Stormwater Division

MEMORANDUM

DATE: July 23, 2014
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jacob Smith, Stormwater Intern
PO: 110426
RE: Files Approved for Scanning

NAME PDF/SCANNED FILE:	MARYWOOD		
BMP ID OR GEN FILE NUMBER:	MC063	**OWNER NAME:**	CENTEX HOMES
PIN:	4722600001B	**SITE ADDRESS:**	167 BRADDOCK RD
		LEGAL DESCRIPTION:	CA P-3 MARYWOOD SUBDIVISION

MAINTENANCE AGREEMENT IN FILE:	YES	**BOOK/PAGE OR DOCUMENT NO.:**	010006790	**OTHER DESCRIPTION:**	N/A

BOX NO.:	1	**COMMENTS:**	DECLARATION INSPECTION MAINTENANCE

COPY

COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS
INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 20 day of September, 2007, between Centex Homes, and all successors in interest, ("COVENANTOR(S)"), owner(s) of the following property:

Parcel Identification Number: (47-2) (1-47)
Legal Description: See Attached Exhibit A
Project or Subdivision Name: Marywood
Document No.
OR Deed Book 0200067900, Page No. ,
and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

I (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 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,

Instrument # 070027625
Recorded on Oct. 3, 2007

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)

Signature

R James Birkholz P.P. Center Homes NL

Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/CO~~UNTY~~ OF Suffolk, to wit:

I hereby certify that on this 21st day of September, 2007, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared R James Birkholz and did acknowledge the foregoing instrument to be his/her A
ct.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 21st day of September, 2007.

SEAL
NICKEY N MAGEE
Notary Public
Commonwealth of Virginia
342148
My Commission Expires Apr 30, 2008

Notary Public

Notary Registration Number: 342148

My Commission expires April 30, 2008

COVENANTOR(S)

_____
Signature

_____
Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF _____, to wit:

I hereby certify that on this ____ day of _____, 20____, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared _____ and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this _____ day of _____, 20____.

[SEAL]

_____
Notary Public

Notary Registration Number: _____

My Commission expires: _____

Approved as to form:

Adam Kinsman
County Attorney

This Declaration of Covenants prepared by:

Name: _____

Print Name: Joseph Roque

Title: Cortex Homes Land Development Project Manager

Address: 7025 Harbour View Blvd Suite 115
Suffolk, VA 23435

Phone Number: 757-342-6222

(drainage1.pre)

Marywood

Exhibit A

PARCEL PROPERTY DESCRIPTION:

PARCEL CONTAINING 115.275 ACRE± STANDING IN THE
NAME OF ROBERT E. YANCEY AND HIRKO K. YANCEY
JAMES CITY COUNTY TAX ASSESSORS PARCEL (47-2)(1-47)

BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A IRON PIPE FOUND (P.O.B. SEE SHEET 2 OF 5) ON THE EASTERN RIGHT-OF-WAY LINE OF JOHN TYLER MEMORIAL HIGHWAY; THENCE ALONG THE EASTERN RIGHT-OF-WAY OF JOHN TYLER MEMORIAL HIGHWAY N30°21'08"E 91.25; THENCE S52°21'21"E 227.02' TO A BENT PIPE FOUND; THENCE N18°52'04"E, A DISTANCE 99.84' TO A IRON PIPE FOUND; THENCE N31°59'06E 194.67' TO A BENT IRON PIPE FOUND; THENCE N27°42'45"E 203.04' TO A IRON ROD FOUND; THENCE N21°00'45"E 209.62' TO A IRON PIPE FOUND;THENCE S47°36'57"E 163.69' TO A IRON PIPE FOUND; THENCE S47°43'24E 158.54' TO AN IRON PIPE FOUND; THENCE S47°40'33"E 144.02' TO AN IRON PIPE FOUND; THENCE S47°43'37"E 192.99 TO A IRON PIN FOUND; THENCE S47°48'53"E 204.10' TO A IRON ROD FOUND; THENCE S47°40'31"E 703.31' TO A IRON ROD FOUND, SAID ROD BEING IN THE CENTERLINE OF A STREAM, THE STREAM BEING THE PROPERTY LINE; THENCE ALONG CENTERLINE OF STREAM THE FOLLOWING BEARINGS AND DISTANCES:S39°01'26"W 95.05', S62°32'57"W 85.10', N85°25'36"W 43.04', S56°21'38"W 34.89', S73°17'39"W 128.22', N48°34'23"W 43.99', S87°09'19"W 29.68', N49°09'56"W 44.78', S55°32'08"W 38.80', S77°03'23"W 63.17', S49°24'10"W 24.75', S06°12'58"W, 13.13', S30°33'38"W 12.90', S50°3525"W 48.08', N88°00'19"W 21.94', N36°18'37"W 32.33', S78°12'06"W 64.55' TO A POINT; SAID POINT BEING ON THE NORTHERN RIGHT-OF-WAY LINE OF OXFORD ROAD; THENCE CONTINUING ALONG NORTHERN RIGHT-OF-WAY LINE OF OXFORD ROAD N48°15'52"W 31.05' TO A POINT; THENCE S41°14'08"W 60.00' TO A POINT AT THE SOUTHWEST CORNER OF OXFORD ROAD; THENCE LEAVING OXFORD ROAD N48°15'52"W 21.14' TO A IRON ROD FOUND; THENCE S49°41'43"W 119.98' TO A IRON ROD FOUND; THENCE S54°24'03"W 4.37' TO A IRON PIPE FOUND; THENCE S58°12'15"W 220.44' TO A IRON ROD FOUND; THENCE S04°45'50"W 204.63' TO A POINT; THENCE S17°47'24"E 146.85' TO A POINT; THENCE S25°09'40"E 78.12' TO A POINT; THENCE S08°11'56"E 109.25' TO A IRON ROD FOUND; THENCE S01°50'37"E OF 82.90' TO A IRON ROD FOUND; THENCE S26°13'12"W 81.87' TO A IRON PIPE FOUND; THENCE S45°09'31"W 154.87' TO A IRON PIPE FOUND; THENCE S08°46'34"W 107.38' TO A POINT; THENCE S48°28'13"W 135.32 TO A POINT; THENCE S44°55'22"E 145.00' TO A POINT ON THE WESTERN RIGHT-OF-WAY LINE OF BRADDOCK ROAD; THENCE ALONG A CURVE TO THE LEFT HAVING A LENGTH OF 50.82' AND A RADIUS OF 330.66' TO A POINT ON THE SOUTHWEST CORNER OF BRADDOCK ROAD; THENCE S53°44'12"E 50.00' TO A IRON PIPE FOUND AT THE SOUTHEAST CORNER OF BRADDOCK ROAD; THENCE S53°44'12"E

Marywood

Exhibit A

294.52'; THENCE S35°56'02"W 165.32' TO A IRON PIPE FOUND; THENCE S36°09'37"W 199.61' TO A IRON PIPE FOUND ON THE NORTHERN RIGHT-OF-WAY OF SPRING ROAD; THENCE CONTINUING ALONG THE NORTHERN RIGHT-OF-WAY OF SAID ROAD N53°50'23"W 108.61' TO A POINT AT THE NORTHWEST CORNER OF SPRING ROAD; THENCE S36°09'57"W 50.00' TO A POINT ON THE SOUTHWEST CORNER OF SPRING ROAD; THENCE LEAVING SAID ROAD S37°40'57"W 862.40' TO A IRON PIPE FOUND; THENCE N52°22'47"W 50.03 TO A IRON PIPE FOUND; THENCE S37°37'13"W 50.00' TO A IRON PIPE FOUND; THENCE S52°17'39"E 49.98' TO A IRON PIPE FOUND; THENCE S37°40'57"W 1356.01' TO A IRON ROD FOUND; THENCE S51°13'22"W 160.38' TO A IRON ROD ON THE NORTHWEST CORNER OF RICHNECK ROAD; THENCE S56°36'22"W 184.20' TO A IRON PIPE FOUND ON THE SOUTHWEST CORNER OF RICHNECK ROAD; THENCE S40°40'52"W 299.74' TO A POINT AT THE HIGH WATER LINE OF LAKE POWELL; THENCE ALONG THE HIGH WATER LINE OF LAKE POWELL THE FOLLOWING BEARINGS AND DISTANCES: S73°23'12"W 85.95', N53°39'34"W 105.83', N45°35'28"W 140.60', N27°15'22"W 44.73', N04°48'15"E 108.96', N69°07'33"E 35.38', N22°34'06"W 182.62', N32°32'44"W 145.52', N40°18'07"W 40.18', N06°55'17"E 77.22', N09°42'01"W 126.53' TO A POINT AT THE HIGH-WATER LINE OF LAKE POWEL AND THE CENTERLINE OF A STREAM; PROPERTY LINE IS ALONG THE CENTERLINE OF SAID STREAM; THENCE ALONG THE CENTERLINE OF STREAM THE FOLLOWING BEARINGS AND DISTANCES: N06°44'10"E 57.40', N10°35'40"E 94.89', N27°24'00"E 239.71', N50°27'53"W 126.56', N11°37'56"W 46.90', N13°55'40"E 48.04', N05°01'41"E 37.70', N49°39'26"E 45.62', N72°50'13"E 26.86', N14°32'45"E 128.56', N41°34'29"E 87.60', N01°08'48"W 38.41', N63°05'07"E 53.45', N41°17'30"E 25.05', N84°16'56"E 27.56', S09°04'26"W 32.39', S21°36'41"E 17.57', S87°42'41"E 17.04', N80°56'58"E 23.80', S23°38'48"W 23.78', S64°00'07"E 22.33', N47°18'30"E 40.59', N73°47'38"E 30.25', N58°32'40"E 67.36', N23°25'47"E 94.24', N31°29'54"W 38.84', N44°01'32"E 31.44', S89°17'11"E 88.68', N67°03'37"E 65.18', N52°50'46"E 31.15', N80°05'47"E 52.43', N60°43'53"E 51.91', N42°29'18"E 103.79', N57°00'12"E 115.74', N21°09'30"E 56.51', N51°55'09"W 33.13', N00°24'05"W 56.07', N70°16'34"E 63.66', N01°34'04"W 22.37', N60°07'00"E 33.98', S00°21'23"W 48.81', N83°53'20"E 82.18', TO A IRON PIPE FOUND; THENCE LEAVING SAID STREAM S46°17'12"E 301.33' TO A IRON PIPE FOUND; N43°41'06"E 499.81' TO A IRON PIPE FOUND; THENCE N46°18'54"W 589.09'; THENCE N33°06'22"E 118.45' TO A IRON ROD FOUND; THENCE N61°10'36"W 199.94 TO A IRON PIPE FOUND; THENCE N33°01'14"E 50.12' TO A IRON PIPE FOUND; THENCE S61°12'19"E 199.72' TO A IRON PIPE FOUND; THENCE N33°06'02"E 194.88' TO A IRON PIPE FOUND; THENCE N36°11'07"E 194.24' TO A IRON PIPE FOUND; THENCE N41°41'07"E 384.32' TO A POINT; THENCE N81°58'54"E 284.37' TO A IRON PIPE FOUND; THENCE N65°37'05"E 229.36' TO A IRON PIPE FOUND; THENCE N02°08'39"E 201.29' TO A IRON PIPE FOUND; THENCE N23°22'27"W 108.29' TO A IRON PIPE FOUND; THENCE N29°02'26"W 178.60' TO A IRON PIPE FOUND; THENCE N02°15'37"W 163.23' TO A IRON PIPE FOUND; THENCE N30°28'07"W 447.84' TO A IRON PIPE FOUND;

Marywood

Exhibit A

THENCE N63°56'37"W 123.99' TO A PIPE FOUND, SAID PIPE BEING THE AFORESAID POINT OF BEGINNING.

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

County BMP ID Code (if known): MC-063

Name of Facility: Marywood BMP No.: 2 of 4 Date: 11/23/2012

Location: Cul-de-sac Marywood Drive

Name of Owner: Pulte Group

Name of Inspector: Gregory B. Johnson

Type of Facility: BMP - Wet Pond

Weather Conditions: _____ Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner 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 to 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
Embankments and Side Slopes:				
Grass Height	✓			
Vegetation Condition	✓			
Tree Growth	✓			
Erosion	✓			
Trash & Debris		✓		
Seepage	✓			
Fencing or Benches	✓			
Interior Landscaping/Planted Areas: ☐ None ☒ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation				
Vegetated Conditions	✓			
Trash & Debris	✓			
Floating Material	✓			
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☐ None, Dry (Detention Basin)				
Shoreline Erosion	✓			
Algae	✓			
Trash & Debris	✓			
Sediment	✓			
Aesthetics	✓			
Other				
Inflows (Describe Types/Locations):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Outlet Protection				
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): DI-7 88' 24" RCP w/valve				
Condition of Structure	✓			
Corrosion	✓			
Trash and Debris	✓			
Sediment	✓			
Vegetation	✓			
Other	✓			
Principal Outlet Structure - Barrel, Conduit, etc. : Modified DI-7				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris	✓			
Erosion/Sediment	✓			
Outlet Protection	✓			
Other	✓			
Emergency Spillway (Overflow):				
Vegetation		✓		Additional vegetation needed
Lining		✓		Holes on slopes and bottom
Erosion		✓		Several "hole" on slopes
Trash & Debris	✓			
Other		✓		Outfall channel needs to be cleared
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other	✓			
Surrounding Perimeter Conditions:				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			GATE AT EAST CORNER OF BMP
Other				

Remarks:

Overall Environmental Division Internal Rating: ___ _____

Signature: Gary B. Johnson **Date:** 11/15/2012

Title: Inspector

SWMProg\BMP\CoInspProg\InspForms\DetRet.wpd

Environmental Division
OCT 17 2012
RECEIVED

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: Marywood
Structure/BMP Name: Wet Pond #2
Project Location: Off Jamestown Road, approximately 2000 feet northwest along Spring Road
BMP Location: East end of Marywood Drive
County Plan No.: S - 91 - 04

Project Type:
- ☒ Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Public
- ☐ Other
- ☐ Business
- ☐ Office
- ☐ Industrial
- ☐ Roadway

Tax Map/Parcel No.: 4722600001B
BMP ID Code (if known):
Zoning District: R-1
Land Use: Singel Family Residential
Site Area (sf or acres): 115.3 acres

Brief Description of Stormwater Management/BMP Facility: Wet pond with aquatic bench

Nearest Visible Landmark to SWM/BMP Facility: Cul-de-sac of Marywood Drive

Nearest Vertical Ground Control (if known):
☒ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other
Station Number or Name: 319
Datum or Reference Elevation: 103.44
Control Description: James City County Geodetic Station #319
Control Location from Subject Facility: at intersection for John Tyler Highway with Route 199, , approximately 5000 feet northeast of bmp

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: 2007
Facility Monitored by County Representative during Construction: ☒ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: George Nice and Sons
Name of Professional Firm Who Routinely Monitored Construction: GET Solutions, Inc.
Date of Completion for SWM/BMP Facility: Unknown
Date of Record Drawing/Construction Certification Submittal: November 28, 2011

(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: Pulte Group
Mailing Address: 3951 Westerre Parkway, Suite 160
Richmond, VA 23233
Business Phone: 804-521-3443 Fax:804-521-3467
Contact Person: Kenneth Stubenhofer Title:Land Development Manager

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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Responsible Plan Preparer: Jason A Grimes, P.E.
Title: Project Manager
Plan Name: Marywood
Firm's Project No. 9272-00
Plan Date: December 22, 2004
Sheet No.'s Applicable to SWM/BMP Facility: 1 / 23 / 30 / ____ / ____

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

Name: George Nice and Sons
Mailing Address: 129 Industrial Park
Toano, Virginia 23168
Business Phone: 757-565-2885
Fax: 757-565-1526
Contact Person: Mike Nice
Site Foreman/Supervisor: Jerry Nice
Specialty Subcontractors & Purpose (for BMP Construction Only):

Section 4 – Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer of 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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: V. Marc Bennett, P.E.
Title: Senior Project Manager
Signature:
Date: 09/24/2012

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.

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
Lic. No. 026628
09/24/2012
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered Professional Engineer
Or Certified Land Surveyor

Construction Certification

Firm Name: GET Solutions, Inc.
Mailing Address: 1592 Penniman Road Suite E
Williamsburg, VA 23185
Business Phone: 757-564-6452
Fax: 757-564-6453

Name: DAVID J. GORDINIER
Title: Senior Engineer
Signature:
Date: 9/24/12

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.

COMMONWEALTH OF VIRGINIA
DAVID J GORDINIER, JR
Lic. No. 038969
9/24/12
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered
Professional Engineer

S:\Jobs\9272\03-Marywood-RecordDwg\Admin\Forms & Comments\w09272-00Cert BMP2 part 1 11-28-2011.doc

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 plans 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.

N/A 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.

XX 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.
XX	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.
N/A	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.**
N/A	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.
XX	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.
XX	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.)*

XX	A1.	All requirements of Section II, Minimum Standards, apply to Group A facilities.
XX	A2.	Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
XX	A3.	Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
XX	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.
N/A	A5.	Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
N/A	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.
N/A	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).
XX	A8.	No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
XX	A9.	Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
XX	A10.	Low flow orifice has a non-clogging mechanism.
XX	A11.	A pond drain pipe with valve was provided.
XX	A12.	Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
N/A	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)

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.

INC SD5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

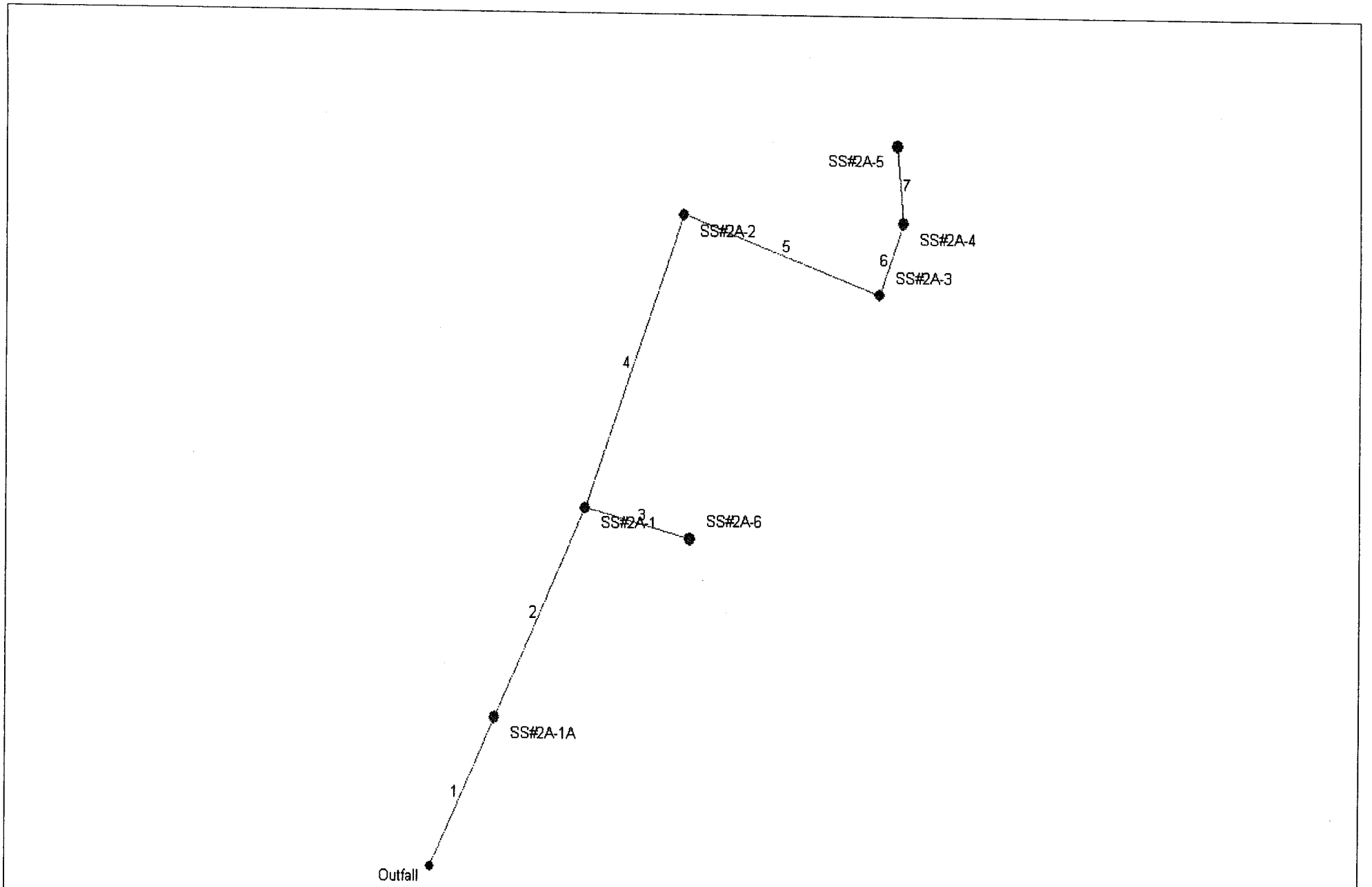
XII. Other Systems

(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.

Hydraflow Plan View



Marywood Storm System 2A	No. Lines: 7	08-23-2007

Hydraflow Storm Sewers 2005

BMP-2
MC-063

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	89.0	0.45	2.91	0.43	0.19	1.29	5.0	9.1	6.2	7.94	39.25	2.53	24	3.01	42.68	40.00	51.27	51.16	55.20	0.00	
2	1	125.0	0.15	2.46	0.43	0.06	1.10	5.0	8.1	6.4	6.97	39.23	2.22	24	3.01	46.44	42.68	51.41	51.29	63.60	55.20	
3	2	64.0	0.25	0.25	0.40	0.10	0.10	5.0	5.0	7.1	0.71	23.62	1.62	15	13.38	55.00	46.44	55.34	51.48	59.00	63.60	
4	2	169.0	0.84	2.06	0.43	0.36	0.93	5.0	7.3	6.5	6.09	10.50	3.45	18	1.00	48.13	46.44	51.98	51.41	60.33	63.60	
5	4	123.0	0.20	1.22	0.49	0.10	0.57	5.0	6.7	6.7	3.82	6.46	3.11	15	1.00	49.36	48.13	52.44	52.01	53.94	60.33	
6	5	41.0	0.81	1.02	0.48	0.39	0.47	5.0	6.4	6.7	3.19	6.46	2.60	15	1.00	49.77	49.36	52.59	52.49	53.94	53.94	
7	6	42.0	0.21	0.21	0.40	0.08	0.08	5.0	5.0	7.1	0.60	17.91	1.51	15	7.69	53.00	49.77	53.31	52.69	57.00	53.94	

Marywood Storm System 2A

Number of lines: 7

Run Date: 08-23-2007

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs.

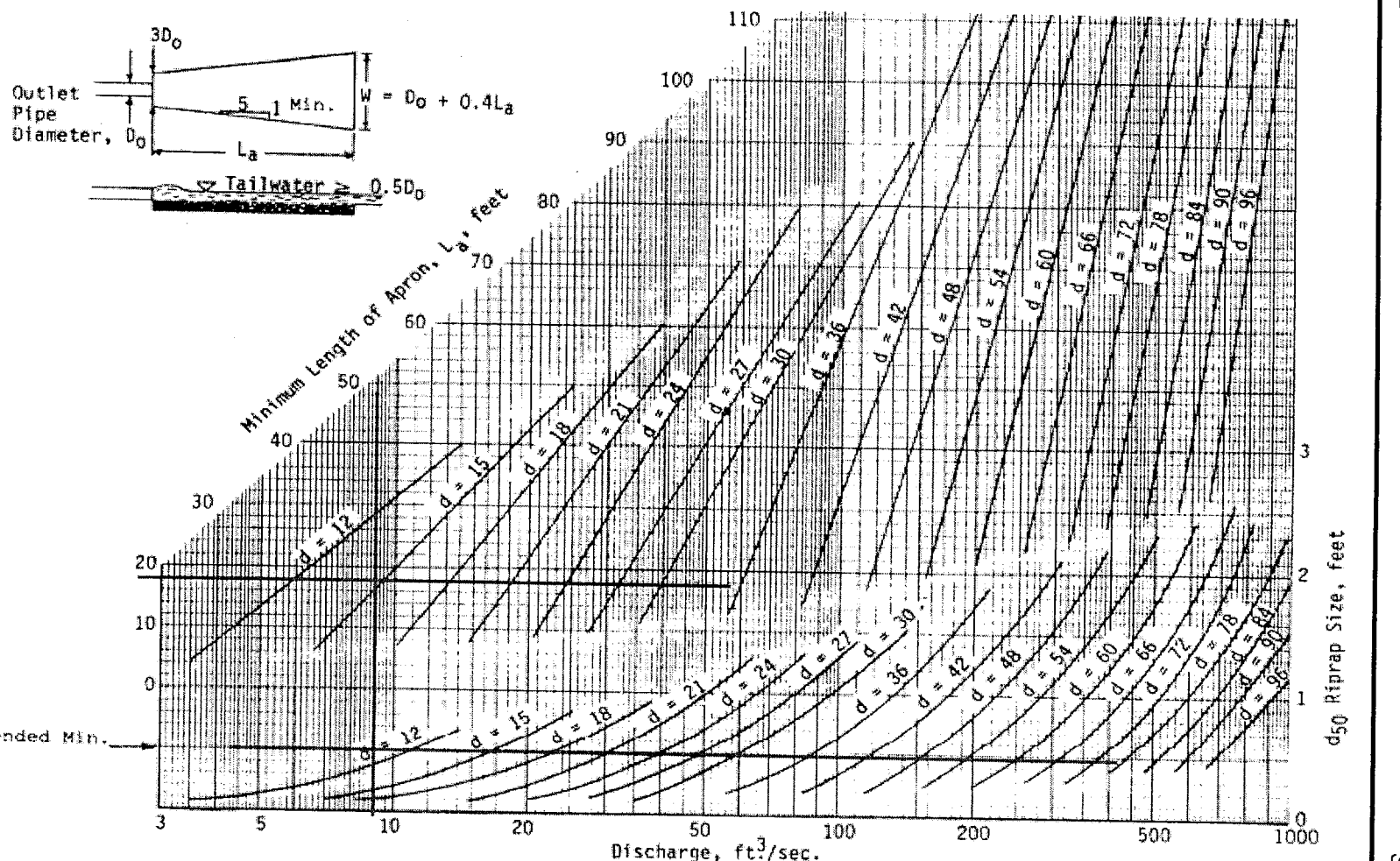
CONSULTING ENGINEERS

Williamsburg (757) 253-0040
Gloucester (804) 693-4450
Richmond (804) 330-8040

Project:	Marywood
Project No.:	9272
Subject:	Outlet Protection
Date:	August 23, 2007
Calculated By:	MJR

Outlet Location: SS#2A Outfall

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
MAXIMUM TAILWATER CONDITION ($T_W \geq 0.5$ DIAMETER)



Source: USDA-SCS

Q =	7.94	cfs	$3D_0$ =	72	in	W =	14	ft	Depth = >1 ft
D_0 =	24	in	L_a =	18	ft	d_{50} =	0.5	ft	

Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Pond No. 2 - BMP 2

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 40.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	40.00	1,596	0	0
2.00	42.00	3,124	4,720	4,720
4.00	44.00	4,777	7,901	12,621
6.00	46.00	6,531	11,308	23,929
8.00	48.00	16,238	22,769	46,698
10.00	50.00	21,003	37,241	83,939
12.00	52.00	26,162	47,165	131,104
14.00	54.00	31,741	57,903	189,007

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	0.00	0.00
Span (in)	= 18.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 40.00	48.00	0.00	0.00
Length (ft)	= 126.00	0.00	0.00	0.00
Slope (%)	= 3.97	0.00	0.00	n/a
N-Value	= .013	.013	.000	n/a
Orifice Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	15.00	0.00	0.00
Crest El. (ft)	= 52.00	53.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	0.00	0.00
Weir Type	= Riser	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	40.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
2.00	4,720	42.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
4.00	12,621	44.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
6.00	23,929	46.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
8.00	46,698	48.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
10.00	83,939	50.00	0.33 IC	0.32 IC	---	---	0.00	0.00	---	---	---	---	0.324
12.00	131,104	52.00	0.47 IC	0.47 IC	---	---	0.00	0.00	---	---	---	---	0.465
14.00	189,007	54.00	30.49 OC	0.05 IC	---	---	30.44 s	39.00	---	---	---	---	69.48

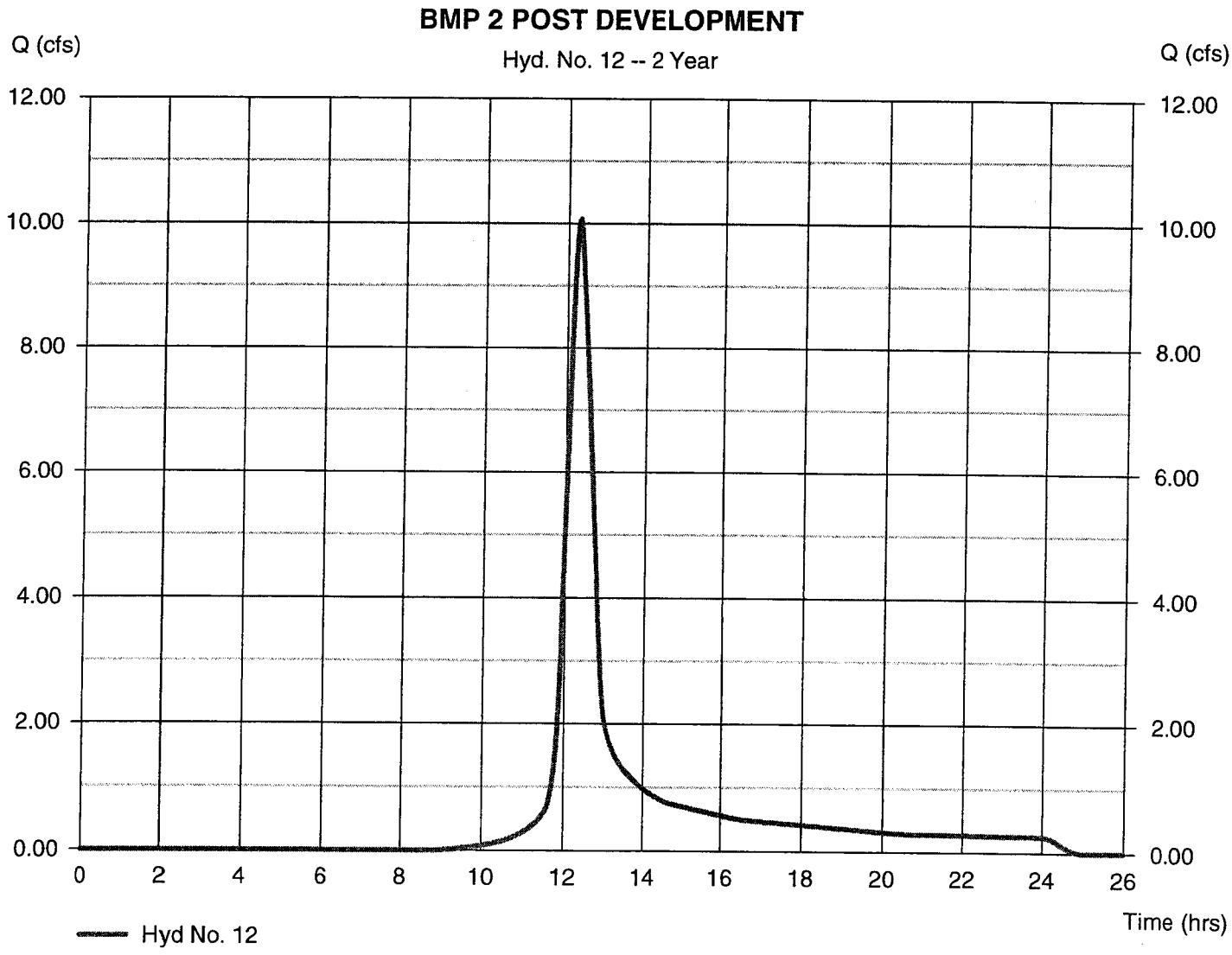
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 10.07 cfs
Storm frequency	= 2 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 49,244 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



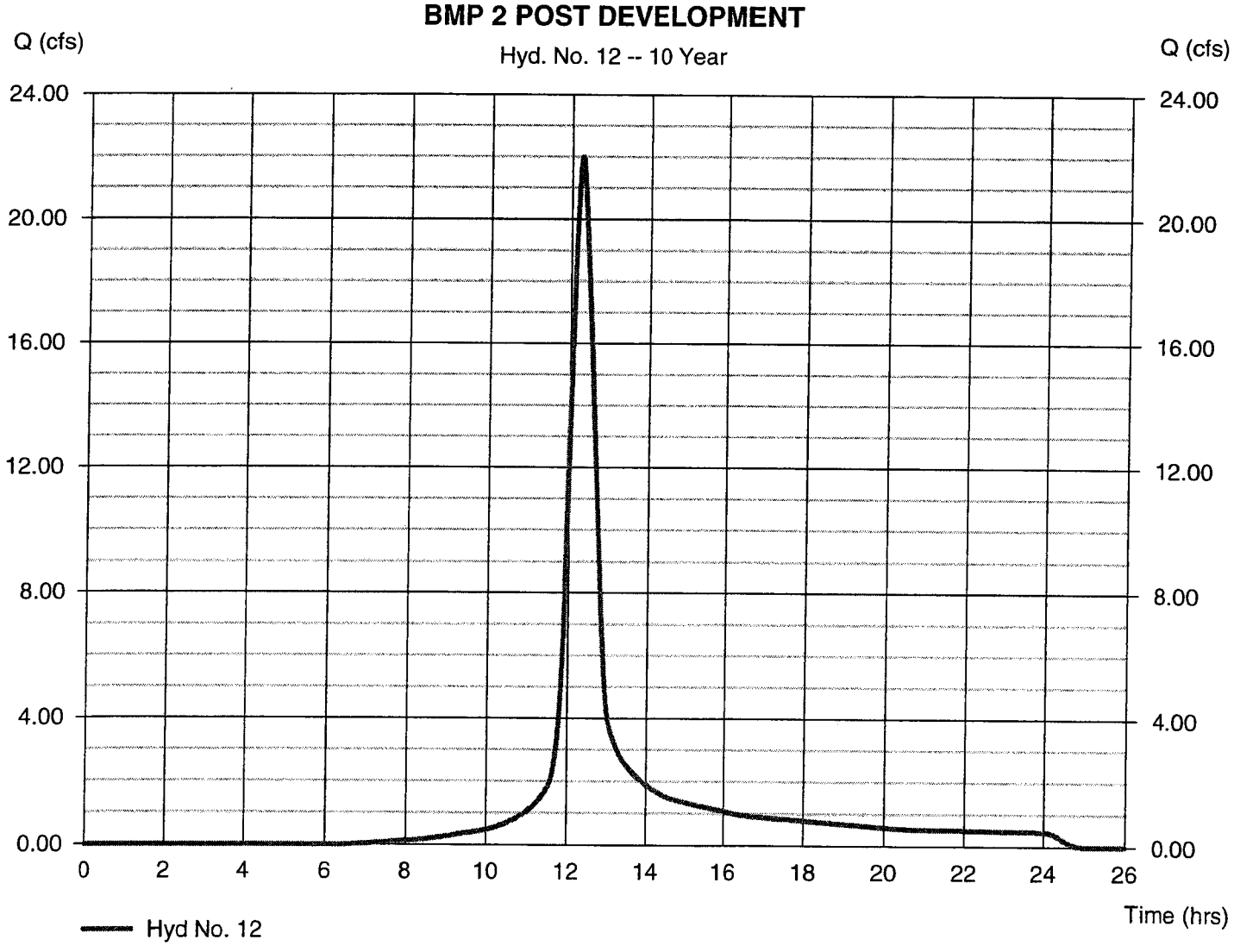
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 22.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 106,698 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 5.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



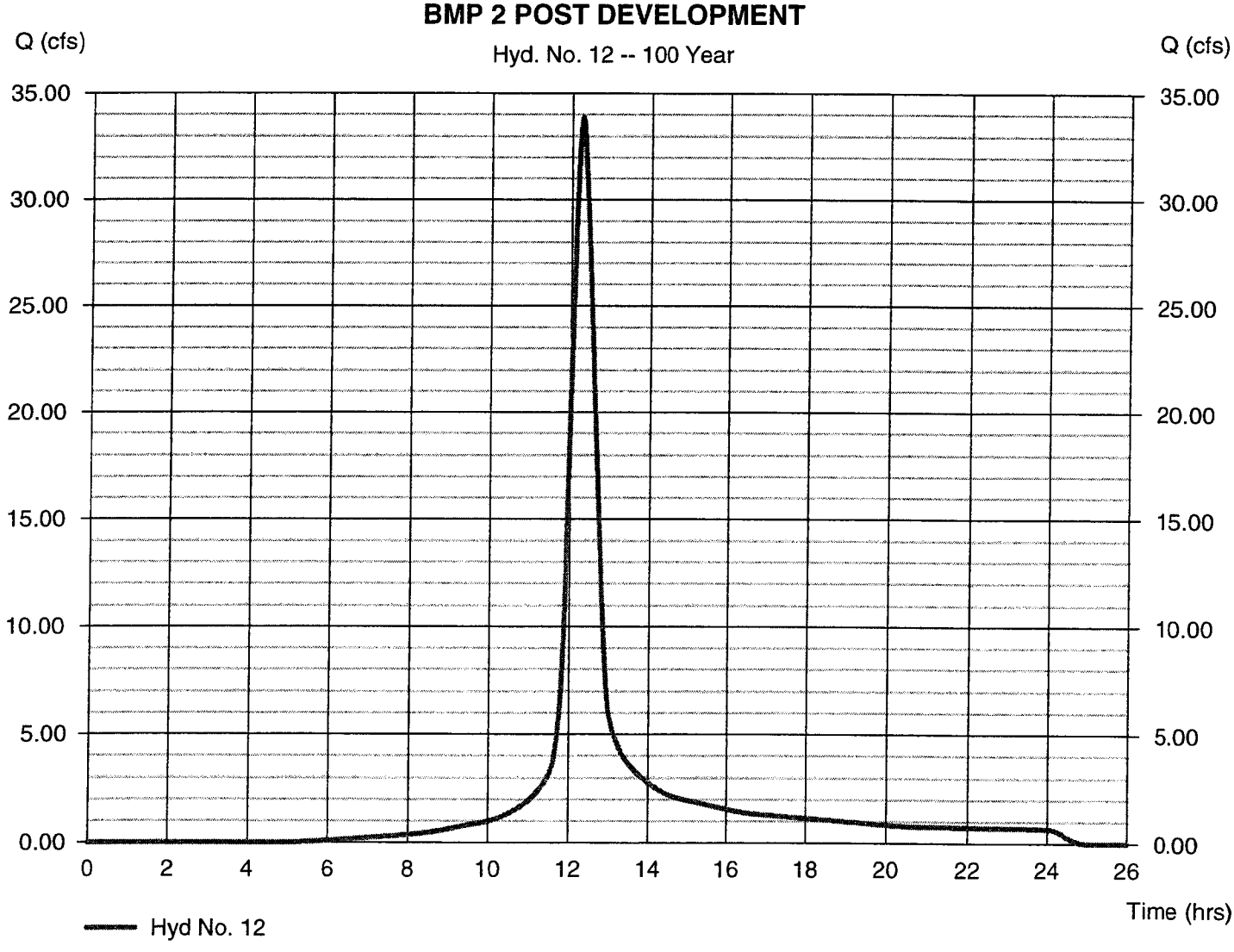
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 33.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 165,505 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

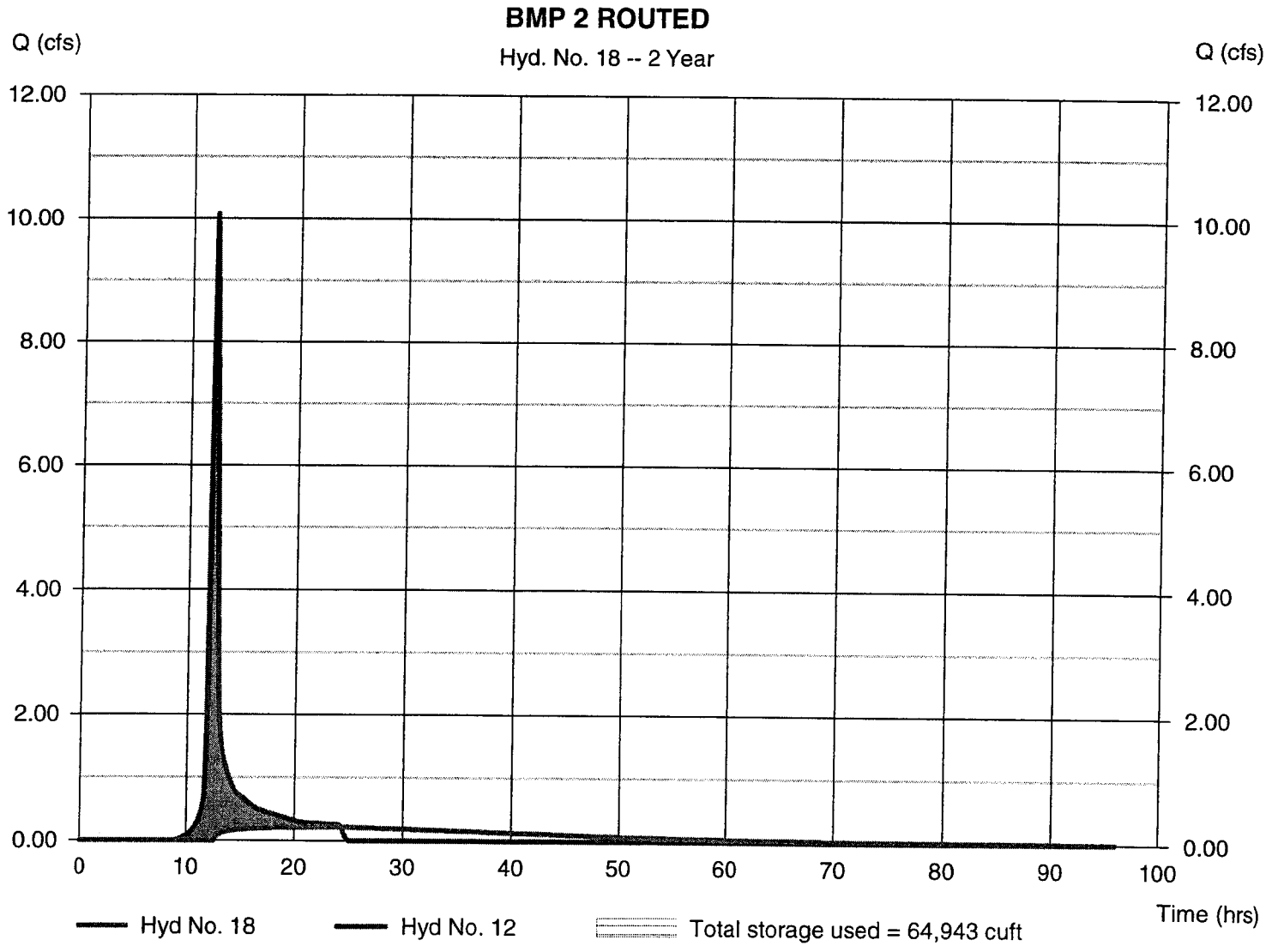
Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 1454 min
Time interval	= 2 min	Hyd. volume	= 26,208 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 48.98 ft
Reservoir name	= BMP 2	Max. Storage	= 64,943 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

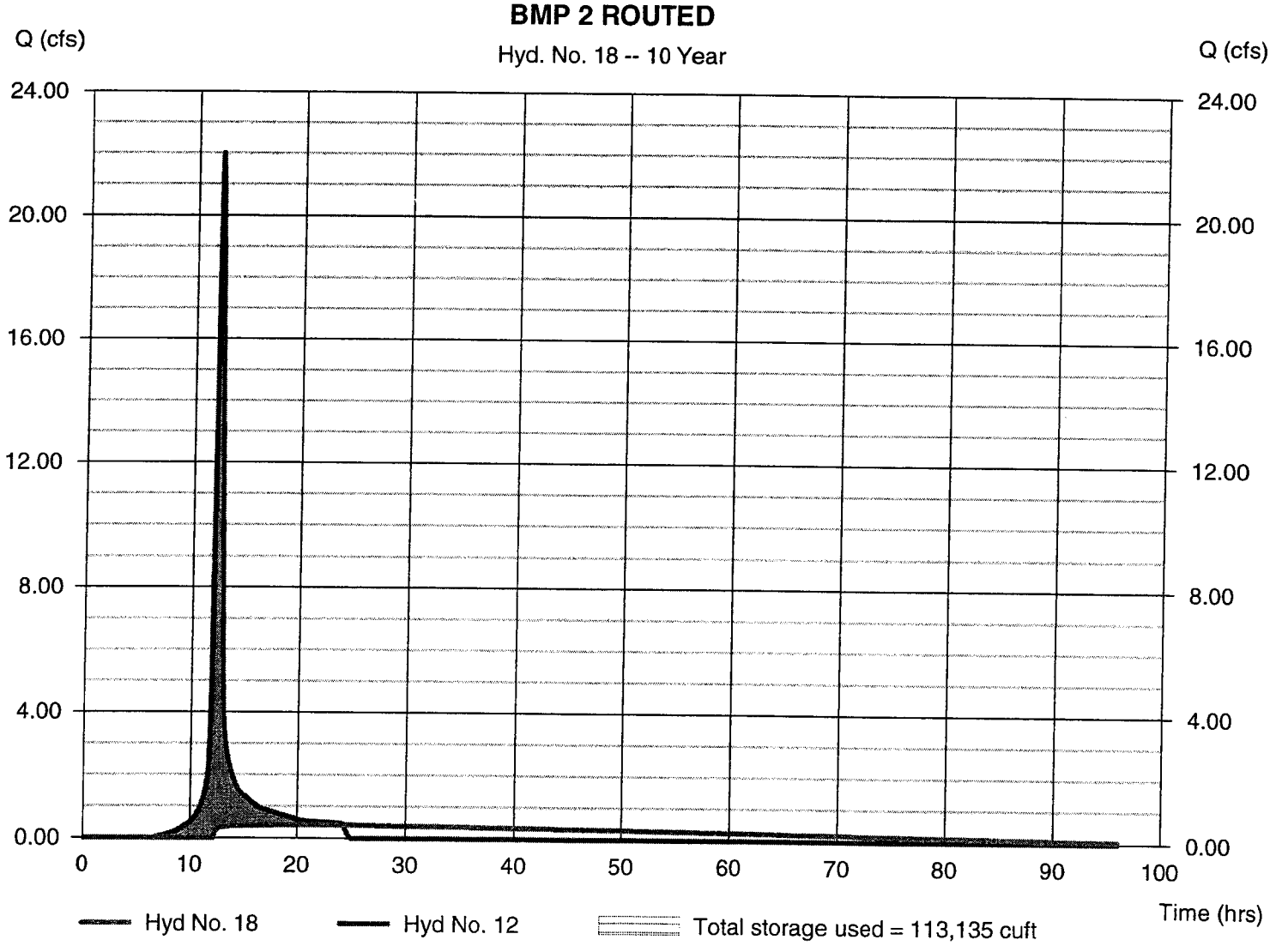
Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.417 cfs
Storm frequency	= 10 yrs	Time to peak	= 1452 min
Time interval	= 2 min	Hyd. volume	= 80,459 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 51.24 ft
Reservoir name	= BMP 2	Max. Storage	= 113,135 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



Hydrograph Report

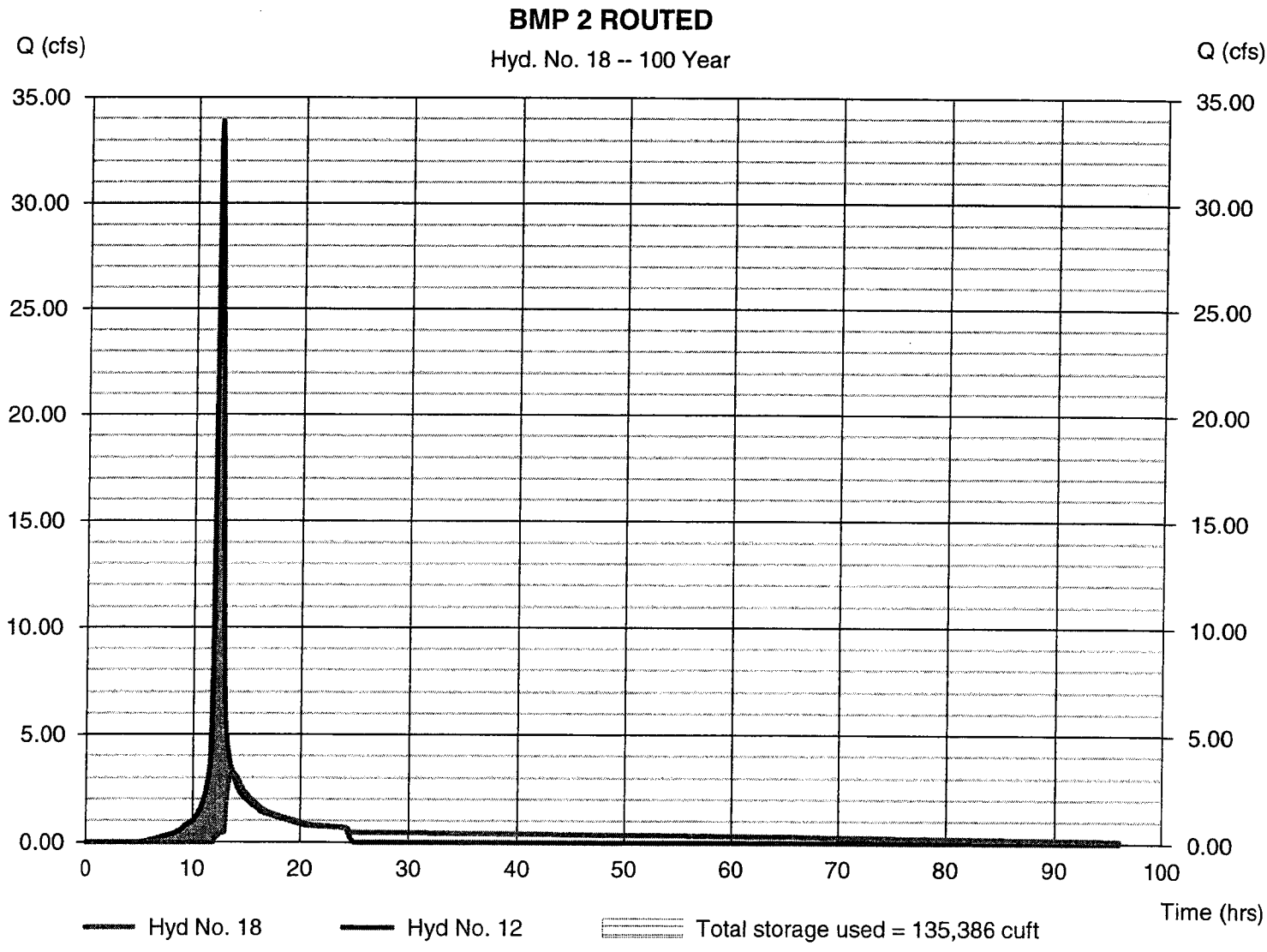
Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 3.240 cfs
Storm frequency	= 100 yrs	Time to peak	= 822 min
Time interval	= 2 min	Hyd. volume	= 135,744 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 52.15 ft
Reservoir name	= BMP 2	Max. Storage	= 135,386 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



BMP 2 AND 4 RECORD DRAWINGS

FOR

MARYWOOD SUBDIVISION

JAMES CITY COUNTY, VIRGINIA

NOTE: PRIOR TO CONSTRUCTION A SEPARATE PLAN TO LOCATE THE PASSIVE RECREATION TRAILS MUST BE SUBMITTED AND APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION. THE LOCATION OF PASSIVE RECREATION TRAILS ARE TO BE FIELD VERIFIED BY COUNTY ENVIRONMENTAL STAFF TO ENSURE TRAILS ARE PROPERLY LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.

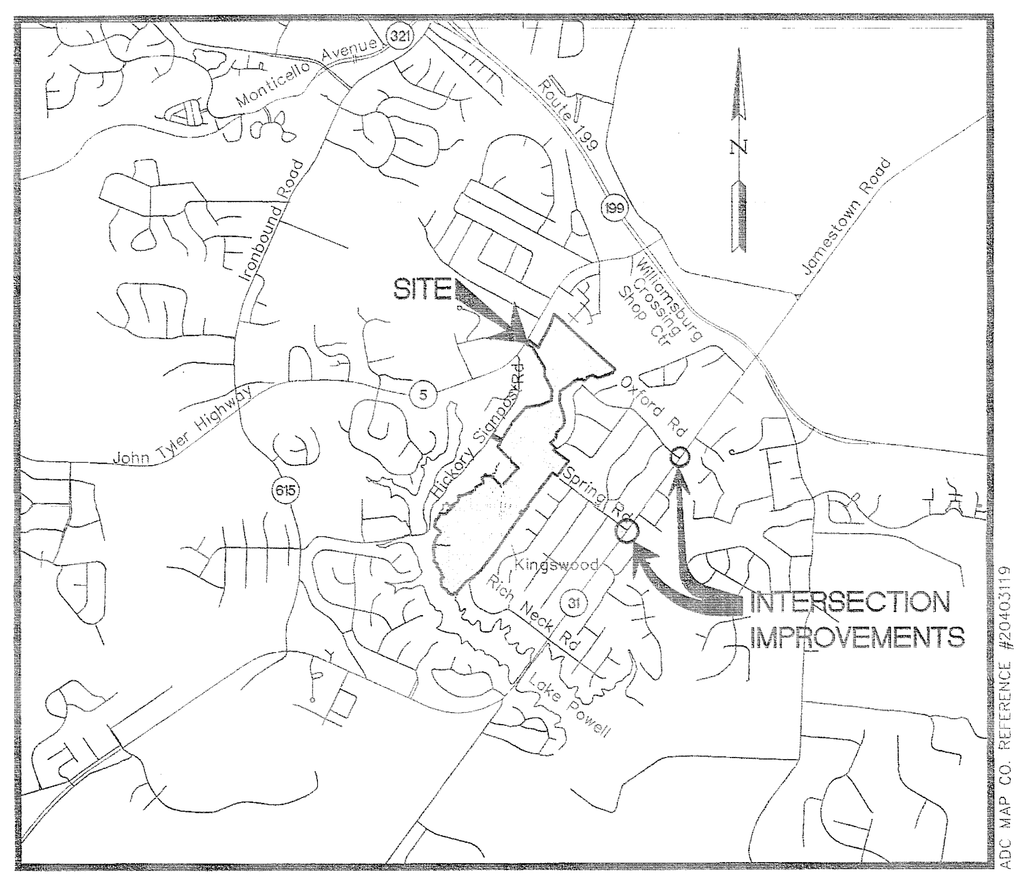
Environmental Division
OCT 17 2012
RECEIVED

County of James City
Subdivision Construction Plan
DATE of APPROVAL 11/9/2007
Does not constitute final plat approval

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	OVERALL SUBDIVISION LAYOUT & SHEET INDEX
3A	ENVIRONMENTAL INVENTORY PLAN
3B	ENVIRONMENTAL INVENTORY PLAN
4	OVERALL UTILITY PLAN
5	OVERALL DRAINAGE PLAN
6	PRELIMINARY PLAT
7	PRELIMINARY PLAT
8	PRELIMINARY PLAT
9	PRELIMINARY PLAT
10	INITIAL EROSION & SEDIMENT CONTROL PLAN
11	INITIAL EROSION & SEDIMENT CONTROL PLAN
12	INITIAL EROSION & SEDIMENT CONTROL PLAN
13	INITIAL EROSION & SEDIMENT CONTROL PLAN
14	FINAL EROSION & SEDIMENT CONTROL PLAN
15	FINAL EROSION & SEDIMENT CONTROL PLAN
16	FINAL EROSION & SEDIMENT CONTROL PLAN
17	FINAL EROSION & SEDIMENT CONTROL PLAN
18	ROAD AND UTILITY PLAN
19	ROAD AND UTILITY PLAN
20	ROAD AND UTILITY PLAN
21	ROAD AND UTILITY PLAN
22	GRADING AND DRAINAGE PLAN
23	GRADING AND DRAINAGE PLAN
24	GRADING AND DRAINAGE PLAN
25	GRADING AND DRAINAGE PLAN
26	ROAD AND UTILITY PROFILE
27	ROAD AND UTILITY PROFILE
28	ROAD AND UTILITY PROFILE
29	ROAD AND UTILITY PROFILE
30	STORMWATER MANAGEMENT
30A	STORMWATER MANAGEMENT
31	STORMWATER MANAGEMENT DETAILS
32	ROAD AND DRAINAGE NOTES & DETAILS
32A	ROAD AND DRAINAGE NOTES & DETAILS
33	NOTES AND DETAILS
34	GRINDER PUMP NOTES AND DETAILS
35	EROSION & SEDIMENT CONTROL DETAILS SHEET
36	JAMESTOWN ROAD INTERSECTION IMPROVEMENTS
L1	PWBMP LANDSCAPE PLAN
L2	PWBMP LANDSCAPE PLAN AND NOTES & DETAILS

DECEMBER 22, 2004



ADC MAP CO. REFERENCE #20403119

VICINITY MAP (APPROX. SCALE 1"=2000')

SITE DATA:

TAX MAP PARCEL No.	(47-2)(1-47)
ZONING:	R-1
PROJECT AREA:	115.28 ACRES / 5,021,410 SF
DISTURBED AREA:	22.72 ACRES / 989,587 SF
WETLAND DISTURBED AREA:	0.40 ACRES / 17,500 SF
WATERSHED:	MILL CREEK (LAKE POWELL) WATERSHED
NUMBER OF LOTS:	90
FLOOD HAZARD MAP:	FEMA PANEL NUMBER 510201 0045 B ZONE X: AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD PLAIN

OWNER INFORMATION:

CENTEX HOMES
3951 WESTERRE PARKWAY, SUITE 160
RICHMOND, VA 23233
ATTENTION: DAVID MURRAY
TELEPHONE: (757) 215-1250
FAX: (757) 215-1261

RESPONSIBLE LAND DISTURBER:

"THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, THE OWNER OR DEVELOPER SHALL PROVIDE THE NAME OF A "RESPONSIBLE LAND DISTURBER" WHO SHALL ASSUME RESPONSIBILITY AS THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT. THE OWNER OR DEVELOPER SHALL PROVIDE WRITTEN NOTIFICATION SHOULD THE "RESPONSIBLE LAND DISTURBER" CHANGE DURING CONSTRUCTION."

NOTES:

1. SETBACKS:
   FRONT = 35'; SIDE = 15'; REAR = 35'
   IF LOT IS LESS THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 100 FT.
   IF LOT IS MORE THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 150 FT.
   SPECIAL PROVISIONS FOR CORNER LOTS
   A) OF THE 2 SIDES OF A CORNER LOT, THE FRONT OF THE LOT SHALL BE DEEMED TO BE THE SHORTER OF THE 2 SIDES FRONTING THE STREETS.
   B) EACH CORNER LOT SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 125 FT.
2. ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
3. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
4. ALL EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH THE STATE PRIVATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
5. ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION.
6. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE BMPS OR THEIR STRUCTURES AND SHALL BE SAVED HARMLESS FROM ANY DAMAGES.
7. ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
8. NEW PROPERTY MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
9. ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
10. THE CONTRACTOR SHALL AT ALL TIMES POSSESS AND MAINTAIN A CURRENT COPY OF THE HRPDC REGIONAL STANDARDS AND THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS AT THE SITE AND READILY AVAILABLE FOR IMMEDIATE REFERENCE.
11. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 23-7(c) OF THE JAMES CITY COUNTY CODE.
12. DISTURBANCE TO TOPOGRAPHY WITH SLOPES EQUAL TO OR GREATER THAN 25% IS PROHIBITED UNLESS A WAIVER HAS BEEN OBTAINED FROM JAMES CITY COUNTY. TOPOGRAPHY SHOWN ON THESE PLANS ARE REASONABLY ACCURATE FOR LAND FORM, HOWEVER THIS TOPOGRAPHY MAY NOT ACCURATELY LOCATE OR SHOW STEEPLY SLOPED GROUND PLANES. PRIOR TO ANY LOT DISTURBANCE, THE HOMEOWNER SHALL IDENTIFY AREAS OF 25%, OR GREATER SLOPES AND SHALL SECURE ALL NECESSARY APPROVALS THROUGH THE ENVIRONMENTAL DIVISION TO DISTURB STEEP SLOPES..
13. SECURITY LIGHTS, WHERE NOTED, REFER TO STREET LIGHTS INSTALLED FOR SECURITY AND NIGHT TIME ILLUMINATION OF THE ADJACENT STREET. THESE LIGHTS, POLES AND LUMINARS WILL NOT BE MAINTAINED OR REPLACED BY VDOT.
14. A LAND DISTURBING PERMIT, SILTATION AGREEMENT WITH SURETY, AND A PRE-CONSTRUCTION CONFERENCE IS REQUIRED FOR THIS PROJECT.
15. ONLY JCSA PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON THE EXISTING WATER MAINS AND SANITARY FORCE MAINS.
16. THE CONTRACTOR IS TO PLACE AN RPA BUFFER SIGN AT THE INTERSECTION OF EACH LOT LINE WITH AN RPA BUFFER. THE STANDARD JAMES CITY COUNTY RPA BUFFER SIGN IS TO BE LOCATED AT THE LIMIT OF THE BUFFER. SIGNS ARE AVAILABLE FROM MR. WAYLAND BASS, THE JAMES CITY COUNTY ENGINEER, AT A FEE OF $30 / SIGN. TELEPHONE: 757-253-6671 FOR FURTHER INFORMATION.
17. ALL STORM PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) SMOOTH WALL UNLESS OTHERWISE NOTED.
18. STORM STRUCTURES SHALL CONFORM TO VDOT ROAD & BRIDGE STANDARDS AND SPECIFICATIONS. ALL MANHOLES SHALL INCLUDE INLET SHAPING (IS-1) AND MANHOLES DEEPER THAN 4 FEET SHALL HAVE STEPS (ST-1). PIPE BEDDING SHALL BE IN ACCORDANCE WITH VDOT PB-1 AND MANUFACTURERS SPECIFICATIONS.
19. NATURAL OPEN SPACE AREAS SHALL REMAIN IN AN UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.
20. CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS ARE TO BE SUBMITTED TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION FOR REVIEW AND APPROVAL BEFORE APPLICABLE, INDIVIDUAL SINGLE-FAMILY BUILDING PERMIT APPLICATIONS ARE SUBMITTED FOR REVIEW.
21. SURVEY DATA PROVIDED BASED UPON JAMES CITY COUNTY GEODETIC CONTROL NAD-83 ESTABLISHED FROM MONUMENT 318.

THIS PROJECT DOES NOT RELY ON EXISTING LAKE POWELL TO MEET STORMWATER MANAGEMENT CRITERIA

THIS PLAN WAS GRANTED PRELIMINARY APPROVAL BY THE JAMES CITY COUNTY PLANNING COMMISSION ON DECEMBER 5, 2005.

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	GRINDER PUMP CONNECTION	GPC
	CLEAN OUT	CO
	WATER METER	WM
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREE LINE	
	LIMITS OF CLEARING	
	REVERSE ROLL TOP GUTTER	
251	GROUND ELEVATION	251
	PROPOSED TOP OF CURB ELEV.	TC= ELEV.
	STRAW BALE BARRIER	
	RIP RAP	
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	SIGN	
	CUT/FILL	C F

EROSION AND SEDIMENTATION CONTROL LEGEND

SF	SILT FENCE (SPEC. 3.05)
SSF	SUPER SILT FENCE (SPEC. 3.05)
IP	INLET PROTECTION (SPEC. 3.07)
CE	CONSTRUCTION ENTRANCE (SPEC. 3.02)
CD	CHECK DAM (SPEC. 3.20)
RR	RIP RAP (SPEC. 3.19)
OP	OUTLET PROTECTION (SPEC. 3.18)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBIN. INSTEAD OF SILT FENCE)
ST	TEMPORARY SEDIMENT TRAP (SPEC. 3.13)
PS	PERMANENT SEEDING (SPEC. 3.32)
TP	TREE PROTECTION (SPEC. 3.38)
SCC	STORMWATER CONVEYANCE CHANNEL (SPEC. 3.17)
SB	SEDIMENT BASIN (SPEC. 3.14)
CRS	CONSTRUCTION ROAD STABILIZATION (SPEC. 3.03)
DD	DIVERSION DIKE (SPEC. 3.12)
BB	BRUSH BARRIER (SPEC. 3.06)

NOTE: SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

PROJECT NO.: 9272-0
JCC CASE: S-91-04

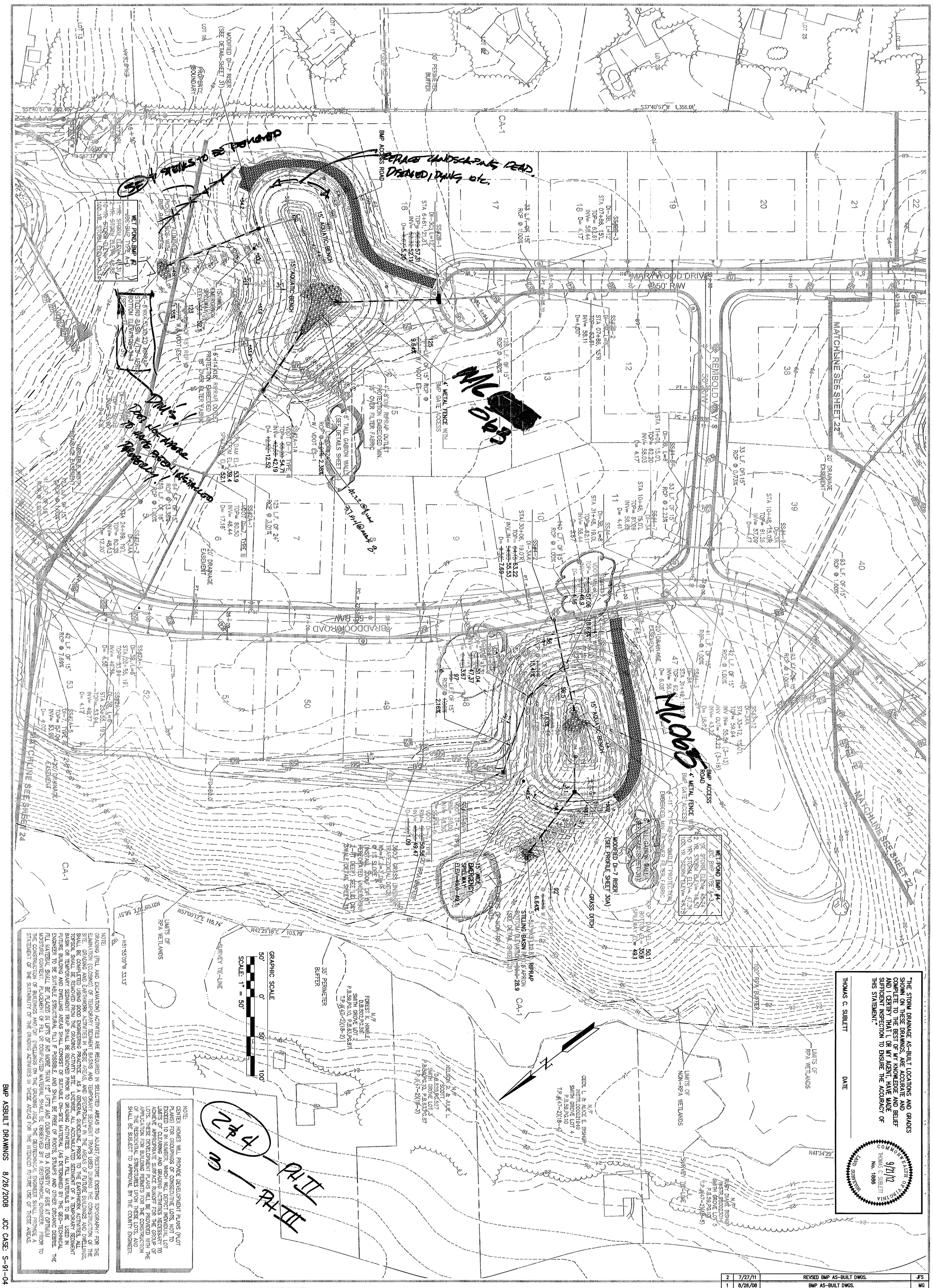
"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

COMMONWEALTH OF VIRGINIA
9/21/12
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

THOMAS C. SUBLETT DATE

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVISED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
8	8/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	6/07	REVISED PER JCC COMMENTS 3/07 THROUGH 4/07	JAG
6	2/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG
4	2/06	REVISED PER JCC COMMENTS 11/05 THROUGH 1/06	VMB
3	10/05	REVISED PER JCC COMMENTS 6/05	VMB
2	4/05	REVISED PER JCC COMMENTS 2/17/05	VMB
1	12/04	REVISED PER JCC COMMENTS 10/18/04	VMB



NOTE:
GRADING (FILL AND EXCAVATION) ACTIVITIES ARE REQUIRED IN SELECTED AREAS TO ADJUST/RESTORE EXISTING TOPOGRAPHY FOR THE ELIMINATION (CLOSING) OF TEMPORARY SEDIMENT BASINS AND TEMPORARY SEDIMENT TRAPS USED DURING THE CONSTRUCTION OF THE SITE. GRADING AND EARTHWORK ACTIVITIES IN THESE AREAS, AND SPECIFICALLY IN THE AREAS OF FUTURE BUILDINGS AND DWELLINGS, SHALL BE COMPLETED USING GOOD ENGINEERING PRACTICE. AS A GENERAL GUIDELINE, PRIOR TO THE EARTHWORK ACTIVITIES, ALL TOPSOIL SHALL BE REMOVED FROM THE GRADING ACTIVITY SITE. LIKEWISE, ALL ACCUMULATED SEDIMENT OF A TEMPORARY SEDIMENT BASIN OR TEMPORARY SEDIMENT TRAP SHALL BE REMOVED PRIOR TO GRADING ACTIVITIES. ALL FILL MATERIALS TO BE USED IN FUTURE BUILDING AND DWELLING AREAS SHALL CONSIST OF SUITABLE ON-SITE MATERIAL (AS DETERMINED BY THE GEO-TECHNICAL ENGINEER TO BE SUITABLE STRUCTURAL FILL) IF POSSIBLE, AND SHALL BE FREE OF ROOTS, STUMPS AND OTHER ORGANIC DEBRIS. THE FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" LIFTS AND COMPACTED TO A DENSITY OF 95% AT OPTIMUM MOISTURE CONTENT. PLACEMENT OF FILL OR COMPACTED MATERIAL SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER. PRIOR TO THE CONSTRUCTION OF BUILDINGS AND/OR DWELLINGS ON THE GRADING AREA, THE GEOTECHNICAL ENGINEER SHALL PROVIDE A STATEMENT OF THE SUITABILITY OF THE GRADING ACTIVITIES IN THESE AREAS FOR THE INTENDED FUTURE USE OF THESE AREAS.

NOTE:
CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS WILL BE PROVIDED WITH THE APPLICATION FOR BUILDING PERMITS FOR THE CONSTRUCTION OF THE RESIDENTIAL STRUCTURES UPON THESE LOTS AND SHALL BE SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

THOMAS C. SUBLETT — DATE

COMMONWEALTH OF VIRGINIA — LAND SURVEYOR — THOMAS C. SUBLETT No. 1886 — 9/21/12

No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVISED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
3	6/08	REVISED SANITARY SEWER MH #1-2	JAG
4	11/07	REVISED STORM SYSTEM #4 FOR CONSTRUCTION PHASING	JAG
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG

GRADING AND DRAINAGE PLAN

MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed JAG/MJR — Drawn GVC/MJR — Scale 1" = 50' — Date 8/23/07 — Project No. 9272 — Drawing No. 23

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

BMP ASBUILT DRAWINGS 8/26/2008 JCC CASE: S-91-04

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.

3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.

4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON-SITE. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN ANOTHER AREA ON THE SITE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENTATION AT EARTHWORK AND STOCKPILE LOCATIONS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS, UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WILL BE CERTIFIED BY A GEOTECHNICAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

8. A RECORD DRAWING (AS-BUILT) SHALL BE SUBMITTED, REVIEWED, AND APPROVED PRIOR TO RELEASE OF THE POSTED BOND / SURETY.

GEOTECHNICAL ENGINEER'S EARTHWORK RECOMMENDATIONS

1. PRIOR TO INITIATION OF EARTHWORK OPERATIONS, ANY STREAM FLOWS SHOULD BE DIVERTED SO THAT SURFACE WATER DOES NOT ENTER AREAS OF FILL PLACEMENT. THIS COULD BE ACCOMPLISHED WITH DIVERSION DITCHES AND SUMP PUMPS.

2. SUBGRADE PREPARATION SHOULD INCLUDE REMOVAL OF TOPSOIL, ORGANIC MATERIAL, AND ANY STREAM SEDIMENT, COBBLES, OR OTHER POROUS MATERIALS FROM BELOW THE DAM EMBANKMENTS. REMOVAL OF THESE MATERIALS SHOULD BE EXTENDED TO AT LEAST 5 FEET BEYOND THE PLANNED EDGE OF THE DAM EMBANKMENTS. EMBANKMENT SUBGRADES SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT TO ASSURE THAT SUITABLE SUBGRADE MATERIALS HAVE BEEN EXPOSED.

3. THE FOLLOWING FILL TYPES ARE RECOMMENDED ON THIS PROJECT

DAM EMBANKMENT FILL: INORGANIC SOILD MATERIAL CLASSIFIED AS SC, CL, CH, OR ML CONTAINING AT LEAST 35% FINES (SILT AND CLAY) AND HAVING A MAXIMUM LIQUID LIMIT OF 60. MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE DAM EMBANKMENT FILL MATERIALS.

SOIL LINER FILL (SOIL WHICH WILL BE USED IN POND BOTTOMS TO RESTRICT SEEPAGE): INORGANIC SOILD MATERIAL CLASSIFIED AS CL, ML, MH, OR CH CONTAINING AT LEAST 60% FINES (SILT AND CLAY). MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE SOIL LINER FILL MATERIALS.

4. ALL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS (4 INCHES FOR LIGHT COMPACTION EQUIPMENT) AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THE SOIL'S OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. COMPACTION SHOULD BE ACCOMPLISHED USING SHEEPSFOOT ROLLERS, OR A VIBRATORY DRUM ROLLER FOR MORE GRANULAR SOILS, UNTIL A MINIMUM DENSITY OF 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698) IS ACHIEVED. CARE SHOULD BE EXERCISED TO ACHIEVE THOROUGH COMPACTION ON SLOPING SURFACES. A QUALIFIED SOILS TECHNICIAN UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO PROVIDE ON TO PROVIDE COMPACTION TESTING DURING THE FILL PLACEMENT TO ASSURE THAT THE MINIMUM COMPACTION REQUIREMENTS ARE BEING MET. AT LEAST 1 TEST PER 5,000 SQUARE FEET PER LIFT SHOULD BE PERFORMED. COMPACTION TESTING IN TRENCHES SHOULD BE PERFORMED AT A RATE OF AT LEAST 1 TEST PER 50 LINEAR FEET PER LIFT.

5. THE POND SUBGRADES SHOULD BE THOROUGHLY COMPACTED TO MINIMIZE SEEPAGE LOSS. THIS SHOULD BE ACCOMPLISHED BY SCARIFYING THE SUBGRADE TO A DEPTH OF 8 INCHES, MOISTURE CONDITIONING THE SOILS TO WITHIN +/- 3# OF OPTIMUM MOISTURE CONTENT, AND COMPACTING TO A DRY DENSITY OF AT LEAST 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). BOTH SHEEPSFOOT AND SMOOTH DRUM COMPACTION EQUIPMENT SHOULD BE USED.

6. FILL SOILS COMPRISING A SOIL LINER SYSTEM SHOULD BE COMPACTED TO THE SPECIFICATIONS OF PARAGRAPH 4 ABOVE. FILL SOILS OF AN AMENDED SOIL LINER SYSTEM SHOULD BE PREPARED IN ACCORDANCE WITH THE AMENDMENT MANUFACTURER'S SPECIFICATIONS.

7. IT IS EXPECTED THAT MOST SOILS EXCAVATED FROM THE IMPOUNDMENTS WILL BE WET OF THEIR OPTIMUM MOISTURE CONTENT. EXCESSIVELY WET SOILS SHOULD BE SPREAD, MANIPULATED, AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THEIR OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. THE CONTRACTOR SHOULD CONSIDER THIS IN THE SCHEDULE AND EQUIPMENT PLANNING.

8. ZONES OF PERCHED WATER WERE ENCOUNTERED IN SOME LOCATIONS ABOVE THE POND BOTTOM ELEVATIONS. THESE WILL RESULT IN SEEPAGE INTO THE EXCAVATIONS, AND ACCUMULATION OF WATER IN THE PONDS DURING CONSTRUCTION SHOULD BE ANTICIPATED. SEEPAGE FROM THE POND SIDE SLOPES MAY OCCUR AT ANY LOCATION, RESULTING IN LOCALIZED SLOUGHING. PERMANENT STABILIZATION OF THESE SEEPAGE ZONES BY INSTALLATION OF SUBSURFACE DRAIN LINES MAY BE REQUIRED DURING CONSTRUCTION.

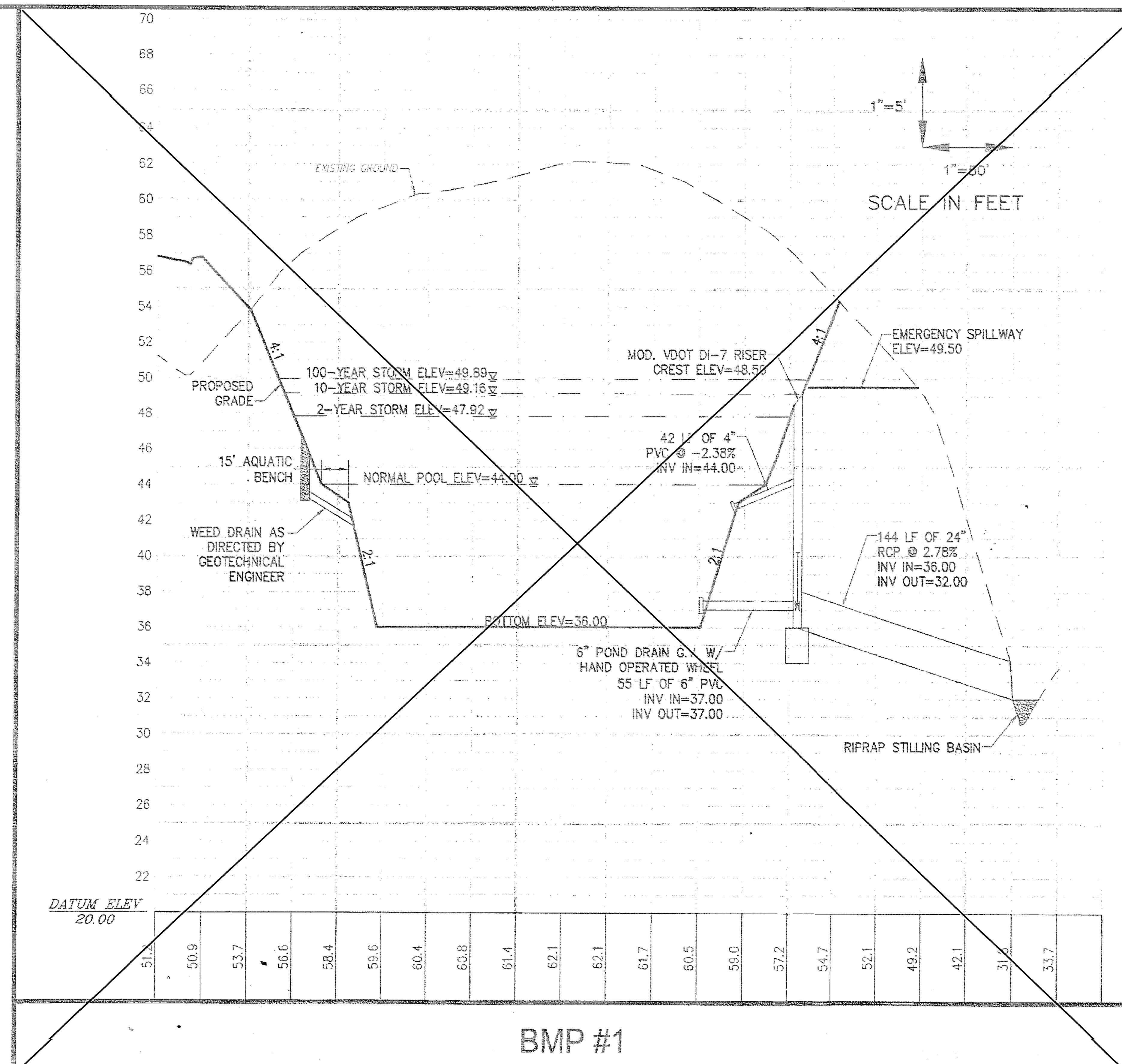
9. DAM MAINTENANCE IS AN ESSENTIAL REQUIREMENT FOR ASSURING THAT DAMS PERFORM AS INTENDED OVER TIME. THE EMBANKMENT SHOULD BE PERIODICALLY INSPECTED FOR INDICATIONS OF SEEPAGE AND EROSION. TREES SHOULD BE KEPT FROM GROWING ON THE EMBANKMENTS, HEAVY GRASS GROWTH SHOULD BE MAINTAINED, AND ANIMAL BURROWS SHOULD BE FILLED. PIPES SHOULD BE INSPECTED FOR INDICATIONS OF LEAKAGE OR FOR THE PRESENCE OF SEDIMENT, WHICH MIGHT INDICATE LEAKAGE. IF DETERIORATION WHICH MIGHT COMPROMISE THE PERFORMANCE OR SAFETY OF THE DAM IS OBSERVED, A QUALIFIED GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO ASSIST IN THE REPAIR.

CONVERSION OF SEDIMENT BASIN INTO BMP FACILITES

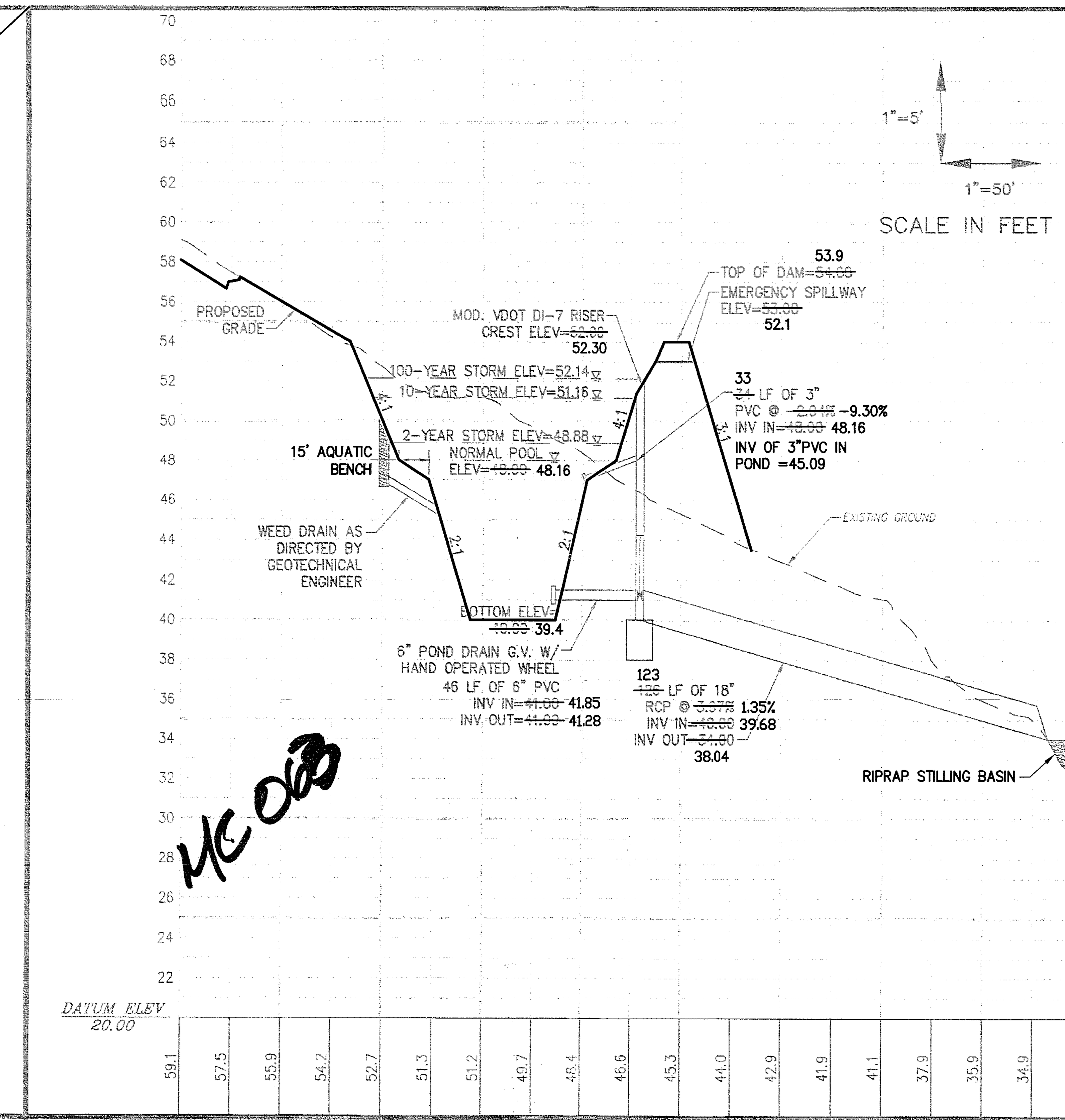
THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNITIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURS HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.



BMP #1



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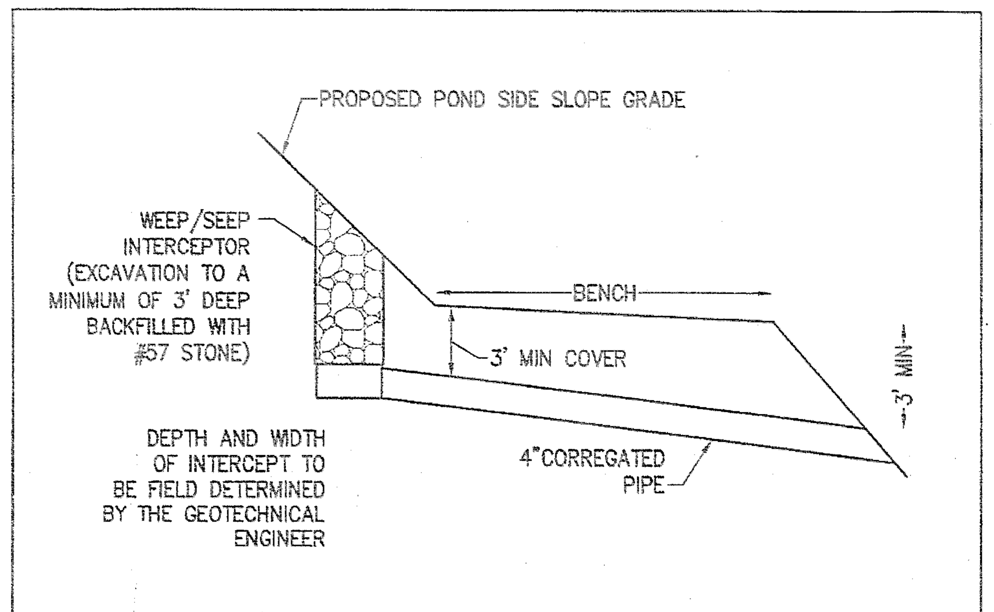


WEEP/SEEP INTERCEPT DETAIL

N.T.S.

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

THOMAS C. SUBLETT	**DATE**

COMMONWEALTH OF VIRGINIA 9/21/12 THOMAS C. SUBLETT No. 1886 LAND SURVEYOR

STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT THE BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST. INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

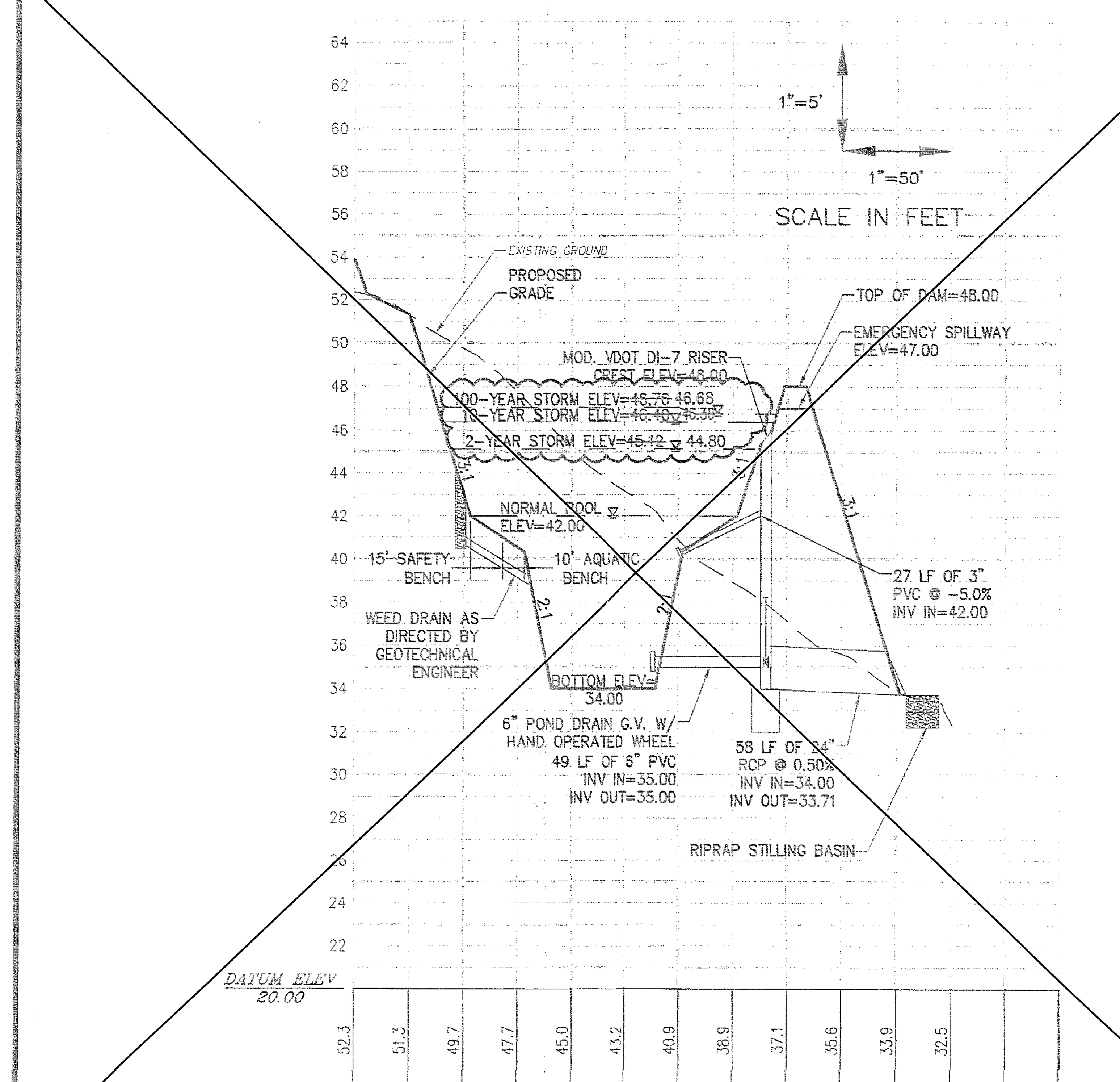
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/APPROVAL OF THE COUNTY.

10. YEARLY INSPECTIONS OF SEDIMENT FOREBAYS SHALL BE PERFORMED. AT ANY TIME MORE THAN 2 FEET OF SEDIMENT HAS ACCUMULATED FOREBAYS SHOULD BE DEWATERED AND SEDIMENT REMOVED.

11. SHOULD MAINTENANCE REQUIRE DEWATERING OF THE FACILITY, A DEWATERING DEVICE APPROVED BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION SHALL BE USED THAT IS RATED TO HANDLE THE MAXIMUM DISCHARGE OF THE DEWATERING PUMP. DISCHARGE FROM DEWATERING SHALL BE FOCUSED INTO THE DOWNSTREAM OUTLET PROTECTION OR THROUGH THE BMP OUTFALL BARREL.



BMP #3

No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVSED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
2 (triangle)	6/08	REVISED SANITARY SEWER MH #1-2	JAG
1 (triangle)	11/07	REVISED STORM SYSTEM #4 FOR CONSTRUCTION PHASING	JAG
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG

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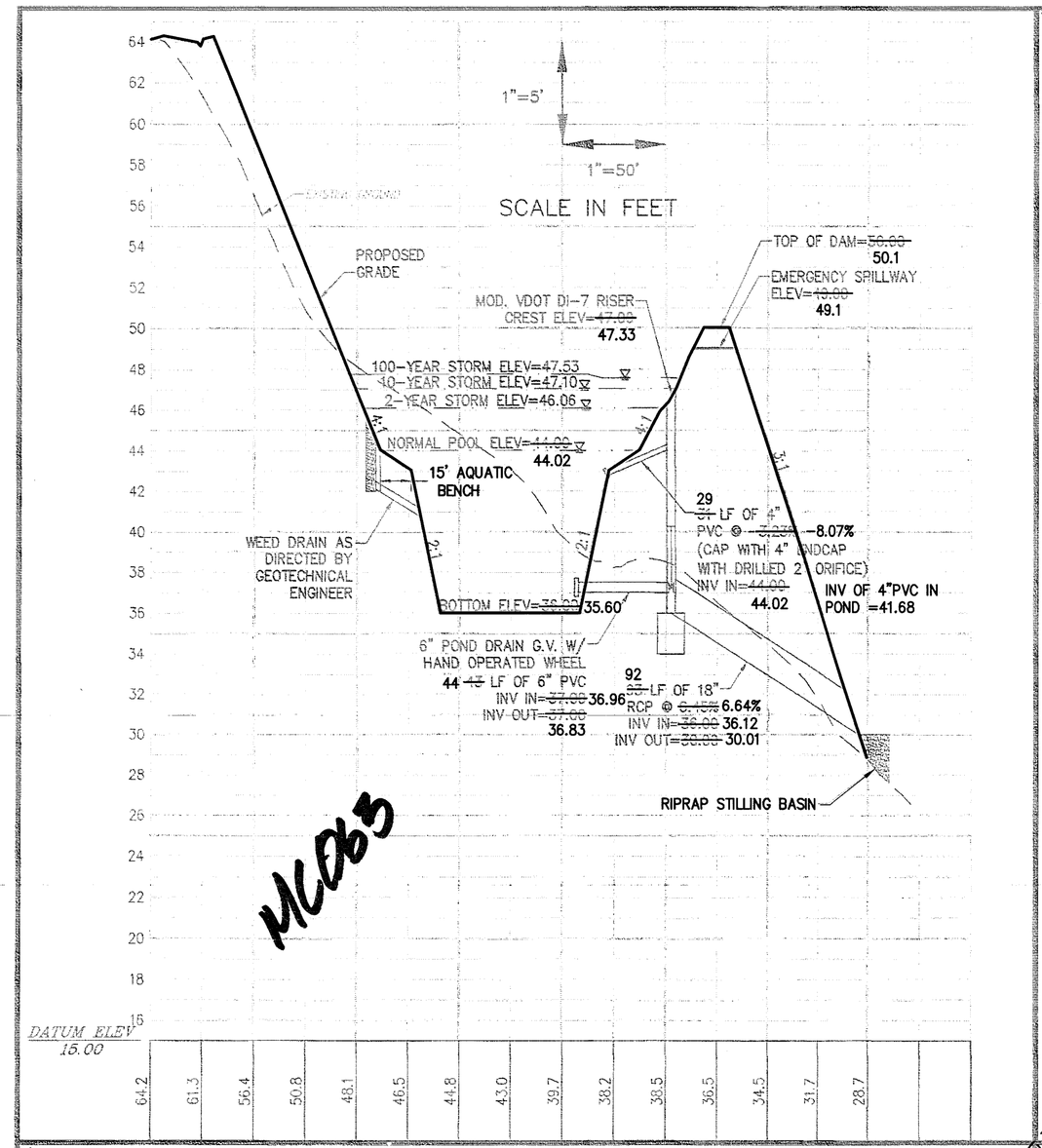
CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

STORM WATER MANAGEMENT

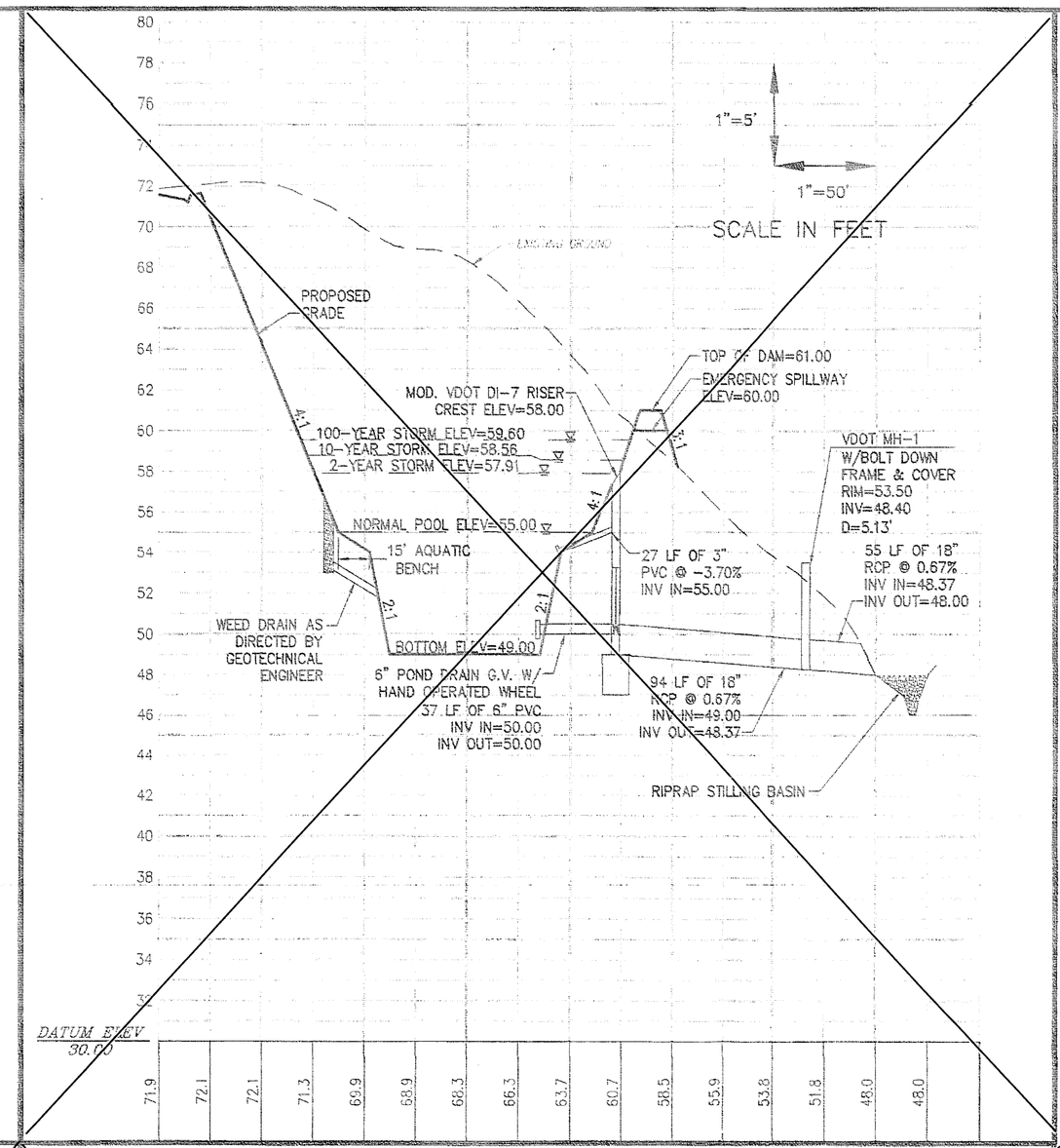
MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
JAG/MJR	MJR
Scale	Date
NOTED	8/23/07
Project No. 9272	
Drawing No. 30 AS-BUILT	



BMP #4



BMP #5

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURS HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.

CONVERSION OF SEDIMENT BASIN INTO BMP FACILITIES

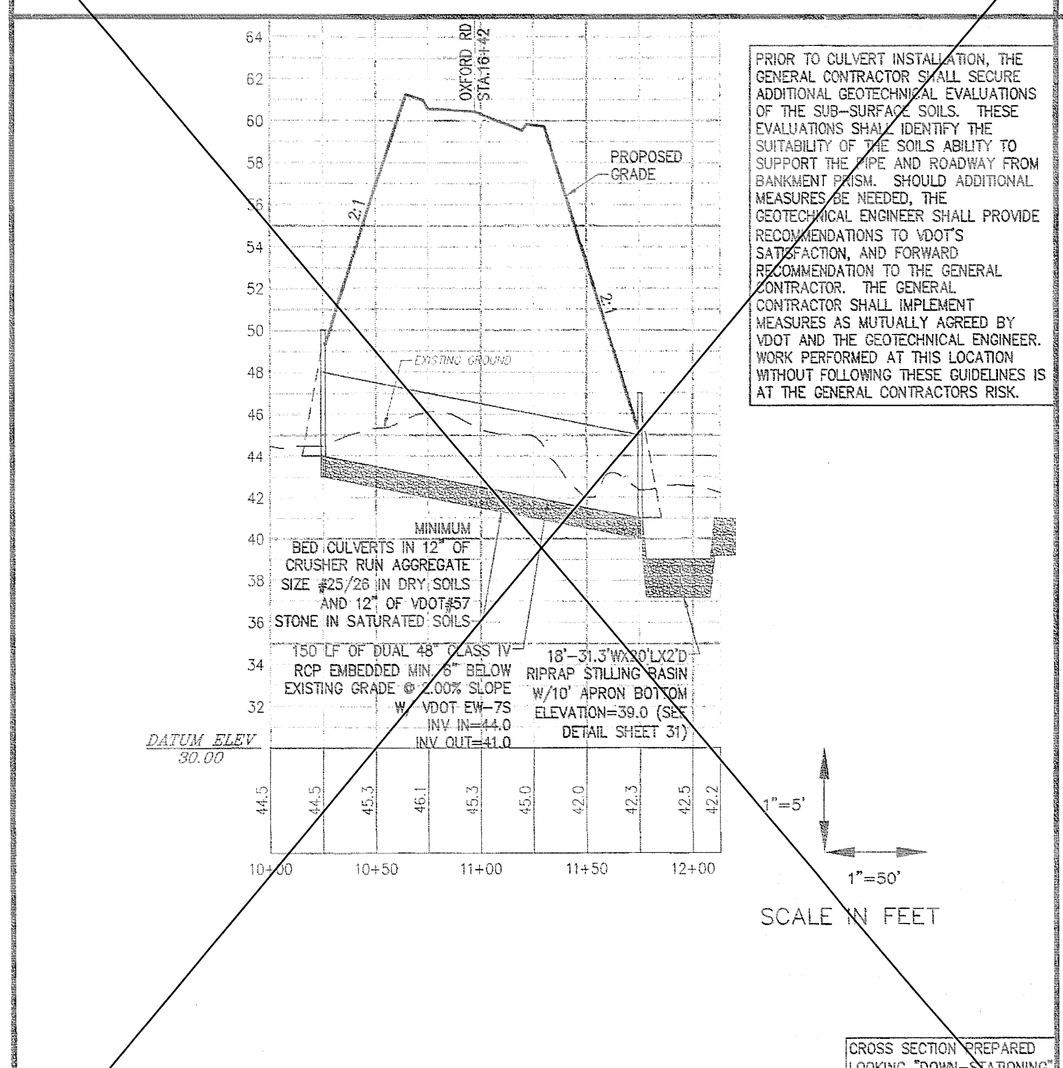
THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNITIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

COMMONWEALTH OF VIRGINIA
9/21/12
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

THOMAS C. SUBLETT DATE

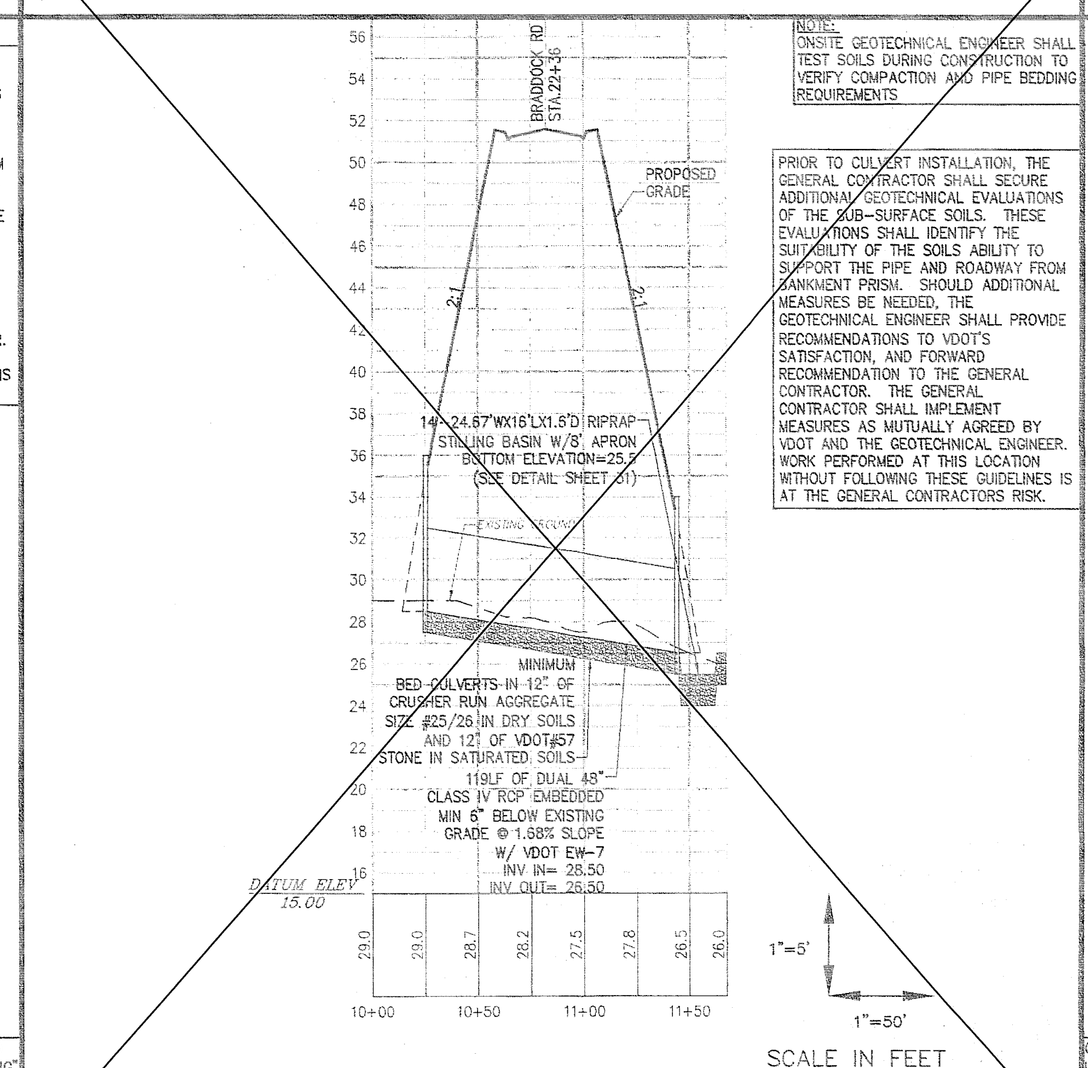
No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/22/11	REVISED BMP AS-BUILT DWGS.	JFS
1	8/25/08	BMP AS-BUILT DWGS.	MG
8	09/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAC
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAC
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAC
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAC
4	2/06	REVISED PER JCC COMMENTS 11/05 THROUGH 1/06	YMB
3	10/05	REVISED PER JCC COMMENTS 8/05	YMB
2	4/05	REVISED PER JCC COMMENTS 2/17/05	YMB



PRIOR TO CULVERT INSTALLATION, THE GENERAL CONTRACTOR SHALL SECURE ADDITIONAL GEOTECHNICAL EVALUATIONS OF THE SUB-SURFACE SOILS. THESE EVALUATIONS SHALL IDENTIFY THE SUITABILITY OF THE SOILS ABILITY TO SUPPORT THE PIPE AND ROADWAY FROM BANKMENT PRISM. SHOULD ADDITIONAL MEASURES BE NEEDED, THE GEOTECHNICAL ENGINEER SHALL PROVIDE RECOMMENDATIONS TO VDOT'S SATISFACTION, AND FORWARD RECOMMENDATION TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT MEASURES AS MUTUALLY AGREED BY VDOT AND THE GEOTECHNICAL ENGINEER. WORK PERFORMED AT THIS LOCATION WITHOUT FOLLOWING THESE GUIDELINES IS AT THE GENERAL CONTRACTORS RISK.

CROSS SECTION PREPARED LOOKING "DOWN-STATIONING"

SECTION B-B
DUAL CULVERTS "A" (OXFORD RD)



NOTE:
ONSITE GEOTECHNICAL ENGINEER SHALL TEST SOILS DURING CONSTRUCTION TO VERIFY COMPACTION AND PIPE BEDDING REQUIREMENTS

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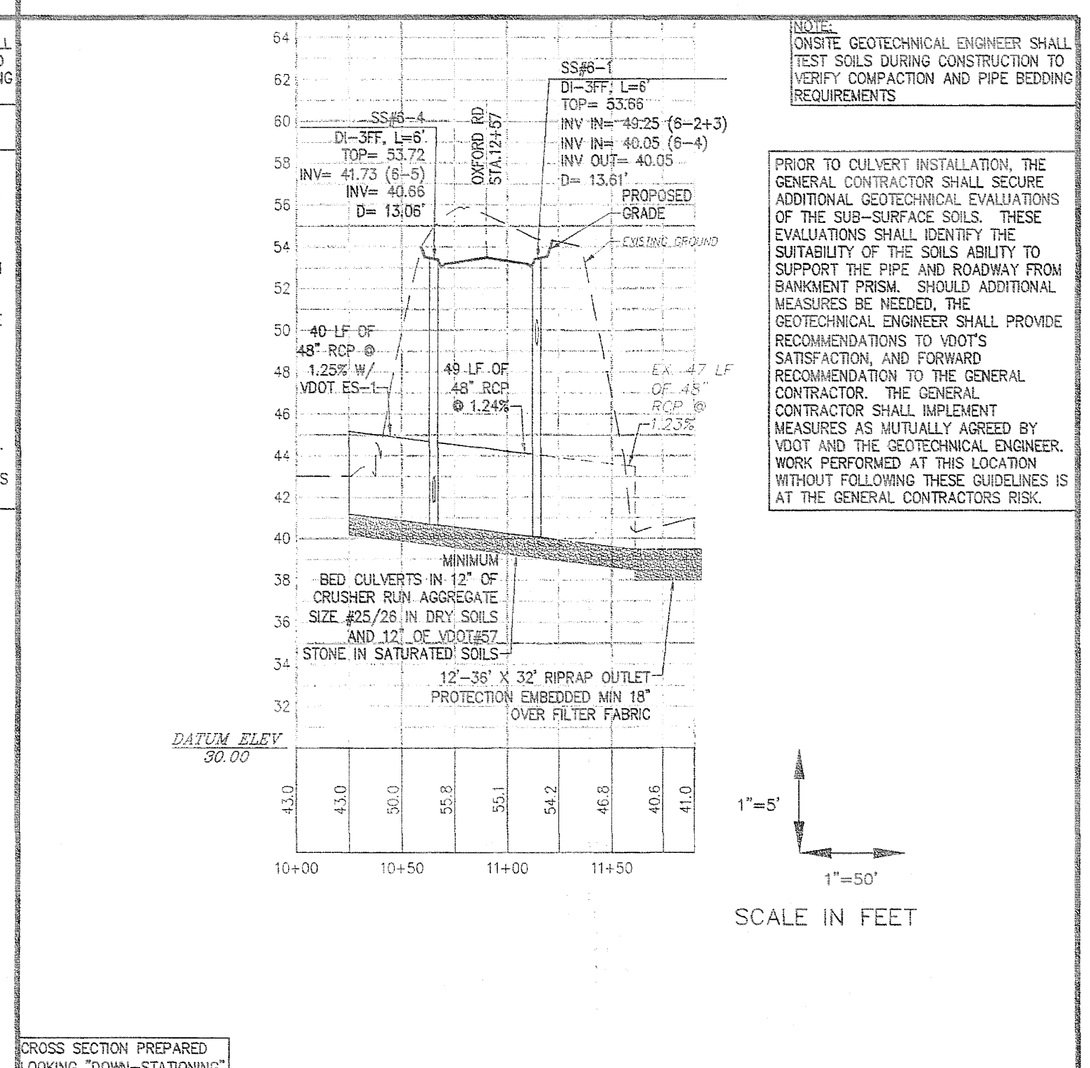
SECTION C-C
DUAL CULVERTS "B" (BRADDOCK RD)



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PRIOR TO CULVERT INSTALLATION, THE GENERAL CONTRACTOR SHALL SECURE ADDITIONAL GEOTECHNICAL EVALUATIONS OF THE SUB-SURFACE SOILS. THESE EVALUATIONS SHALL IDENTIFY THE SUITABILITY OF THE SOILS ABILITY TO SUPPORT THE PIPE AND ROADWAY FROM BANKMENT PRISM. SHOULD ADDITIONAL MEASURES BE NEEDED, THE GEOTECHNICAL ENGINEER SHALL PROVIDE RECOMMENDATIONS TO VDOT'S SATISFACTION, AND FORWARD RECOMMENDATION TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT MEASURES AS MUTUALLY AGREED BY VDOT AND THE GEOTECHNICAL ENGINEER. WORK PERFORMED AT THIS LOCATION WITHOUT FOLLOWING THESE GUIDELINES IS AT THE GENERAL CONTRACTORS RISK.

CROSS SECTION PREPARED LOOKING "DOWN-STATIONING"

SECTION A-A
EX. 48" CULVERT (OXFORD)

5248 Olde Towne Road, Suite 1
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CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

STORM WATER MANAGEMENT
MARYWOOD SUBDIVISION
JAMES CITY COUNTY VIRGINIA
JAMESTOWN DISTRICT

Designed	Drawn
JAG/MJR	MJR
Scale	Date
NOTED	8/23/07

Project No. 9272
Drawing No. 30A AS-BUILT

BMP RECORD DRAWINGS 8/26/2008 JCC CASE: S-91-04

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.

3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.

4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON-SITE. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN ANOTHER AREA ON THE SITE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENTATION AT EARTHWORK AND STOCKPILE LOCATIONS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS, UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WILL BE CERTIFIED BY A GEOTECHNICAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

8. A RECORD DRAWING (AS-BUILT) SHALL BE SUBMITTED, REVIEWED, AND APPROVED PRIOR TO RELEASE OF THE POSTED BOND / SURETY.

GEOTECHNICAL ENGINEER'S EARTHWORK RECOMMENDATIONS

1. PRIOR TO INITIATION OF EARTHWORK OPERATIONS, ANY STREAM FLOWS SHOULD BE DIVERTED SO THAT SURFACE WATER DOES NOT ENTER AREAS OF FILL PLACEMENT. THIS COULD BE ACCOMPLISHED WITH DIVERSION DITCHES AND SUMP PUMPS.

2. SUBGRADE PREPARATION SHOULD INCLUDE REMOVAL OF TOPSOIL, ORGANIC MATERIAL, AND ANY STREAM SEDIMENT, COBBLES, OR OTHER POROUS MATERIALS FROM BELOW THE DAM EMBANKMENTS. REMOVAL OF THESE MATERIALS SHOULD BE EXTENDED TO AT LEAST 5 FEET BEYOND THE PLANNED EDGE OF THE DAM EMBANKMENTS. EMBANKMENT SUBGRADES SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT TO ASSURE THAT SUITABLE SUBGRADE MATERIALS HAVE BEEN EXPOSED.

3. THE FOLLOWING FILL TYPES ARE RECOMMENDED ON THIS PROJECT

DAM EMBANKMENT FILL: INORGANIC SOILD MATERIAL CLASSIFIED AS SC, CL, CH, OR ML CONTAINING AT LEAST 35% FINES (SILT AND CLAY) AND HAVING A MAXIMUM LIQUID LIMIT OF 60. MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE DAM EMBANKMENT FILL MATERIALS.

SOIL LINER FILL (SOIL WHICH WILL BE USED IN POND BOTTOMS TO RESTRICT SEEPAGE): INORGANIC SOILD MATERIAL CLASSIFIED AS CL, ML, MH, OR CH CONTAINING AT LEAST 60% FINES (SILT AND CLAY). MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE SOIL LINER FILL MATERIALS.

4. ALL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS (4 INCHES FOR LIGHT COMPACTION EQUIPMENT) AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THE SOIL'S OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. COMPACTION SHOULD BE ACCOMPLISHED USING SHEEPSFOOT ROLLERS, OR A VIBRATORY DRUM ROLLER FOR MORE GRANULAR SOILS, UNTIL A MINIMUM DENSITY OF 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698) IS ACHIEVED. CARE SHOULD BE EXERCISED TO ACHIEVE THOROUGH COMPACTION ON SLOPING SURFACES. A QUALIFIED SOILS TECHNICIAN UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO PROVIDE ON TO PROVIDE COMPACTION TESTING DURING THE FILL PLACEMENT TO ASSURE THAT THE MINIMUM COMPACTION REQUIREMENTS ARE BEING MET. AT LEAST 1 TEST PER 5,000 SQUARE FEET PER LIFT SHOULD BE PERFORMED. COMPACTION TESTING IN TRENCHES SHOULD BE PERFORMED AT A RATE OF AT LEAST 1 TEST PER 50 LINEAR FEET PER LIFT.

5. THE POND SUBGRADES SHOULD BE THOROUGHLY COMPACTED TO MINIMIZE SEEPAGE LOSS. THIS SHOULD BE ACCOMPLISHED BY SCARIFYING THE SUBGRADE TO A DEPTH OF 8 INCHES, MOISTURE CONDITIONING THE SOILS TO WITHIN +/- 3# OF OPTIMUM MOISTURE CONTENT, AND COMPACTING TO A DRY DENSITY OF AT LEAST 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). BOTH SHEEPSFOOT AND SMOOTH DRUM COMPACTION EQUIPMENT SHOULD BE USED.

6. FILL SOILS COMPRISING A SOIL LINER SYSTEM SHOULD BE COMPACTED TO THE SPECIFICATIONS OF PARAGRAPH 4 ABOVE. FILL SOILS OF AN AMENDED SOIL LINER SYSTEM SHOULD BE PREPARED IN ACCORDANCE WITH THE AMENDMENT MANUFACTURER'S SPECIFICATIONS.

7. IT IS EXPECTED THAT MOST SOILS EXCAVATED FROM THE IMPOUNDMENTS WILL BE WET OF THEIR OPTIMUM MOISTURE CONTENT. EXCESSIVELY WET SOILS SHOULD BE SPREAD, MANIPULATED, AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THEIR OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. THE CONTRACTOR SHOULD CONSIDER THIS IN THE SCHEDULE AND EQUIPMENT PLANNING.

8. ZONES OF PERCHED WATER WERE ENCOUNTERED IN SOME LOCATIONS ABOVE THE POND BOTTOM ELEVATIONS. THESE WILL RESULT IN SEEPAGE INTO THE EXCAVATIONS, AND ACCUMULATION OF WATER IN THE PONDS DURING CONSTRUCTION SHOULD BE ANTICIPATED. SEEPAGE FROM THE POND SIDE SLOPES MAY OCCUR AT ANY LOCATION, RESULTING IN LOCALIZED SLOUGHING. PERMANENT STABILIZATION OF THESE SEEPAGE ZONES BY INSTALLATION OF SUBSURFACE DRAIN LINES MAY BE REQUIRED DURING CONSTURCTION.

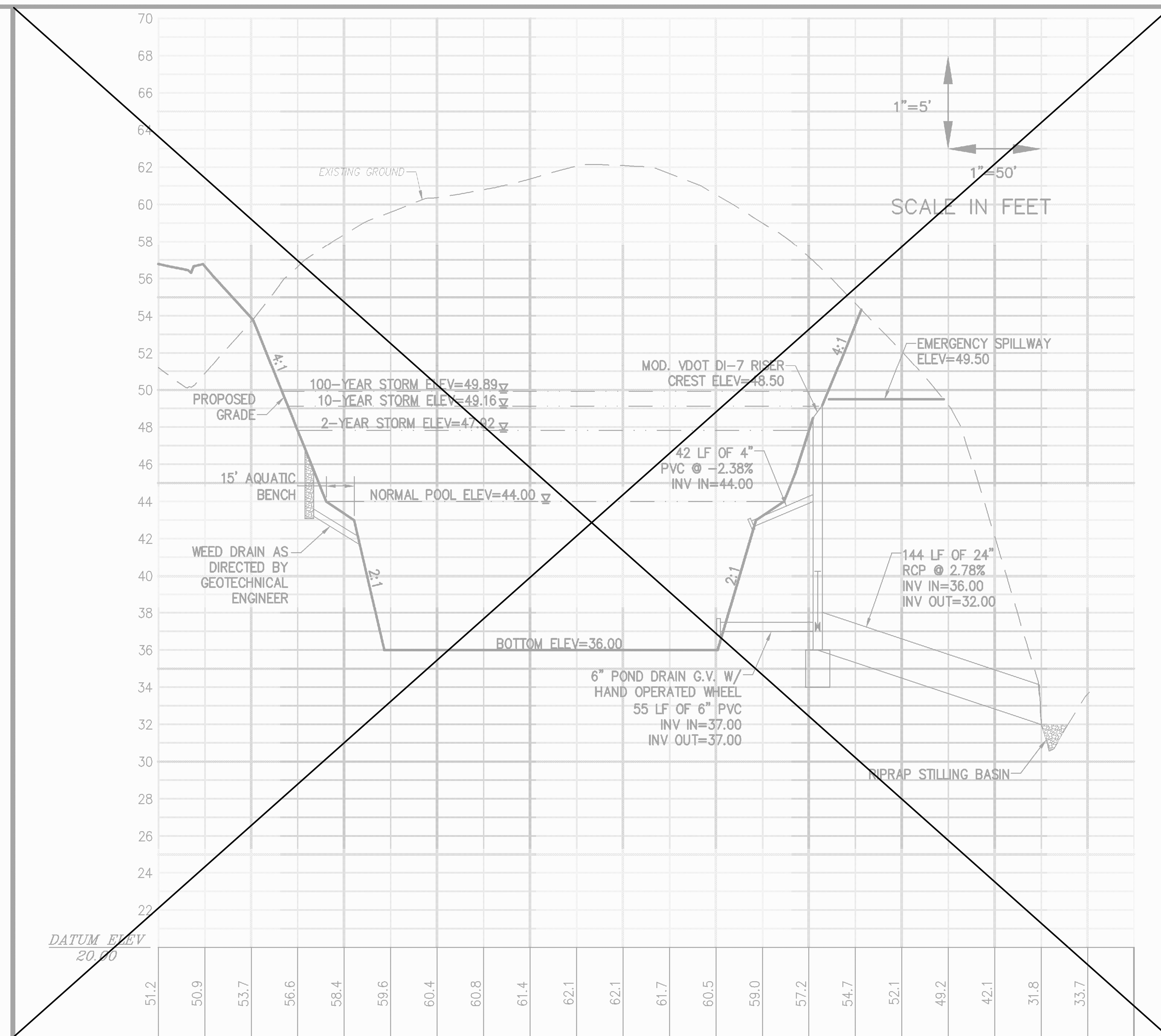
9. DAM MAINTENANCE IS AN ESSENTIAL REQUIREMENT FOR ASSURING THAT DAMS PERFORM AS INTENDED OVER TIME. THE EMBANKMENT SHOULD BE PERIODICALLY INSPECTED FOR INDICATIONS OF SEEPAGE AND EROSION. TREES SHOULD BE KEPT FROM GROWING ON THE EMBANKMENTS, HEAVY GRASS GROWTH SHOULD BE MAINTAINED, AND ANIMAL BURROWS SHOULD BE FILLED. PIPES SHOULD BE INSPECTED FOR INDICATIONS OF LEAKAGE OR FOR THE PRESENCE OF SEDIMENT, WHICH MIGHT INDICATE LEAKAGE. IF DETERIORATION WHICH MIGHT COMPROMISE THE PERFORMANCE OR SAFETY OF THE DAM IS OBSERVED, A QUALIFIED GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO ASSIST IN THE REPAIR.

CONVERSION OF SEDIMENT BASIN INTO BMP FACILITIES

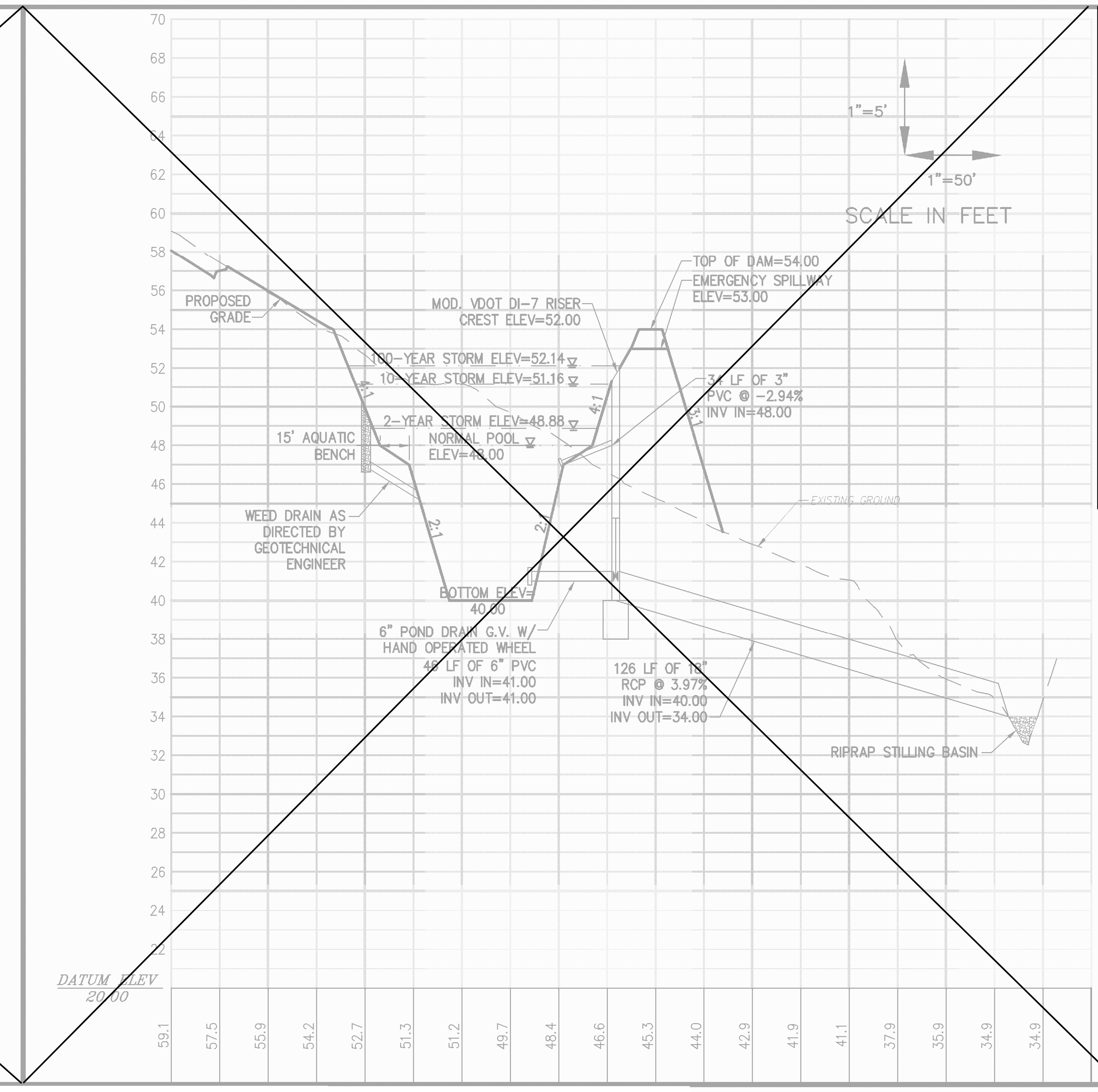
THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNITIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURS HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.



BMP #1

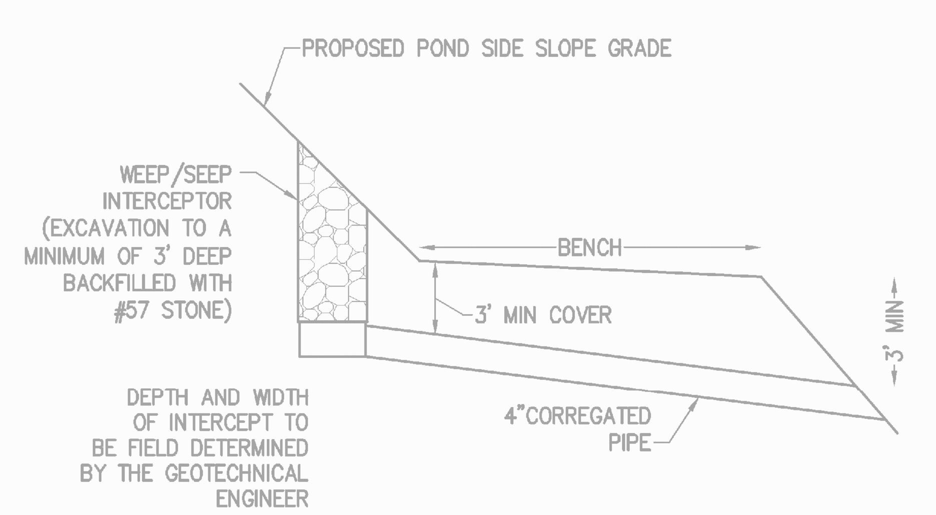


"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

THOMAS C. SUBLETT — 12/4/13

DATE

COMMONWEALTH OF VIRGINIA — 12/5/13 — THOMAS C. SUBLETT — No. 1886 — LAND SURVEYOR



WEEP/SEEP INTERCEPT DETAIL
N.T.S.

STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT THE BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST. INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

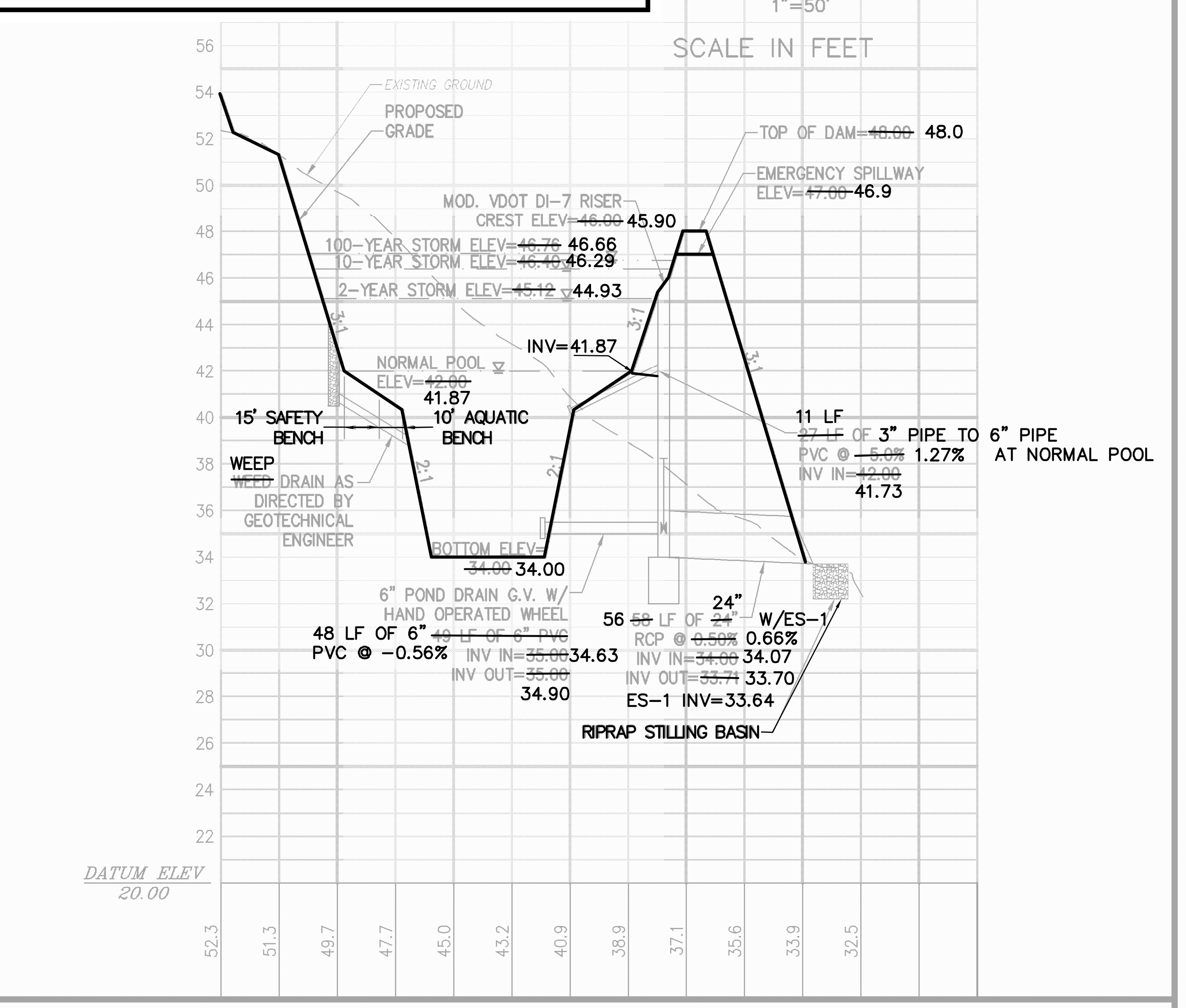
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/APPROVAL OF THE COUNTY.

10. YEARLY INSPECTIONS OF SEDIMENT FOREBAYS SHALL BE PERFORMED. AT ANY TIME MORE THAN 2 FEET OF SEDIMENT HAS ACCUMULATED FOREBAYS SHOULD BE DEWATERED AND SEDIMENT REMOVED.

11. SHOULD MAINTENANCE REQUIRE DEWATERING OF THE FACILITY, A DEWATERING DEVICE APPROVED BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION SHALL BE USED THAT IS RATED TO HANDLE THE MAXIMUM DISCHARGE OF THE DEWATERING PUMP. DISCHARGE FROM DEWATERING SHALL BE FOCUSED INTO THE DOWNSTREAM OUTLET PROTECTION OR THROUGH THE BMP OUTFALL BARREL.



BMP #3

No.	DATE	REVISION / COMMENT / NOTE	BY
3	12/4/13	REVSED BMP AS-BUILT DWGS.	JAG
1	2/09/09	BMP AS-BUILT DWGS.	MG
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG
4	2/06	REVISED PER JCC COMMENTS 11/05 THROUGH 1/06	VMB
3	10/05	REVISED PER JCC COMMENTS 6/05	VMB
2	4/05	REVISED PER JCC COMMENTS 2/17/05	VMB

COMMONWEALTH OF VIRGINIA — JASON A. GRIMES — No. 040170 — 8/23/07 — PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

STORM WATER MANAGEMENT

MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
JAG/MJR	MJR
Scale	Date
NOTED	8/23/07

Project No. 9272

Drawing No. 30

BMP ASBUILT DRAWINGS 2/09/09 JCC CASE: S-91-04

NOTE:
GRADING (FILL AND EXCAVATION) ACTIVITIES ARE REQUIRED IN SELECTED AREAS TO ADJUST/RESTORE EXISTING TOPOGRAPHY FOR THE ELIMINATION (CLOSING) OF TEMPORARY SEDIMENT BASINS AND TEMPORARY SEDIMENT TRAPS USED DURING THE CONSTRUCTION OF THE SITE. GRADING AND EARTHWORK ACTIVITIES IN THESE AREAS, AND SPECIFICALLY IN THE AREAS OF FUTURE BUILDINGS AND DWELLINGS, SHALL BE COMPLETED USING GOOD ENGINEERING PRACTICE. AS A GENERAL GUIDELINE, PRIOR TO THE EARTHWORK ACTIVITIES, ALL TOPSOIL SHALL BE REMOVED FROM THE GRADING ACTIVITY SITE. LIKEWISE, ALL ACCUMULATED SEDIMENT OF A TEMPORARY SEDIMENT BASIN OR TEMPORARY SEDIMENT TRAP SHALL BE REMOVED PRIOR TO GRADING ACTIVITIES. ALL FILL MATERIALS TO BE USED IN FUTURE BUILDING AND DWELLING AREAS SHALL CONSIST OF SUITABLE ON-SITE MATERIAL (AS DETERMINED BY THE GEO-TECHNICAL ENGINEER TO BE SUITABLE STRUCTURAL FILL) IF POSSIBLE, AND SHALL BE FREE OF ROOTS, STUMPS AND OTHER ORGANIC DEBRIS. THE FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" LIFTS AND COMPACTED TO A DENSITY OF 95% AT OPTIMUM MOISTURE CONTENT. PLACEMENT OF FILL OR COMPACTED MATERIAL SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER. PRIOR TO THE CONSTRUCTION OF BUILDINGS AND/OR DWELLINGS ON THE GRADING AREA, THE GEOTECHNICAL ENGINEER SHALL PROVIDE A STATEMENT OF THE SUITABILITY OF THE GRADING ACTIVITIES IN THESE AREAS FOR THE INTENDED FUTURE USE OF THESE AREAS.

NOTE:
CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS WILL BE PROVIDED WITH THE APPLICATION FOR BUILDING PERMITS FOR THE CONSTRUCTION OF THE RESIDENTIAL STRUCTURES UPON THESE LOTS, AND SHALL BE SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.

No.	DATE	REVISION / COMMENT / NOTE	BY
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
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2	4/05	REVISED PER JCC COMMENTS 2/17/05	VMB
1	2/09/09	BMP AS-BUILT DWGS.	WG
3	12/4/13	REVISED BMP AS-BUILT DWGS.	JAG

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CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

GRADING AND DRAINAGE PLAN
MARYWOOD SUBDIVISION
JAMESTOWN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
JAG/MJR	GVC/MJR
Scale	Date
1" = 50'	8/23/07
Project No.	
9272	
Drawing No.	
22	

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

12/4/13
THOMAS C. SUBLETT DATE

COMMONWEALTH OF VIRGINIA
12/5/13
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

BMP ASBUILT DRAWINGS 2/09/09 JCC CASE: S-91-04

BMP 3 RECORD DRAWING

FOR

MARYWOOD SUBDIVISION

JAMES CITY COUNTY, VIRGINIA

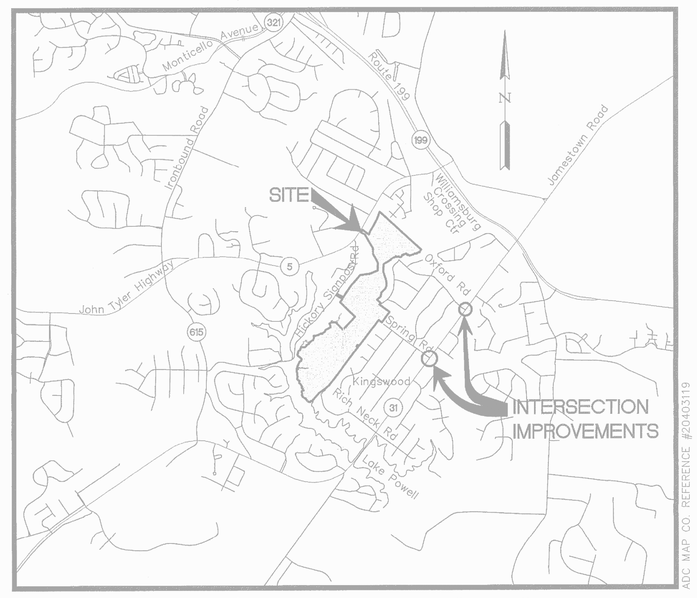
NOTE: PRIOR TO CONSTRUCTION A SEPARATE PLAN TO LOCATE THE PASSIVE RECREATION TRAILS MUST BE SUBMITTED AND APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION. THE LOCATION OF PASSIVE RECREATION TRAILS ARE TO BE FIELD VERIFIED BY COUNTY ENVIRONMENTAL STAFF TO ENSURE TRAILS ARE PROPERLY LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.

County of James City
Subdivision Construction Plan
DATE of APPROVAL 11/9/2007
Does not constitute final plat approval

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
~~2~~	~~OVERALL SUBDIVISION LAYOUT & SHEET INDEX~~
~~3A~~	~~ENVIRONMENTAL INVENTORY PLAN~~
~~3B~~	~~ENVIRONMENTAL INVENTORY PLAN~~
~~4~~	~~OVERALL UTILITY PLAN~~
~~5~~	~~OVERALL DRAINAGE PLAN~~
~~6~~	~~PRELIMINARY PLAT~~
~~7~~	~~PRELIMINARY PLAT~~
~~8~~	~~PRELIMINARY PLAT~~
~~9~~	~~PRELIMINARY PLAT~~
~~10~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~11~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~12~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~13~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~14~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~15~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~16~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~17~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~18~~	~~ROAD AND UTILITY PLAN~~
~~19~~	~~ROAD AND UTILITY PLAN~~
~~20~~	~~ROAD AND UTILITY PLAN~~
~~21~~	~~ROAD AND UTILITY PLAN~~
22	GRADING AND DRAINAGE PLAN
~~23~~	~~GRADING AND DRAINAGE PLAN~~
~~24~~	~~GRADING AND DRAINAGE PLAN~~
~~25~~	~~GRADING AND DRAINAGE PLAN~~
~~26~~	~~ROAD AND UTILITY PROFILE~~
~~27~~	~~ROAD AND UTILITY PROFILE~~
~~28~~	~~ROAD AND UTILITY PROFILE~~
~~29~~	~~ROAD AND UTILITY PROFILE~~
30	STORMWATER MANAGEMENT
~~30A~~	~~STORMWATER MANAGEMENT~~
~~31~~	~~STORMWATER MANAGEMENT DETAILS~~
~~32~~	~~ROAD AND DRAINAGE NOTES & DETAILS~~
~~32A~~	~~ROAD AND DRAINAGE NOTES & DETAILS~~
~~33~~	~~NOTES AND DETAILS~~
~~34~~	~~GRINDER PUMP NOTES AND DETAILS~~
~~35~~	~~EROSION & SEDIMENT CONTROL DETAILS SHEET~~
~~36~~	~~JAMESTOWN ROAD INTERSECTION IMPROVEMENTS~~
~~L1~~	~~BMP#1 LANDSCAPE PLAN~~
~~L2~~	~~BMP#2 LANDSCAPE PLAN AND NOTES & DETAILS~~

DECEMBER 22, 2004



ADC MAP CO. REFERENCE #20403119

VICINITY MAP (APPROX. SCALE 1"=2000')

SITE DATA:

TAX MAP PARCEL No.	(47-2)(1-47)
ZONING:	R-1
PROJECT AREA:	115.28 ACRES / 5,021,410 SF
DISTURBED AREA:	22.72 ACRES / 989,567 SF
WETLAND DISTURBED AREA:	0.40 ACRES / 17,500 SF
WATERSHED:	MILL CREEK (LAKE POWELL) WATERSHED
NUMBER OF LOTS:	90
FLOOD HAZARD MAP:	FEMA PANEL NUMBER 510201 0045 B ZONE X: AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD PLAIN

OWNER INFORMATION:

CENTEX HOMES
3951 WESTERRE PARKWAY, SUITE 160
RICHMOND, VA 23233
ATTENTION: DAVID MURRAY
TELEPHONE: (757) 215-1260
FAX: (757) 215-1261

RESPONSIBLE LAND DISTURBER:

"THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, THE OWNER OR DEVELOPER SHALL PROVIDE THE NAME OF A "RESPONSIBLE LAND DISTURBER" WHO SHALL ASSUME RESPONSIBILITY AS THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT. THE OWNER OR DEVELOPER SHALL PROVIDE WRITTEN NOTIFICATION SHOULD THE "RESPONSIBLE LAND DISTURBER" CHANGE DURING CONSTRUCTION."

NOTES:

1. SETBACKS:
   FRONT = 35'; SIDE = 15'; REAR = 35'
   IF LOT IS LESS THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 100 FT.
   IF LOT IS MORE THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 150 FT.
   SPECIAL PROVISIONS FOR CORNER LOTS
   A) OF THE 2 SIDES OF A CORNER LOT, THE FRONT OF THE LOT SHALL BE DEEMED TO BE THE SHORTER OF THE 2 SIDES FRONTING THE STREETS.
   B) EACH CORNER LOT SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 125 FT.
2. ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
3. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
4. ALL EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH THE STATE PRIVATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
5. ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION.
6. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE BMPS OR THEIR STRUCTURES AND SHALL BE SAVED HARMLESS FROM ANY DAMAGES.
7. ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
8. NEW PROPERTY MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
9. ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
10. THE CONTRACTOR SHALL AT ALL TIMES POSSESS AND MAINTAIN A CURRENT COPY OF THE HRPDC REGIONAL STANDARDS AND THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS AT THE SITE AND READILY AVAILABLE FOR IMMEDIATE REFERENCE.
11. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 23-7(c) OF THE JAMES CITY COUNTY CODE.
12. DISTURBANCE TO TOPOGRAPHY WITH SLOPES EQUAL TO OR GREATER THAN 25% IS PROHIBITED UNLESS A WAIVER HAS BEEN OBTAINED FROM JAMES CITY COUNTY. TOPOGRAPHY SHOWN ON THESE PLANS ARE REASONABLY ACCURATE FOR LAND FORM, HOWEVER THIS TOPOGRAPHY MAY NOT ACCURATELY LOCATE OR SHOW STEEPLY SLOPED GROUND PLANES. PRIOR TO ANY LOT DISTURBANCE, THE HOMEOWNER SHALL IDENTIFY AREAS OF 25%, OR GREATER SLOPES AND SHALL SECURE ALL NECESSARY APPROVALS THROUGH THE ENVIRONMENTAL DIVISION TO DISTURB STEEP SLOPES..
13. SECURITY LIGHTS, WHERE NOTED, REFER TO STREET LIGHTS INSTALLED FOR SECURITY AND NIGHT TIME ILLUMINATION OF THE ADJACENT STREET. THESE LIGHTS, POLES AND LUMINARS WILL NOT BE MAINTAINED OR REPLACED BY VDOT.
14. A LAND DISTURBING PERMIT, SILTATION AGREEMENT WITH SURETY, AND A PRE-CONSTRUCTION CONFERENCE IS REQUIRED FOR THIS PROJECT.
15. ONLY JCSA PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON THE EXISTING WATER MAINS AND SANITARY FORCE MAINS.
16. THE CONTRACTOR IS TO PLACE AN RPA BUFFER SIGN AT THE INTERSECTION OF EACH LOT LINE WITH AN RPA BUFFER. THE STANDARD JAMES CITY COUNTY RPA BUFFER SIGN IS TO BE LOCATED AT THE LIMIT OF THE BUFFER. SIGNS ARE AVAILABLE FROM MR. WAYLAND BASS, THE JAMES CITY COUNTY ENGINEER, AT A FEE OF $30 / SIGN. TELEPHONE: 757-253-6671 FOR FURTHER INFORMATION.
17. ALL STORM PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) SMOOTH WALL UNLESS OTHERWISE NOTED.
18. STORM STRUCTURES SHALL CONFORM TO VDOT ROAD & BRIDGE STANDARDS AND SPECIFICATIONS. ALL MANHOLES SHALL INCLUDE INLET SHAPING (IS-1) AND MANHOLES DEEPER THAN 4 FEET SHALL HAVE STEPS (ST-1). PIPE BEDDING SHALL BE IN ACCORDANCE WITH VDOT PB-1 AND MANUFACTURERS SPECIFICATIONS.
19. NATURAL OPEN SPACE AREAS SHALL REMAIN IN AN UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.
20. CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS ARE TO BE SUBMITTED TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION FOR REVEIW AND APPROVAL BEFORE APPLICABLE, INDIVIDUAL SINGLE-FAMILY BUILDING PERMIT APPLICATIONS ARE SUBMITTED FOR REVIEW.
21. SURVEY DATA PROVIDED BASED UPON JAMES CITY COUNTY GEODETIC CONTROL NAD-83 ESTABLISHED FROM MONUMENT 318.

THIS PROJECT DOES NOT RELY ON EXISTING LAKE POWELL TO MEET STORMWATER MANAGEMENT CRITERIA

THIS PLAN WAS GRANTED PRELIMINARY APPROVAL BY THE JAMES CITY COUNTY PLANNING COMMISSION ON DECEMBER 5, 2005.

EROSION AND SEDIMENTATION CONTROL LEGEND

SF	SILT FENCE (SPEC. 3.05)
SSF	SUPER SILT FENCE (SPEC. 3.05)
IP	INLET PROTECTION (SPEC. 3.07)
CE	CONSTRUCTION ENTRANCE (SPEC. 3.02)
CD	CHECK DAM (SPEC. 3.20)
RR	RIP RAP (SPEC. 3.19)
OP	OUTLET PROTECTION (SPEC. 3.18)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBIN. INSTEAD OF SILT FENCE)
ST	TEMPORARY SEDIMENT TRAP (SPEC. 3.13)
PS	PERMANENT SEEDING (SPEC. 3.32)
TP	TREE PROTECTION (SPEC. 3.38)
SCC	STORMWATER CONVEYANCE CHANNEL (SPEC. 3.17)
SB	SEDIMENT BASIN (SPEC. 3.14)
CRS	CONSTRUCTION ROAD STABILIZATION (SPEC. 3.03)
DD	DIVERSION DIKE (SPEC. 3.12)
BB	BRUSH BARRIER (SPEC. 3.06)

NOTE: SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	GRINDER PUMP CONNECTION	GPC
	CLEAN OUT	CO
	WATER METER	WM
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREE LINE	
	LIMITS OF CLEARING	
	REVERSE ROLL TOP GUTTER	
25.1	GROUND ELEVATION	25.1
	PROPOSED TOP OF CURB ELEV.	TC= ELEV.
	STRAW BALE BARRIER	
	RIP RAP	
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	SIGN	
	CUT/FILL	C F

PROJECT NO.: 9272-0
JCC CASE: S-91-04

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

12/4/13
THOMAS C. SUBLETT — DATE

COMMONWEALTH OF VIRGINIA
12/5/13
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

No	DATE	REVISION / COMMENT / NOTE	BY
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1	2/09/09	BMP AS-BUILT DWGS.	MG
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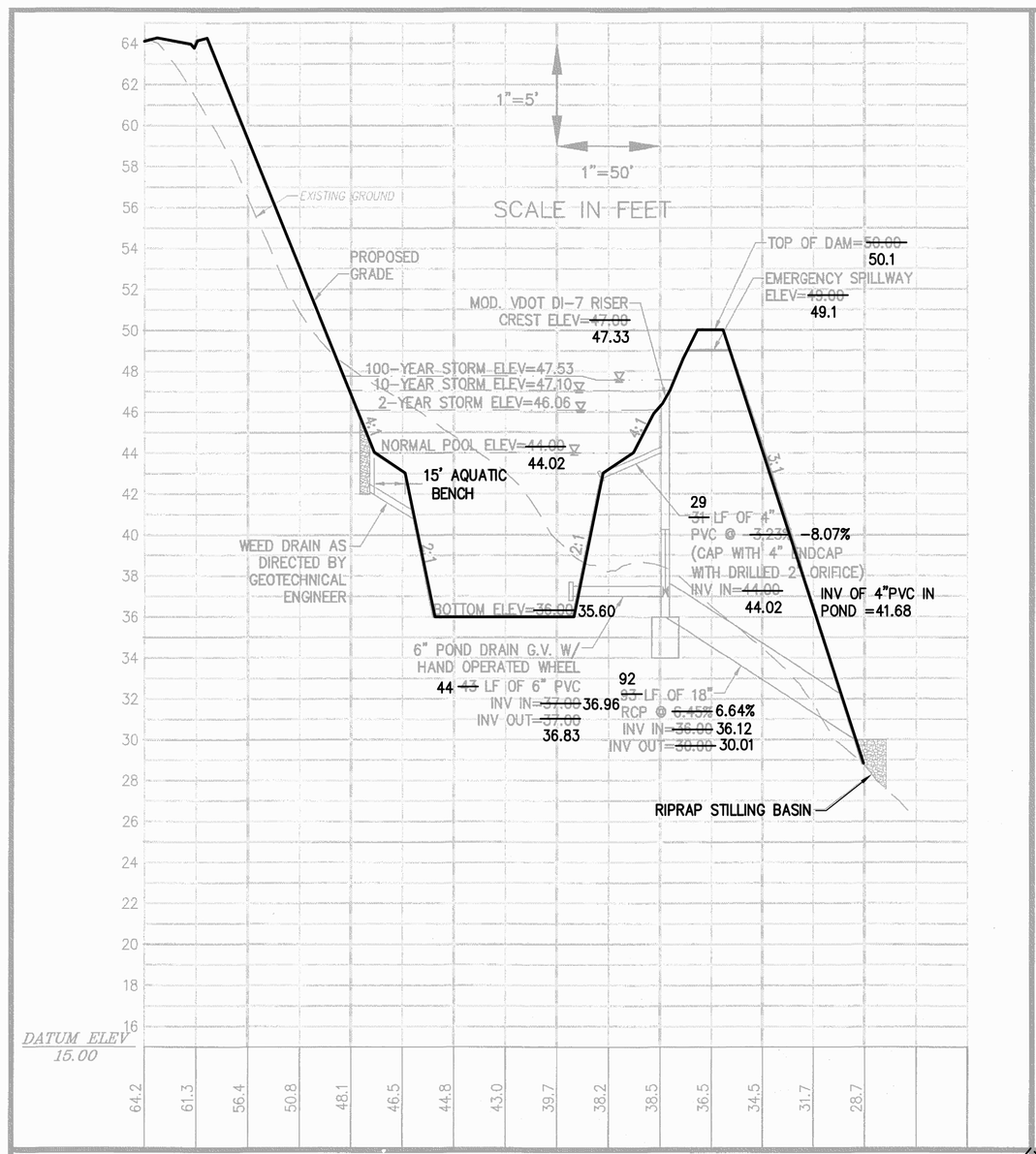
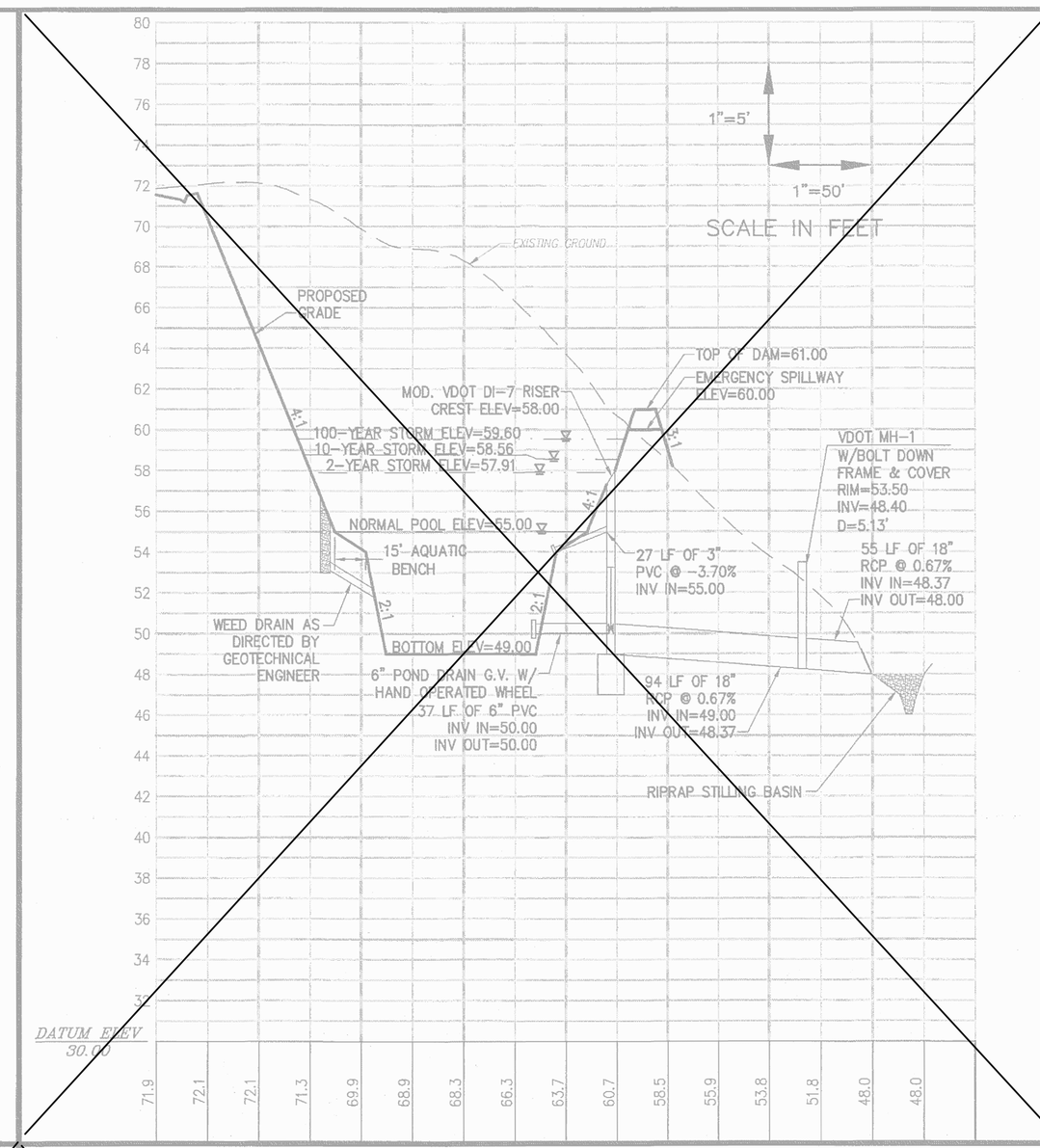


BMP #4



BMP #5

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURS HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.

CONVERSION OF SEDIMENT BASIN INTO BMP FACILITIES

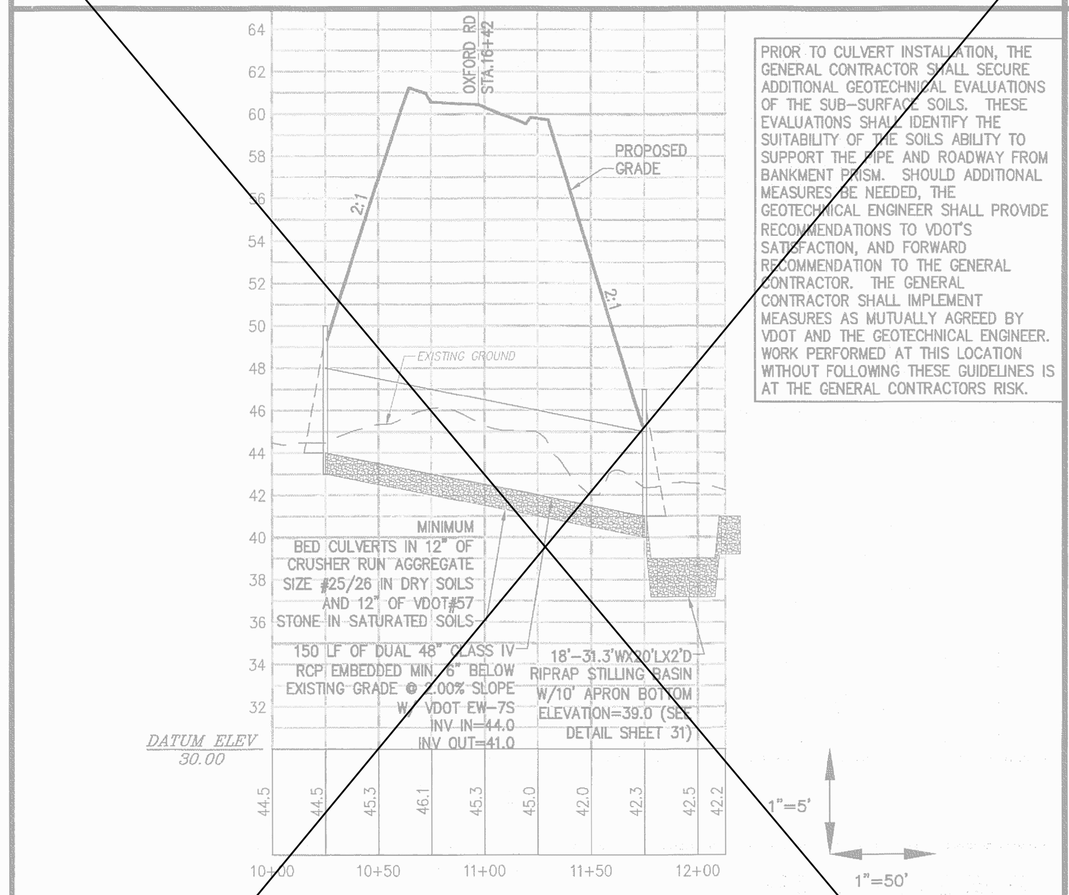
THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNITIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

Thomas C. Sublett 9/21/12

THOMAS C. SUBLETT DATE

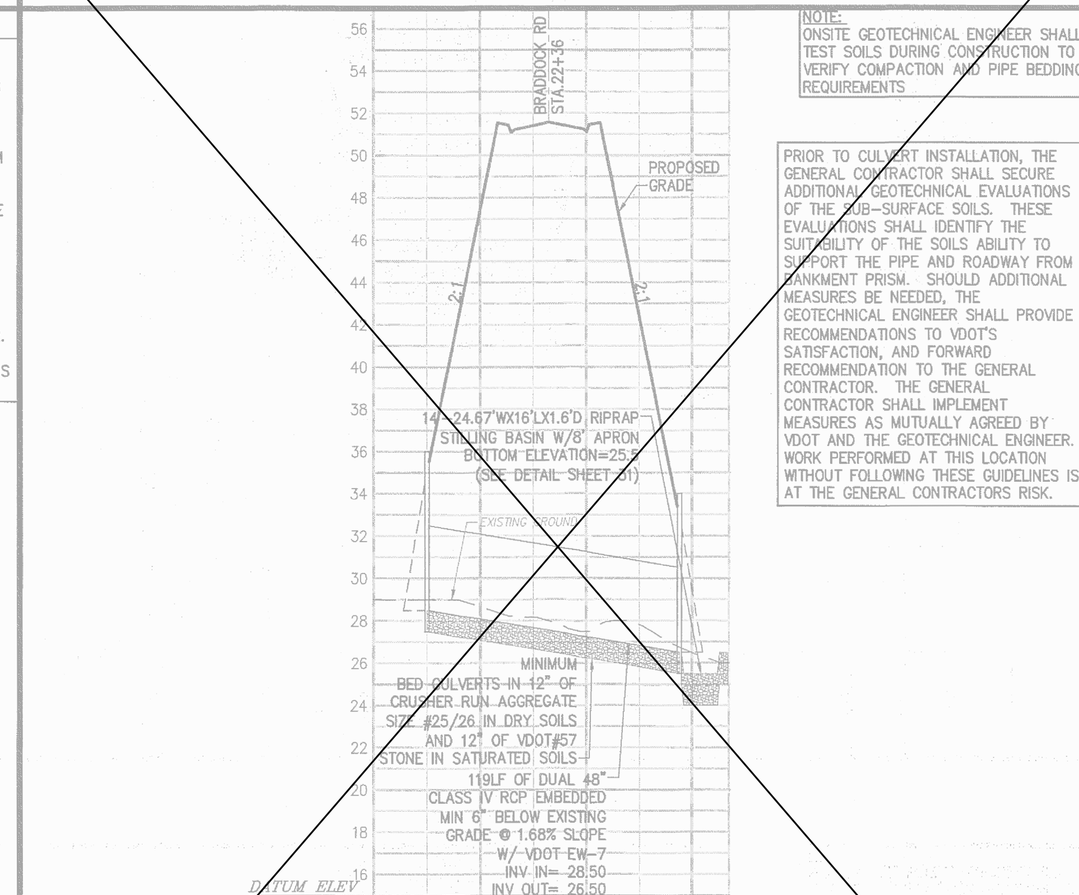
COMMONWEALTH OF VIRGINIA
9/21/12
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR



PRIOR TO CULVERT INSTALLATION, THE GENERAL CONTRACTOR SHALL SECURE ADDITIONAL GEOTECHNICAL EVALUATIONS OF THE SUB-SURFACE SOILS. THESE EVALUATIONS SHALL IDENTIFY THE SUITABILITY OF THE SOILS ABILITY TO SUPPORT THE PIPE AND ROADWAY FROM BANKMENT PRISM. SHOULD ADDITIONAL MEASURES BE NEEDED, THE GEOTECHNICAL ENGINEER SHALL PROVIDE RECOMMENDATIONS TO VDOT'S SATISFACTION, AND FORWARD RECOMMENDATION TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT MEASURES AS MUTUALLY AGREED BY VDOT AND THE GEOTECHNICAL ENGINEER. WORK PERFORMED AT THIS LOCATION WITHOUT FOLLOWING THESE GUIDELINES IS AT THE GENERAL CONTRACTORS RISK.

CROSS SECTION PREPARED LOOKING "DOWN-STATIONING"

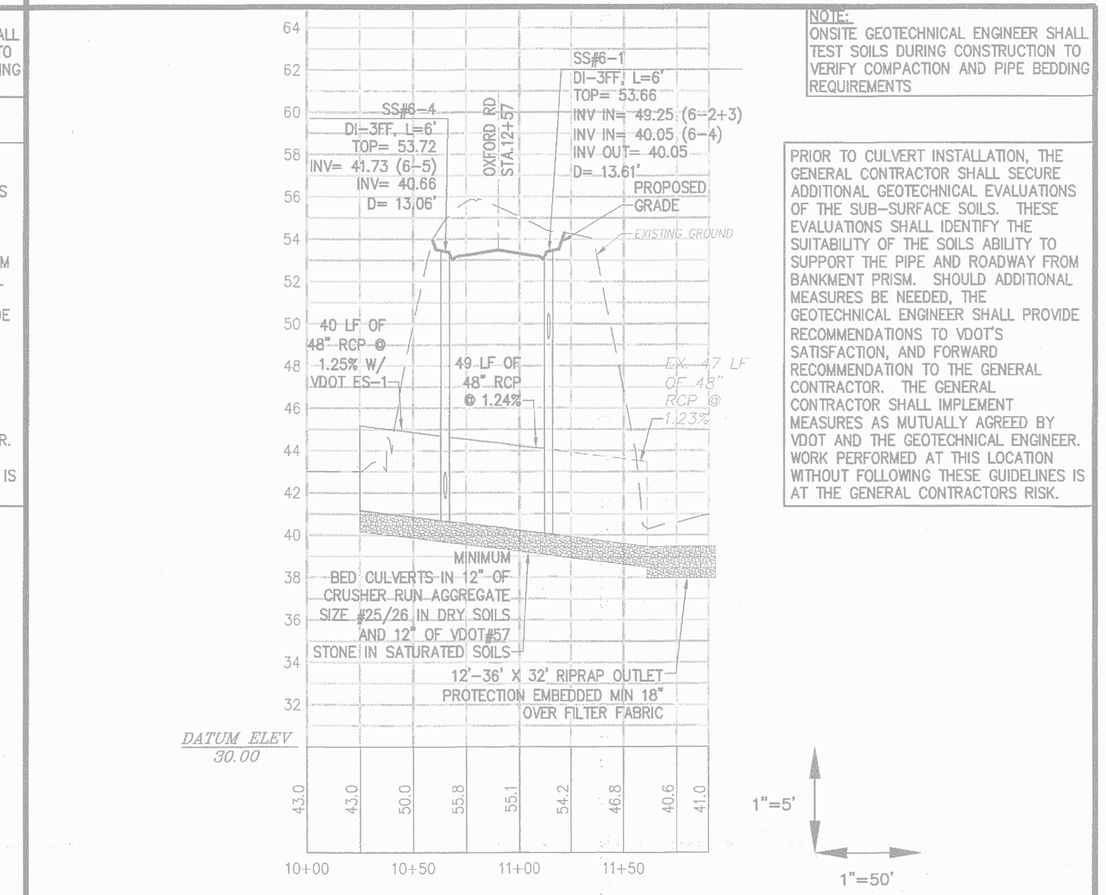
SECTION B-B
DUAL CULVERTS "A" (OXFORD RD)



NOTE:
ONSITE GEOTECHNICAL ENGINEER SHALL TEST SOILS DURING CONSTRUCTION TO VERIFY COMPACTION AND PIPE BEDDING REQUIREMENTS

PRIOR TO CULVERT INSTALLATION, THE GENERAL CONTRACTOR SHALL SECURE ADDITIONAL GEOTECHNICAL EVALUATIONS OF THE SUB-SURFACE SOILS. THESE EVALUATIONS SHALL IDENTIFY THE SUITABILITY OF THE SOILS ABILITY TO SUPPORT THE PIPE AND ROADWAY FROM BANKMENT PRISM. SHOULD ADDITIONAL MEASURES BE NEEDED, THE GEOTECHNICAL ENGINEER SHALL PROVIDE RECOMMENDATIONS TO VDOT'S SATISFACTION, AND FORWARD RECOMMENDATION TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT MEASURES AS MUTUALLY AGREED BY VDOT AND THE GEOTECHNICAL ENGINEER. WORK PERFORMED AT THIS LOCATION WITHOUT FOLLOWING THESE GUIDELINES IS AT THE GENERAL CONTRACTORS RISK.

SECTION C-C
DUAL CULVERTS "B" (BRADDOCK RD)



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PRIOR TO CULVERT INSTALLATION, THE GENERAL CONTRACTOR SHALL SECURE ADDITIONAL GEOTECHNICAL EVALUATIONS OF THE SUB-SURFACE SOILS. THESE EVALUATIONS SHALL IDENTIFY THE SUITABILITY OF THE SOILS ABILITY TO SUPPORT THE PIPE AND ROADWAY FROM BANKMENT PRISM. SHOULD ADDITIONAL MEASURES BE NEEDED, THE GEOTECHNICAL ENGINEER SHALL PROVIDE RECOMMENDATIONS TO VDOT'S SATISFACTION, AND FORWARD RECOMMENDATION TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL IMPLEMENT MEASURES AS MUTUALLY AGREED BY VDOT AND THE GEOTECHNICAL ENGINEER. WORK PERFORMED AT THIS LOCATION WITHOUT FOLLOWING THESE GUIDELINES IS AT THE GENERAL CONTRACTORS RISK.

CROSS SECTION PREPARED LOOKING "DOWN-STATIONING"

SECTION A-A
EX. 48" CULVERT (OXFORD)

No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVISED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG
4	2/06	REVISED PER JCC COMMENTS 11/05 THROUGH 1/06	VMB
3	10/05	REVISED PER JCC COMMENTS 6/05	VMB
2	4/05	REVISED PER JCC COMMENTS 2/17/05	VMB

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STORM WATER MANAGEMENT
MARYWOOD SUBDIVISION
JAMESTOWN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
JAG/MJR	MJR
Scale	Date
NOTED	8/23/07

Project No. 9272
Drawing No. 30A AS-BUILT

BMP RECORD DRAWINGS 8/26/2008 JCC CASE: S-91-04

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.

3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.

4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON-SITE. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN ANOTHER AREA ON THE SITE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENTATION AT EARTHWORK AND STOCKPILE LOCATIONS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS, UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WILL BE CERTIFIED BY A GEOTECHNICAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

8. A RECORD DRAWING (AS-BUILT) SHALL BE SUBMITTED, REVIEWED, AND APPROVED PRIOR TO RELEASE OF THE POSTED BOND / SURETY.

GEOTECHNICAL ENGINEER'S EARTHWORK RECOMMENDATIONS

1. PRIOR TO INITIATION OF EARTHWORK OPERATIONS, ANY STREAM FLOWS SHOULD BE DIVERTED SO THAT SURFACE WATER DOES NOT ENTER AREAS OF FILL PLACEMENT. THIS COULD BE ACCOMPLISHED WITH DIVERSION DITCHES AND SUMP PUMPS.

2. SUBGRADE PREPARATION SHOULD INCLUDE REMOVAL OF TOPSOIL, ORGANIC MATERIAL, AND ANY STREAM SEDIMENT, COBBLES, OR OTHER POROUS MATERIALS FROM BELOW THE DAM EMBANKMENTS. REMOVAL OF THESE MATERIALS SHOULD BE EXTENDED TO AT LEAST 5 FEET BEYOND THE PLANNED EDGE OF THE DAM EMBANKMENTS. EMBANKMENT SUBGRADES SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT TO ASSURE THAT SUITABLE SUBGRADE MATERIALS HAVE BEEN EXPOSED.

3. THE FOLLOWING FILL TYPES ARE RECOMMENDED ON THIS PROJECT

DAM EMBANKMENT FILL: INORGANIC SOILD MATERIAL CLASSIFIED AS SC, CL, CH, OR ML CONTAINING AT LEAST 35% FINES (SILT AND CLAY) AND HAVING A MAXIMUM LIQUID LIMIT OF 60. MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE DAM EMBANKMENT FILL MATERIALS.

SOIL LINER FILL (SOIL WHICH WILL BE USED IN POND BOTTOMS TO RESTRICT SEEPAGE): INORGANIC SOILD MATERIAL CLASSIFIED AS CL, ML, MH, OR CH CONTAINING AT LEAST 60% FINES (SILT AND CLAY). MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE SOIL LINER FILL MATERIALS.

4. ALL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS (4 INCHES FOR LIGHT COMPACTION EQUIPMENT) AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THE SOIL'S OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. COMPACTION SHOULD BE ACCOMPLISHED USING SHEEPSFOOT ROLLERS, OR A VIBRATORY DRUM ROLLER FOR MORE GRANULAR SOILS, UNTIL A MINIMUM DENSITY OF 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698) IS ACHIEVED. CARE SHOULD BE EXERCISED TO ACHIEVE THOROUGH COMPACTION ON SLOPING SURFACES. A QUALIFIED SOILS TECHNICIAN UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO PROVIDE ON TO PROVIDE COMPACTION TESTING DURING THE FILL PLACEMENT TO ASSURE THAT THE MINIMUM COMPACTION REQUIREMENTS ARE BEING MET. AT LEAST 1 TEST PER 5,000 SQUARE FEET PER LIFT SHOULD BE PERFORMED. COMPACTION TESTING IN TRENCHES SHOULD BE PERFORMED AT A RATE OF AT LEAST 1 TEST PER 50 LINEAR FEET PER LIFT.

5. THE POND SUBGRADES SHOULD BE THOROUGHLY COMPACTED TO MINIMIZE SEEPAGE LOSS. THIS SHOULD BE ACCOMPLISHED BY SCARIFYING THE SUBGRADE TO A DEPTH OF 8 INCHES, MOISTURE CONDITIONING THE SOILS TO WITHIN +/- 3# OF OPTIMUM MOISTURE CONTENT, AND COMPACTING TO A DRY DENSITY OF AT LEAST 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). BOTH SHEEPSFOOT AND SMOOTH DRUM COMPACTION EQUIPMENT SHOULD BE USED.

6. FILL SOILS COMPRISING A SOIL LINER SYSTEM SHOULD BE COMPACTED TO THE SPECIFICATIONS OF PARAGRAPH 4 ABOVE. FILL SOILS OF AN AMENDED SOIL LINER SYSTEM SHOULD BE PREPARED IN ACCORDANCE WITH THE AMENDMENT MANUFACTURER'S SPECIFICATIONS.

7. IT IS EXPECTED THAT MOST SOILS EXCAVATED FROM THE IMPOUNDMENTS WILL BE WET OF THEIR OPTIMUM MOISTURE CONTENT. EXCESSIVELY WET SOILS SHOULD BE SPREAD, MANIPULATED, AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THEIR OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. THE CONTRACTOR SHOULD CONSIDER THIS IN THE SCHEDULE AND EQUIPMENT PLANNING.

8. ZONES OF PERCHED WATER WERE ENCOUNTERED IN SOME LOCATIONS ABOVE THE POND BOTTOM ELEVATIONS. THESE WILL RESULT IN SEEPAGE INTO THE EXCAVATIONS, AND ACCUMULATION OF WATER IN THE PONDS DURING CONSTRUCTION SHOULD BE ANTICIPATED. SEEPAGE FROM THE POND SIDE SLOPES MAY OCCUR AT ANY LOCATION, RESULTING IN LOCALIZED SLOUGHING. PERMANENT STABILIZATION OF THESE SEEPAGE ZONES BY INSTALLATION OF SUBSURFACE DRAIN LINES MAY BE REQUIRED DURING CONSTRUCTION.

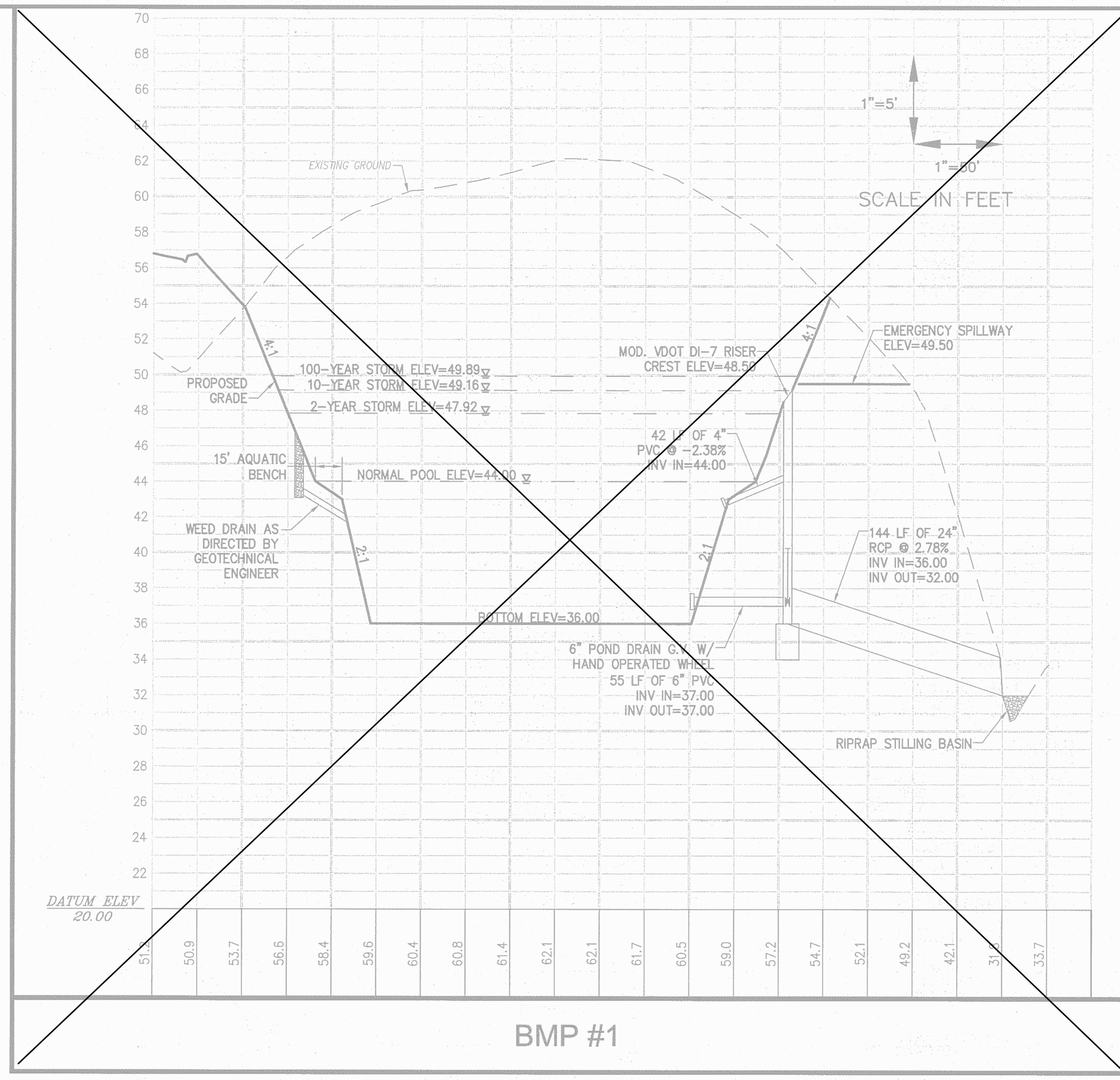
9. DAM MAINTENANCE IS AN ESSENTIAL REQUIREMENT FOR ASSURING THAT DAMS PERFORM AS INTENDED OVER TIME. THE EMBANKMENT SHOULD BE PERIODICALLY INSPECTED FOR INDICATIONS OF SEEPAGE AND EROSION. TREES SHOULD BE KEPT FROM GROWING ON THE EMBANKMENTS, HEAVY GRASS GROWTH SHOULD BE MAINTAINED, AND ANIMAL BURROWS SHOULD BE FILLED. PIPES SHOULD BE INSPECTED FOR INDICATIONS OF LEAKAGE OR FOR THE PRESENCE OF SEDIMENT, WHICH MIGHT INDICATE LEAKAGE. IF DETERIORATION WHICH MIGHT COMPROMISE THE PERFORMANCE OR SAFETY OF THE DAM IS OBSERVED, A QUALIFIED GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO ASSIST IN THE REPAIR.

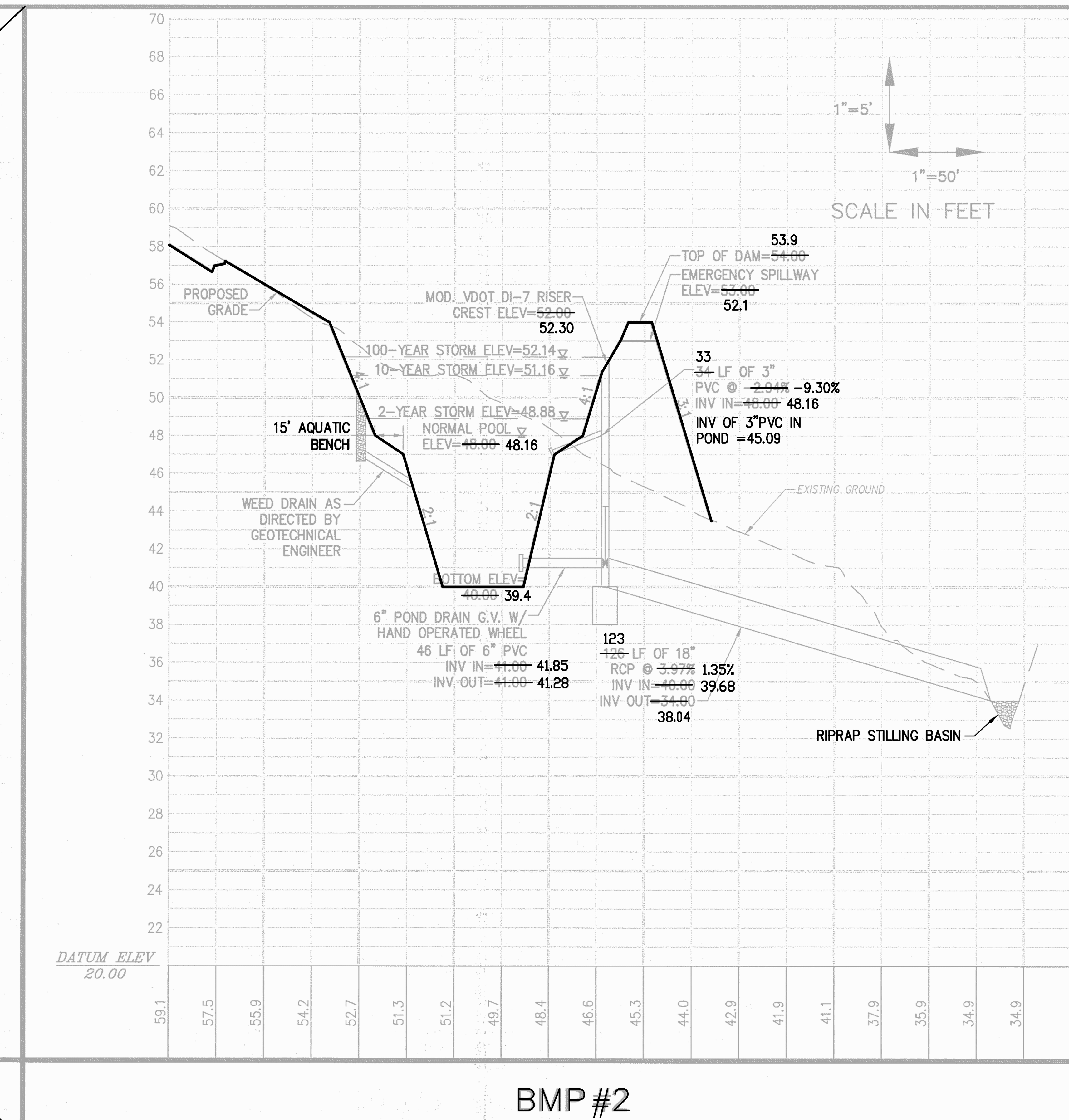
CONVERSION OF SEDIMENT BASIN INTO BMP FACILITIES

THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNTIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURS HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.





STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT THE BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST. INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

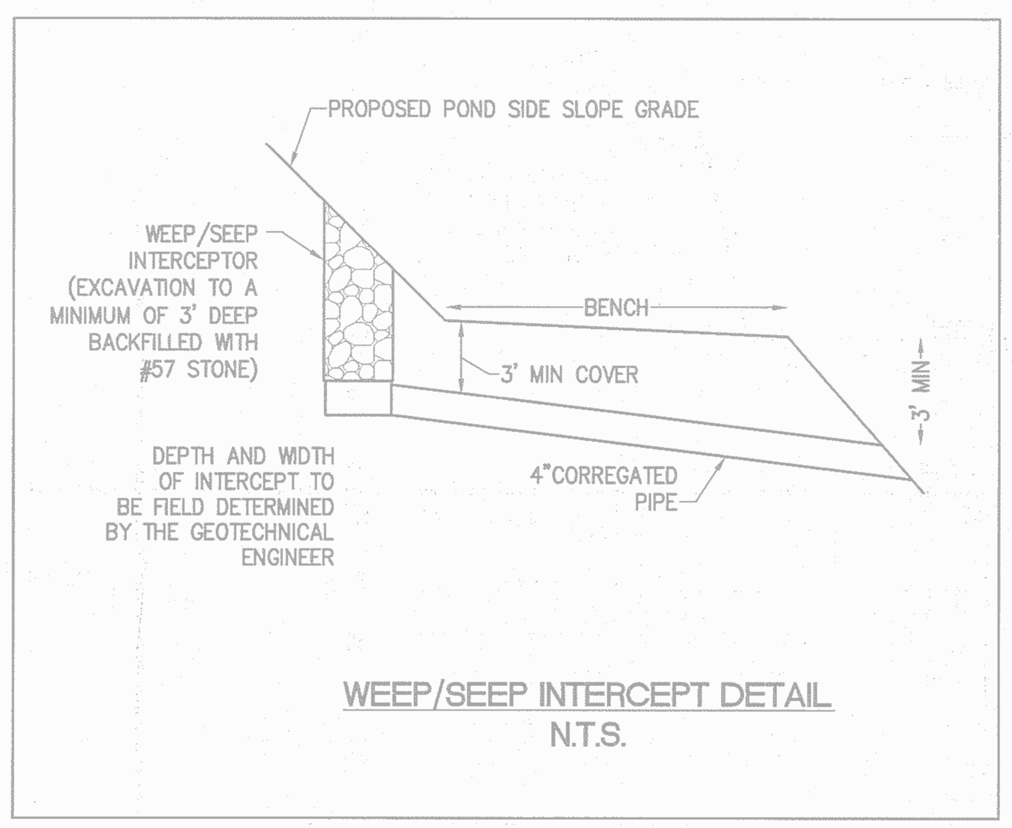
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/APPROVAL OF THE COUNTY.

10. YEARLY INSPECTIONS OF SEDIMENT FOREBAYS SHALL BE PERFORMED. AT ANY TIME MORE THAN 2 FEET OF SEDIMENT HAS ACCUMULATED FOREBAYS SHOULD BE DEWATERED AND SEDIMENT REMOVED.

11. SHOULD MAINTENANCE REQUIRE DEWATERING OF THE FACILITY, A DEWATERING DEVICE APPROVED BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION SHALL BE USED THAT IS RATED TO HANDLE THE MAXIMUM DISCHARGE OF THE DEWATERING PUMP. DISCHARGE FROM DEWATERING SHALL BE FOCUSED INTO THE DOWNSTREAM OUTLET PROTECTION OR THROUGH THE BMP OUTFALL BARREL.

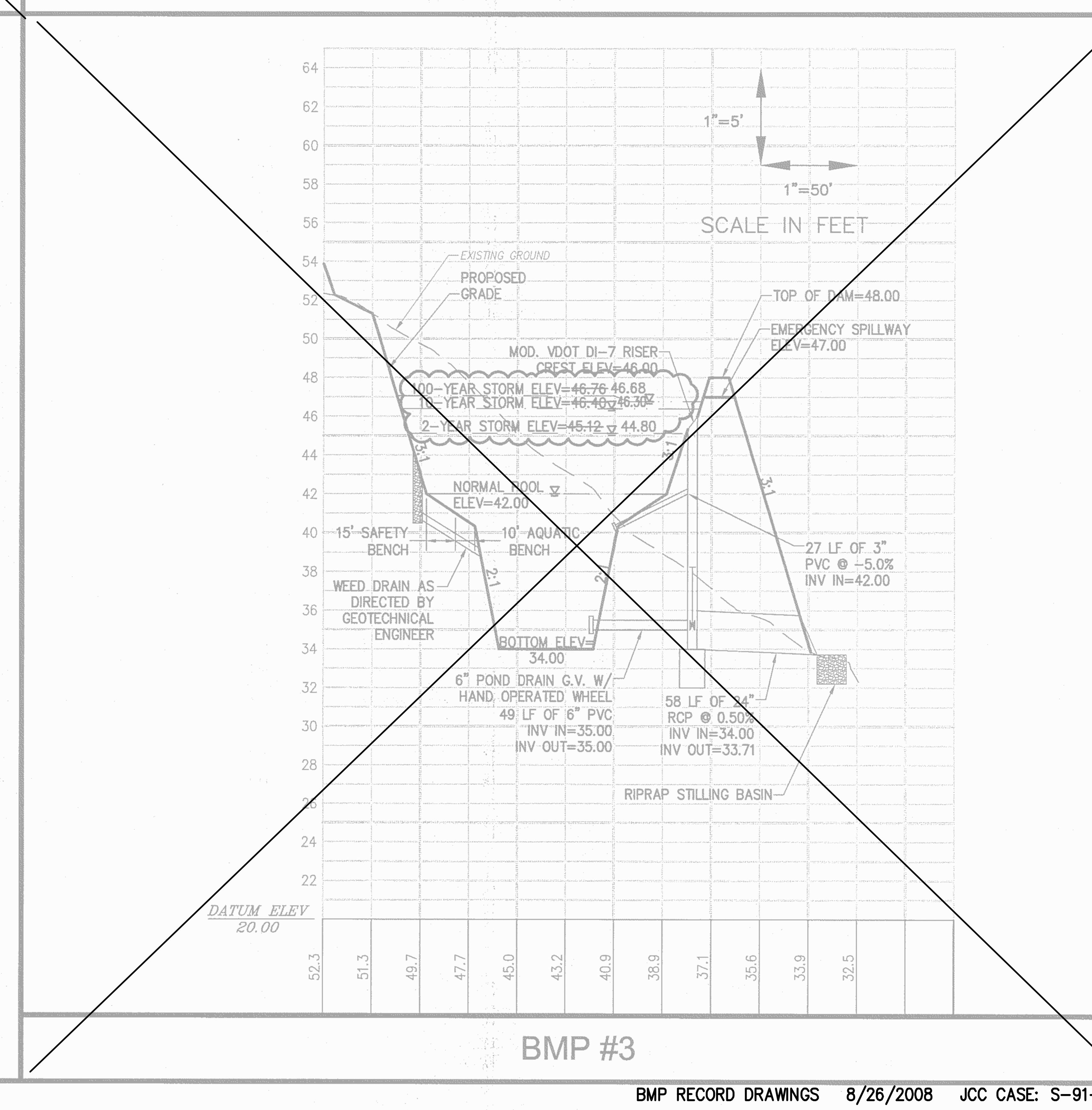


WEEP/SEEP INTERCEPT DETAIL
N.T.S.

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

[signature] 9/21/12
THOMAS C. SUBLETT DATE

COMMONWEALTH OF VIRGINIA
9/21/12
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR



No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVSED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
2 (triangle)	6/08	REVISED SANITARY SEWER MH #1-2	JAG
1 (triangle)	11/07	REVISED STORM SYSTEM #4 FOR CONSTRUCTION PHASING	JAG
8	08/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	06/07	REVISED PER JCC COMMENTS 3/07 THROUGH 5/07	JAG
6	02/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG

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STORM WATER MANAGEMENT
MARYWOOD SUBDIVISION
JAMESTOWN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
JAG/MJR	MJR
Scale	Date
NOTED	8/23/07
Project No.	
9272	
Drawing No.	
30 AS-BUILT	

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THOMAS C. SUBLETT 9/21/12
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WET POND BMP #4
JCC BMP TYPE A-3
1 YR. STORM ELEV= 45.74
2 YR. STORM ELEV= 46.50
10 YR. STORM ELEV= 47.31
100 YR. STORM ELEV= 47.75

TOP OF DAM EL= 50.1
BOTTOM EL= 35.6
SPILLWAY EL= 49.1

WET POND BMP #2
JCC BMP TYPE A-3
1 YR. STORM ELEV= 49.[illegible]
2 YR. STORM ELEV= 49.[illegible]
10 YR. STORM ELEV= 52.[illegible]
100 YR. STORM ELEV= 52.14

TOP OF DAM EL= 53.9
BOTTOM EL= 39.4
SPILLWAY EL= 52.1

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

NOTE:
CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS WILL BE PROVIDED WITH THE APPLICATION FOR BUILDING PERMITS FOR THE CONSTRUCTION OF THE RESIDENTIAL STRUCTURES UPON THESE LOTS, AND SHALL BE SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.

NOTE:
GRADING (FILL AND EXCAVATION) ACTIVITIES ARE REQUIRED IN SELECTED AREAS TO ADJUST/RESTORE EXISTING TOPOGRAPHY FOR THE ELIMINATION (CLOSING) OF TEMPORARY SEDIMENT BASINS AND TEMPORARY SEDIMENT TRAPS USED DURING THE CONSTRUCTION OF THE SITE. GRADING AND EARTHWORK ACTIVITIES IN THESE AREAS, AND SPECIFICALLY IN THE AREAS OF FUTURE BUILDINGS AND DWELLINGS, SHALL BE COMPLETED USING GOOD ENGINEERING PRACTICE. AS A GENERAL GUIDELINE, PRIOR TO THE EARTHWORK ACTIVITIES, ALL TOPSOIL SHALL BE REMOVED FROM THE GRADING ACTIVITY SITE. LIKEWISE, ALL ACCUMULATED SEDIMENT OF A TEMPORARY SEDIMENT BASIN OR TEMPORARY SEDIMENT TRAP SHALL BE REMOVED PRIOR TO GRADING ACTIVITIES. ALL FILL MATERIALS TO BE USED IN FUTURE BUILDING AND DWELLING AREAS SHALL CONSIST OF SUITABLE ON-SITE MATERIAL (AS DETERMINED BY THE GEO-TECHNICAL ENGINEER TO BE SUITABLE STRUCTURAL FILL) IF POSSIBLE, AND SHALL BE FREE OF ROOTS, STUMPS AND OTHER ORGANIC DEBRIS. THE FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" LIFTS AND COMPACTED TO A DENSITY OF 95% AT OPTIMUM MOISTURE CONTENT. PLACEMENT OF FILL OR COMPACTED MATERIAL SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER. PRIOR TO THE CONSTRUCTION OF BUILDINGS AND/OR DWELLINGS ON THE GRADING AREA, THE GEOTECHNICAL ENGINEER SHALL PROVIDE A STATEMENT OF THE SUITABILITY OF THE GRADING ACTIVITIES IN THESE AREAS FOR THE INTENDED FUTURE USE OF THESE AREAS.

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

GRADING AND DRAINAGE PLAN
MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
JAG/MJR	GVC/MJR
Scale	Date
1" = 50'	8/23/07

Project No. 9272

Drawing No. 23

BMP 2 AND 4 RECORD DRAWINGS

FOR

MARYWOOD SUBDIVISION

JAMES CITY COUNTY, VIRGINIA

NOTE: PRIOR TO CONSTRUCTION A SEPARATE PLAN TO LOCATE THE PASSIVE RECREATION TRAILS MUST BE SUBMITTED AND APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION. THE LOCATION OF PASSIVE RECREATION TRAILS ARE TO BE FIELD VERIFIED BY COUNTY ENVIRONMENTAL STAFF TO ENSURE TRAILS ARE PROPERLY LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.

County of James City
Subdivision Construction Plan
DATE of APPROVAL 11/9/2007
Does not constitute final plat approval

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
~~2~~	~~OVERALL SUBDIVISION LAYOUT & SHEET INDEX~~
~~3A~~	~~ENVIRONMENTAL INVENTORY PLAN~~
~~3B~~	~~ENVIRONMENTAL INVENTORY PLAN~~
~~4~~	~~OVERALL UTILITY PLAN~~
~~5~~	~~OVERALL DRAINAGE PLAN~~
~~6~~	~~PRELIMINARY PLAT~~
~~7~~	~~PRELIMINARY PLAT~~
~~8~~	~~PRELIMINARY PLAT~~
~~9~~	~~PRELIMINARY PLAT~~
~~10~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~11~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~12~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~13~~	~~INITIAL EROSION & SEDIMENT CONTROL PLAN~~
~~14~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~15~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~16~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~17~~	~~FINAL EROSION & SEDIMENT CONTROL PLAN~~
~~18~~	~~ROAD AND UTILITY PLAN~~
~~19~~	~~ROAD AND UTILITY PLAN~~
~~20~~	~~ROAD AND UTILITY PLAN~~
~~21~~	~~ROAD AND UTILITY PLAN~~
~~22~~	~~GRADING AND DRAINAGE PLAN~~
23	GRADING AND DRAINAGE PLAN
~~24~~	~~GRADING AND DRAINAGE PLAN~~
~~25~~	~~GRADING AND DRAINAGE PLAN~~
~~26~~	~~ROAD AND UTILITY PROFILE~~
~~27~~	~~ROAD AND UTILITY PROFILE~~
~~28~~	~~ROAD AND UTILITY PROFILE~~
~~29~~	~~ROAD AND UTILITY PROFILE~~
30	STORMWATER MANAGEMENT
30A	STORMWATER MANAGEMENT
~~31~~	~~STORMWATER MANAGEMENT DETAILS~~
~~32~~	~~ROAD AND DRAINAGE NOTES & DETAILS~~
~~32A~~	~~ROAD AND DRAINAGE NOTES & DETAILS~~
~~33~~	~~NOTES AND DETAILS~~
~~34~~	~~GRINDER PUMP NOTES AND DETAILS~~
~~35~~	~~EROSION & SEDIMENT CONTROL DETAILS SHEET~~
~~36~~	~~JAMESTOWN ROAD INTERSECTION IMPROVEMENTS~~
~~L1~~	~~BMP#2 LANDSCAPE PLAN~~
~~L2~~	~~BMP#2 LANDSCAPE PLAN AND NOTES & DETAILS~~

EROSION AND SEDIMENTATION CONTROL LEGEND

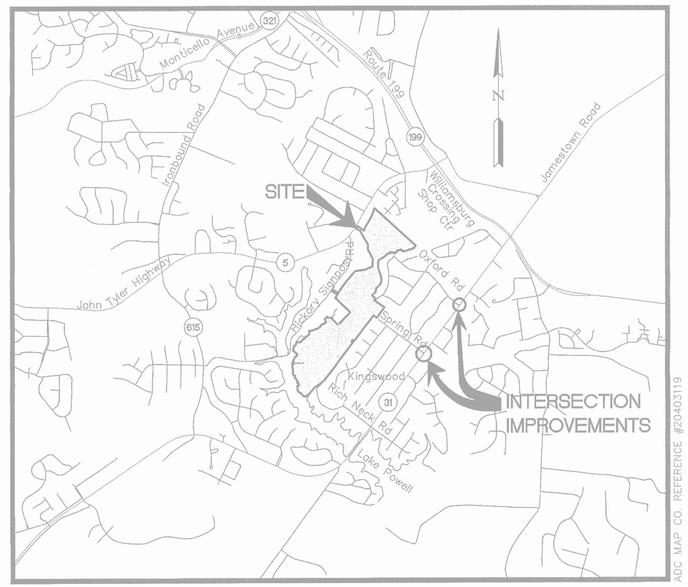
SF	SILT FENCE (SPEC. 3.05)
SSF	SUPER SILT FENCE (SPEC. 3.05)
IP	INLET PROTECTION (SPEC. 3.07)
CE	CONSTRUCTION ENTRANCE (SPEC. 3.02)
CD	CHECK DAM (SPEC. 3.20)
RR	RIP RAP (SPEC. 3.19)
OP	OUTLET PROTECTION (SPEC. 3.18)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBIN. INSTEAD OF SILT FENCE)
ST	TEMPORARY SEDIMENT TRAP (SPEC. 3.13)
PS	PERMANENT SEEDING (SPEC. 3.32)
TP	TREE PROTECTION (SPEC. 3.38)
SCC	STORMWATER CONVEYANCE CHANNEL (SPEC. 3.17)
SB	SEDIMENT BASIN (SPEC. 3.14)
CRS	CONSTRUCTION ROAD STABILIZATION (SPEC. 3.03)
DD	DIVERSION DIKE (SPEC. 3.12)
BB	BRUSH BARRIER (SPEC. 3.06)

NOTE: SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	GRINDER PUMP CONNECTION	GPC
	CLEAN OUT	CO
	WATER METER	WM
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREE LINE	
	LIMITS OF CLEARING	
	REVERSE ROLL TOP GUTTER	
25.1	GROUND ELEVATION	25.1
	PROPOSED TOP OF CURB ELEV.	TC= ELEV.
	STRAW BALE BARRIER	
	RIP RAP	
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	SIGN	
	CUT/FILL	C F

DECEMBER 22, 2004



ADC MAP CO. REFERENCE #20403119

VICINITY MAP (APPROX. SCALE 1"=2000')

PROJECT NO.: 9272-0
JCC CASE: S-91-04

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

9/21/12
THOMAS C. SUBLETT — DATE

COMMONWEALTH OF VIRGINIA
9/21/12
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

SITE DATA:

TAX MAP PARCEL No.	(47-2)(1-47)
ZONING:	R-1
PROJECT AREA:	115.28 ACRES / 5,021,410 SF
DISTURBED AREA:	22.72 ACRES / 989,567 SF
WETLAND DISTURBED AREA:	0.40 ACRES / 17,500 SF
WATERSHED:	MILL CREEK (LAKE POWELL) WATERSHED
NUMBER OF LOTS:	90
FLOOD HAZARD MAP:	FEMA PANEL NUMBER 510201 0045 B ZONE X: AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD PLAIN

OWNER INFORMATION:

CENTEX HOMES
3951 WESTERRE PARKWAY, SUITE 160
RICHMOND, VA 23233
ATTENTION: DAVID MURRAY
TELEPHONE: (757) 215-1260
FAX: (757) 215-1261

RESPONSIBLE LAND DISTURBER:

"THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, THE OWNER OR DEVELOPER SHALL PROVIDE THE NAME OF A "RESPONSIBLE LAND DISTURBER" WHO SHALL ASSUME RESPONSIBILITY AS THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT. THE OWNER OR DEVELOPER SHALL PROVIDE WRITTEN NOTIFICATION SHOULD THE "RESPONSIBLE LAND DISTURBER" CHANGE DURING CONSTRUCTION."

NOTES:

1. SETBACKS:
   FRONT = 35'; SIDE = 15'; REAR = 35'
   IF LOT IS LESS THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 100 FT.
   IF LOT IS MORE THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 150 FT.
   SPECIAL PROVISIONS FOR CORNER LOTS
   A) OF THE 2 SIDES OF A CORNER LOT, THE FRONT OF THE LOT SHALL BE DEEMED TO BE THE SHORTER OF THE 2 SIDES FRONTING THE STREETS.
   B) EACH CORNER LOT SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 125 FT.
2. ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
3. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
4. ALL EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH THE STATE PRIVATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
5. ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION.
6. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE BMPS OR THEIR STRUCTURES AND SHALL BE SAVED HARMLESS FROM ANY DAMAGES.
7. ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
8. NEW PROPERTY MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
9. ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
10. THE CONTRACTOR SHALL AT ALL TIMES POSSESS AND MAINTAIN A CURRENT COPY OF THE HRPDC REGIONAL STANDARDS AND THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS AT THE SITE AND READILY AVAILABLE FOR IMMEDIATE REFERENCE.
11. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 23-7(c) OF THE JAMES CITY COUNTY CODE.
12. DISTURBANCE TO TOPOGRAPHY WITH SLOPES EQUAL TO OR GREATER THAN 25% IS PROHIBITED UNLESS A WAIVER HAS BEEN OBTAINED FROM JAMES CITY COUNTY. TOPOGRAPHY SHOWN ON THESE PLANS ARE REASONABLY ACCURATE FOR LAND FORM, HOWEVER THIS TOPOGRAPHY MAY NOT ACCURATELY LOCATE OR SHOW STEEPLY SLOPED GROUND PLANES. PRIOR TO ANY LOT DISTURBANCE, THE HOMEOWNER SHALL IDENTIFY AREAS OF 25%, OR GREATER SLOPES AND SHALL SECURE ALL NECESSARY APPROVALS THROUGH THE ENVIRONMENTAL DIVISION TO DISTURB STEEP SLOPES..
13. SECURITY LIGHTS, WHERE NOTED, REFER TO STREET LIGHTS INSTALLED FOR SECURITY AND NIGHT TIME ILLUMINATION OF THE ADJACENT STREET. THESE LIGHTS, POLES AND LUMINARS WILL NOT BE MAINTAINED OR REPLACED BY VDOT.
14. A LAND DISTURBING PERMIT, SILTATION AGREEMENT WITH SURETY, AND A PRE-CONSTRUCTION CONFERENCE IS REQUIRED FOR THIS PROJECT.
15. ONLY JCSA PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON THE EXISTING WATER MAINS AND SANITARY FORCE MAINS.
16. THE CONTRACTOR IS TO PLACE AN RPA BUFFER SIGN AT THE INTERSECTION OF EACH LOT LINE WITH AN RPA BUFFER. THE STANDARD JAMES CITY COUNTY RPA BUFFER SIGN IS TO BE LOCATED AT THE LIMIT OF THE BUFFER. SIGNS ARE AVAILABLE FROM MR. WAYLAND BASS, THE JAMES CITY COUNTY ENGINEER, AT A FEE OF $30 / SIGN. TELEPHONE: 757-253-6671 FOR FURTHER INFORMATION.
17. ALL STORM PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) SMOOTH WALL UNLESS OTHERWISE NOTED.
18. STORM STRUCTURES SHALL CONFORM TO VDOT ROAD & BRIDGE STANDARDS AND SPECIFICATIONS. ALL MANHOLES SHALL INCLUDE INLET SHAPING (IS-1) AND MANHOLES DEEPER THAN 4 FEET SHALL HAVE STEPS (ST-1). PIPE BEDDING SHALL BE IN ACCORDANCE WITH VDOT PB-1 AND MANUFACTURERS SPECIFICATIONS.
19. NATURAL OPEN SPACE AREAS SHALL REMAIN IN AN UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.
20. CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS ARE TO BE SUBMITTED TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION FOR REVEIW AND APPROVAL BEFORE APPLICABLE, INDIVIDUAL SINGLE-FAMILY BUILDING PERMIT APPLICATIONS ARE SUBMITTED FOR REVIEW.
21. SURVEY DATA PROVIDED BASED UPON JAMES CITY COUNTY GEODETIC CONTROL NAD-83 ESTABLISHED FROM MONUMENT 318.

THIS PROJECT DOES NOT RELY ON EXISTING LAKE POWELL TO MEET STORMWATER MANAGEMENT CRITERIA

THIS PLAN WAS GRANTED PRELIMINARY APPROVAL BY THE JAMES CITY COUNTY PLANNING COMMISSION ON DECEMBER 5, 2005.

No.	DATE	REVISION / COMMENT / NOTE	BY
2	7/27/11	REVSED BMP AS-BUILT DWGS.	JFS
1	8/26/08	BMP AS-BUILT DWGS.	MG
8	8/07	REVISED PER JCC ENVIRONMENTAL COMMENTS 8/13/07	JAG
7	6/07	REVISED PER JCC COMMENTS 3/07 THROUGH 4/07	JAG
6	2/07	REVISED PER JCC COMMENTS 11/06 THROUGH 1/07	JAG
5	10/06	REVISED PER JCC COMMENTS 8/06 THROUGH 10/06	JAG
4	2/06	REVISED PER JCC COMMENTS 11/05 THROUGH 1/06	VMB
3	10/05	REVISED PER JCC COMMENTS 6/05	VMB
2	4/05	REVISED PER JCC COMMENTS 2/17/05	VMB
1	12/04	REVISED PER JCC COMMENTS 10/18/04	VMB

COPY

COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS
INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 20 day of September, 20 07, between Centex Homes, and all successors in interest, ("COVENANTOR(S)"), owner(s) of the following property:

Parcel Identification Number: (47-2) (1-47)
Legal Description: See Attached Exhibit A
Project or Subdivision Name: Marywood
Document No.
OR Deed Book 0200067900, Page No.
and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

I (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 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,

Instrument # 070027625
Recorded on Oct. 3, 2007

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)

Signature

R James Birkholz P.P. Centex Homes

Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/~~COUNTY~~ OF Suffolk, to wit:

I hereby certify that on this 21st day of September, 2007, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared R James Birkholz and did acknowledge the foregoing instrument to be his/her A
ct.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 21st day of September, 2007.

(SEAL)
NICKEY N MAGEE
Notary Public
Commonwealth of Virginia
342148
My Commission Expires Apr 30, 2008

Notary Public

Notary Registration Number: 342148

My Commission expires: April 30, 2008

COVENANTOR(S)

_____
Signature

_____
Print Name and Title

ACKNOWLEDGMENT

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF _____, to wit:

I hereby certify that on this ____ day of _____, 20____, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared _____ and did acknowledge the foregoing instrument to be his/her Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this _____ day of _____, 20____.

[SEAL]

_____
Notary Public

Notary Registration Number: _____

My Commission expires: _____

Approved as to form:

Adam Linsman
County Attorney

This Declaration of Covenants prepared by:

Name: _____

Print Name: Joseph Rogue

Title: Cortex Homes Land Development Project Manager

Address: 7025 Harbour View Blvd Suite 115
Suffolk, VA 23435

Phone Number: 757-342-6222

(drainage1.pre)

Marywood

Exhibit A

PARCEL PROPERTY DESCRIPTION:

PARCEL CONTAINING 115.275 ACRE± STANDING IN THE
NAME OF ROBERT E. YANCEY AND HIRKO K. YANCEY
JAMES CITY COUNTY TAX ASSESSORS PARCEL (47-2)(1-47)

BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A IRON PIPE FOUND (P.O.B. SEE SHEET 2 OF 5) ON THE EASTERN RIGHT-OF-WAY LINE OF JOHN TYLER MEMORIAL HIGHWAY; THENCE ALONG THE EASTERN RIGHT-OF-WAY OF JOHN TYLER MEMORIAL HIGHWAY N30°21'08"E 91.25; THENCE S52°21'21"E 227.02' TO A BENT PIPE FOUND; THENCE N18°52'04"E, A DISTANCE 99.84' TO A IRON PIPE FOUND; THENCE N31°59'06E 194.67' TO A BENT IRON PIPE FOUND; THENCE N27°42'45"E 203.04' TO A IRON ROD FOUND; THENCE N21°00'45"E 209.62' TO A IRON PIPE FOUND;THENCE S47°36'57"E 163.69' TO A IRON PIPE FOUND; THENCE S47°43'24E 158.54' TO AN IRON PIPE FOUND; THENCE S47°40'33"E 144.02' TO AN IRON PIPE FOUND; THENCE S47°43'37"E 192.99 TO A IRON PIN FOUND; THENCE S47°48'53"E 204.10' TO A IRON ROD FOUND; THENCE S47°40'31"E 703.31' TO A IRON ROD FOUND, SAID ROD BEING IN THE CENTERLINE OF A STREAM, THE STREAM BEING THE PROPERTY LINE; THENCE ALONG CENTERLINE OF STREAM THE FOLLOWING BEARINGS AND DISTANCES:S39°01'26"W 95.05', S62°32'57"W 85.10', N85°25'36"W 43.04', S56°21'38"W 34.89', S73°17'39"W 128.22', N48°34'23"W 43.99', S87°09'19"W 29.68', N49°09'56"W 44.78', S55°32'08"W 38.80', S77°03'23"W 63.17', S49°24'10"W 24.75', S06°12'58"W, 13.13', S30°33'38"W 12.90', S50°3525"W 48.08', N88°00'19"W 21.94', N36°18'37"W 32.33', S78°12'06"W 64.55' TO A POINT; SAID POINT BEING ON THE NORTHERN RIGHT-OF-WAY LINE OF OXFORD ROAD; THENCE CONTINUING ALONG NORTHERN RIGHT-OF-WAY LINE OF OXFORD ROAD N48°15'52"W 31.05' TO A POINT; THENCE S41°14'08"W 60.00' TO A POINT AT THE SOUTHWEST CORNER OF OXFORD ROAD; THENCE LEAVING OXFORD ROAD N48°15'52"W 21.14' TO A IRON ROD FOUND; THENCE S49°41'43"W 119.98' TO A IRON ROD FOUND; THENCE S54°24'03"W 4.37' TO A IRON PIPE FOUND; THENCE S58°12'15"W 220.44' TO A IRON ROD FOUND; THENCE S04°45'50"W 204.63' TO A POINT; THENCE S17°47'24"E 146.85' TO A POINT; THENCE S25°09'40"E 78.12' TO A POINT; THENCE S08°11'56"E 109.25' TO A IRON ROD FOUND; THENCE S01°50'37"E OF 82.90' TO A IRON ROD FOUND; THENCE S26°13'12"W 81.87' TO A IRON PIPE FOUND; THENCE S45°09'31"W 154.87' TO A IRON PIPE FOUND; THENCE S08°46'34"W 107.38' TO A POINT; THENCE S48°28'13"W 135.32 TO A POINT; THENCE S44°55'22"E 145.00' TO A POINT ON THE WESTERN RIGHT-OF-WAY LINE OF BRADDOCK ROAD; THENCE ALONG A CURVE TO THE LEFT HAVING A LENGTH OF 50.82' AND A RADIUS OF 330.66' TO A POINT ON THE SOUTHWEST CORNER OF BRADDOCK ROAD; THENCE S53°44'12"E 50.00' TO A IRON PIPE FOUND AT THE SOUTHEAST CORNER OF BRADDOCK ROAD; THENCE S53°44'12"E

od

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THENCE S35°56'02"W 165.32' TO A IRON PIPE FOUND; THENCE
7"W 199.61' TO A IRON PIPE FOUND ON THE NORTHERN RIGHT-OF-
F SPRING ROAD; THENCE CONTINUING ALONG THE NORTHERN
OF-WAY OF SAID ROAD N53°50'23"W 108.61' TO A POINT AT THE
WEST CORNER OF SPRING ROAD; THENCE S36°09'57"W 50.00' TO A
ON THE SOUTHWEST CORNER OF SPRING ROAD; THENCE LEAVING
OAD S37°40'57"W 862.40' TO A IRON PIPE FOUND; THENCE N52°22'47"W
A IRON PIPE FOUND; THENCE S37°37'13"W 50.00' TO A IRON PIPE
THENCE S52°17'39"E 49.98' TO A IRON PIPE FOUND; THENCE
7"W 1356.01' TO A IRON ROD FOUND; THENCE S51°13'22"W 160.38' TO
ROD ON THE NORTHWEST CORNER OF RICHNECK ROAD; THENCE
2"W 184.20' TO A IRON PIPE FOUND ON THE SOUTHWEST CORNER OF
CK ROAD; THENCE S40°40'52"W 299.74' TO A POINT AT THE HIGH
LINE OF LAKE POWELL; THENCE ALONG THE HIGH WATER LINE OF
OWELL THE FOLLOWING BEARINGS AND DISTANCES: S73°23'12"W
53°39'34"W 105.83', N45°35'28"W 140.60', N27°15'22"W 44.73', N04°48'15"E
N69°07'33"E 35.38', N22°34'06"W 182.62', N32°32'44"W 145.52',
7"W 40.18', N06°55'17"E 77.22', N09°42'01"W 126.53' TO A POINT AT THE
ATER LINE OF LAKE POWEL AND THE CENTERLINE OF A STREAM;
TY LINE IS ALONG THE CENTERLINE OF SAID STREAM; THENCE
THE CENTERLINE OF STREAM THE FOLLOWING BEARINGS AND
CES: N06°44'10"E 57.40', N10°35'40"E 94.89', N27°24'00"E 239.71',
3"W 126.56', N11°37'56"W 46.90', N13°55'40"E 48.04', N05°01'41"E 37.70',
5"E 45.62', N72°50'13"E 26.86', N14°32'45"E 128.56', N41°34'29"E 87.60',
8"W 38.41', N63°05'07"E 53.45', N41°17'30"E 25.05', N84°16'56"E 27.56',
5"W 32.39', S21°36'41"E 17.57', S87°42'41"E 17.04', N80°56'58"E 23.80',
"W 23.78', S64°00'07"E 22.33', N47°18'30"E 40.59', N73°47'38"E 30.25',
)"E 67.36', N23°25'47"E 94.24', N31°29'54"W 38.84', N44°01'32"E 31.44',
"E 88.68', N67°03'37"E 65.18', N52°50'46"E 31.15', N80°05'47"E 52.43',
3"E 51.91', N42°29'18"E 103.79', N57°00'12"E 115.74', N21°09'30"E 56.51',
9"W 33.13', N00°24'05"W 56.07', N70°16'34"E 63.66', N01°34'04"W 22.37',
)"E 33.98', S00°21'23"W 48.81', N83°53'20"E 82.18', TO A IRON PIPE
THENCE LEAVING SAID STREAM S46°17'12"E 301.33' TO A IRON PIPE
N43°41'06"E 499.81' TO A IRON PIPE FOUND; THENCE N46°18'54"W
HENCE N33°06'22"E 118.45' TO A IRON ROD FOUND; THENCE
5"W 199.94 TO A IRON PIPE FOUND; THENCE N33°01'14"E 50.12' TO A
E FOUND; THENCE S61°12'19"E 199.72' TO A IRON PIPE FOUND;
N33°06'02"E 194.88' TO A IRON PIPE FOUND; THENCE N36°11'07"E
) A IRON PIPE FOUND; THENCE N41°41'07"E 384.32' TO A POINT;
N81°58'54"E 284.37' TO A IRON PIPE FOUND; THENCE N65°37'05"E
) A IRON PIPE FOUND; THENCE N02°08'39"E 201.29' TO A IRON PIPE
THENCE N23°22'27"W 108.29' TO A IRON PIPE FOUND; THENCE
"W 178.60' TO A IRON PIPE FOUND; THENCE N02°15'37"W 163.23' TO
IPE FOUND; THENCE N30°28'07"W 447.84' TO A IRON PIPE FOUND;

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

Project Name: Marywood
County Plan No.: S-91-04
Stormwater Management Facility: Retention Pond
BMP Phase #: ☐ I ☐ II ☐ III

- [x] Information Package Received. Date/By: 8/17/2010
- [x] Completeness Check:
  - [x] Record Drawing Date/By: 7/26/2010
  - [x] Construction Certification Date/By: 8/16/2010
  - [x] RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001Only)
  - [x] Insp/Maint Agreement # / Date: 070027625 10/03/2007
  - [x] BMP Maintenance Plan Location: Sheet 30 of Approved Plan
  - ☐ Other:
- [x] Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
  - [x] Yes ☐ No Location: Sheet 30 - Item 20 Approved Plan
- [x] Assign **County BMP ID Code #**: Code: MC-063
- [x] Preliminary Input/Log into Division's "As-Built Tracking Log"
- [x] Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
- [x] Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
- ☐ Active Project File Review (correspondence, H&H, design computations, etc.).
- [x] Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.).
- [x] Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
- [x] Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
- [x] Final Inspection (FI) Performed Date: 10/17/2011
- [x] Record Drawing (RD) Review Date: 8/31/2010
- [x] Construction Certification (CC) Review Date: 8/31/2010
- [x] Actions:
  - ☐ No comments.
  - ☐ Comments. Letter Forwarded. Date: 10/19/2011
  - [x] Record Drawing (RD)
  - ☐ Construction Certification (CC)
  - [x] Construction-Related (CR)
  - ☐ Site Issues (SI)
  - ☐ Other :
- [x] Second Submission: NA
- [x] Reinspection (if necessary): 3/27/2012 - All items addressed
- [x] Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
- [x] Complete "Surety Request Form".
- [x] Check/Clean active file of any remaining material and finish "As-Built" file.
- [x] Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
- ☐ Copy Final Inspection Report into County BMP Inspection Program file.
- [x] Obtain Digital Photographs of BMP and save into County BMP Inventory.
- [x] Request mylar/reproducible from As-Built plan preparer.
- [x] 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: [signature] Date: 3/4/2012

Chief Engineer: [signature] Date: 6/19/12

*** See separate checklist, if needed.

Environmental Division

AUG . 7 ''10

RECEIVED

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: Marywood
Structure/BMP Name: Wet Pond #1
Project Location: Off Jamestown Road, approximately 2000 feet northwest along Spring Road
BMP Location: Easrside of Braddock Road, between lots 4 and 5
County Plan No.: S - 91 - 04

Project Type:
- ☒ Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Public
- ☐ Other
- ☐ Business
- ☐ Office
- ☐ Industrial
- ☐ Roadway

Tax Map/Parcel No.: (47-2) (1-47)
BMP ID Code (if known):
Zoning District: R-1
Land Use: Singel Family Residential
Site Area (sf or acres): 115.3 acres

Brief Description of Stormwater Management/BMP Facility: Wet pond with aquatic bench

Nearest Visible Landmark to SWM/BMP Facility: Braddock Road

Nearest Vertical Ground Control (if known):
☒ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other
Station Number or Name: 319
Datum or Reference Elevation: 103.44
Control Description: James City County Geodetic Station #319
Control Location from Subject Facility: at intersection for John Tyler Highway with Route 199, , approximately 5000 feet northeast of bmp

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: 2007
Facility Monitored by County Representative during Construction: ☒ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: George Nice and Sons
Name of Professional Firm Who Routinely Monitored Construction:
Date of Completion for SWM/BMP Facility: 02/2010
Date of Record Drawing/Construction Certification Submittal: March 01, 2010

(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: Centex Homes
Mailing Address: 7025 Harbour View Boulevard, Suite 115
Suffolk, Virginia 23235
Business Phone: 757-215-1200 Fax:
Contact Person: Kenneth Stubenhofer 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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Responsible Plan Preparer: Jason A Grimes, P.E.
Title: Project Manager
Plan Name: Marywood
Firm's Project No. 9272-00
Plan Date: December 22, 2004
Sheet No.'s Applicable to SWM/BMP Facility: 1 / 24 / 30 / 31 /

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

Name: George Nice and Sons
Mailing Address: 129 Industrial Park
Toano, Virginia 23168
Business Phone: 757-565-2885
Fax: 757-565-1526
Contact Person: Mike Nice
Site Foreman/Supervisor: Jerry Nice
Specialty Subcontractors & Purpose (for BMP Construction Only):

Section 4 – Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer of 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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: V. Marc Bennett, P.E.
Title: Senior Project Manager

Signature:
Date: 7/26/10

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.

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
Lic. No. 026628
7/26/10
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered Professional Engineer
Or Certified Land Surveyor

Construction Certification

Firm Name: GET Solutions Inc
Mailing Address: 204 Grayson Rd
Virginia Beach, Virginia 23462
Business Phone: 757-518-1703
Fax: 757-518-1704

Name: D. MARK SCHOLEFIELD
Title: VP

Signature:
Date: 8/6/2010

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.

COMMONWEALTH OF VIRGINIA
D. MARK SCHOLEFIELD
Lic. No. 033932
8/5/2010
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered
Professional Engineer

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 plans 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.

N/A 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.

XX 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.
XX	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.**
N/A	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.
____	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.
XX	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.)*

XX	A1.	All requirements of Section II, Minimum Standards, apply to Group A facilities.
XX	A2.	Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
XX	A3.	Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
XX	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.
N/A	A5.	Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
N/A	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.
N/A	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).
XX	A8.	No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
XX	A9.	Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
XX	A10.	Low flow orifice has a non-clogging mechanism.
XX	A11.	A pond drain pipe with valve was provided.
XX	A12.	Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
N/A	A13.	End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

Notification of Submission of a Record Drawing/Construction Certification for a Stormwater Management BMP (Inspector's Review)

Date: _____

Inspector:

- ☐ Joe Buchite
- ☐ Jason Beck
- ☐ Tina Cooke
- ☐ Greg Johnson
- ☐ Mike Majdeski
- ☐ Other: _____

Project: _____
BMP Facility: _____
Plan No.: _____
Assigned County BMP ID Code: _____

I received a transmittal for a Record Drawing and/or Construction Certification for the above referenced facility on _____. Prior to performing a full review of these certification items and a field inspection of the BMP, the information is being first forwarded to you for cursory review and input. This is a first screening to ensure the record drawing accurately portrays field observations by the inspector and to notify the engineering group if any relevant changes were made in the field by the inspector beyond the approved site plan or this record drawing. Please review the information and return it to me promptly, with any input, so the engineering group can proceed with the review of certification material.

Please note that you do not need to perform a detailed field inspection. If the asbuilts do not accurately portray what the inspector saw in the field, or if any changes were made to the plan which would affect asbuilt review, then this information needs to be relayed verbally to the engineering group. *(As an example, say the riser/barrel system for the BMP was approved by the inspector to be moved from that shown on the approved design plan due to poor soil conditions. During record drawing review, this would avoid comments being generated saying that the riser/barrel is in the wrong location or needs to be moved back to where the soils were poor.)*

During engineering review, we will look at issues related to the BMP and its primary inflow and outflow conveyance systems, and may make comment on the following areas: Inspection/Maintenance agreement, Record Drawings (RD), Construction Certification (CC) and Construction-Related (CR) field items as it pertains to the BMP. If you have any other related non-BMP site issues such as site erosion, stabilization, removal of erosion & sediment controls, etc. that are not related to the BMP, you must proceed with closing out these items on your own accord; or alternatively, if needed, these can be added to the BMP comment letter.

Again, only verbal response is necessary.

Shared File: AsBuilts\Admin\Final\inspector.form

Suggestions - Minimum Requirements for Asbuilt File

Note: This is for the file created that goes to Stormwater Division

- ☒ Create the file itself (label, project name, BMP ID Code, S/SP #, BMP name, etc.)
- ☒ Copy of transmittals from consultant (AB, CC, etc.)
- ☐ Copy of approved plan computations (SCPV, WQ, storm routings, etc.)
- ☐ Photocopies of important approved plan information helps (ie. Plan view, details, maintenance plan, etc.). There will always be record of the approved plan somewhere, but these mini-photo copies help.
- ☐ The asbuilt drawing (stamped approved once approved)
- ☒ The construction certification
- ☐ Any critical correspondence (design phase, construction phase, certification phase)
- ☐ Any letters or email issued by the Division about asbuilt, construction certification reviews and/or final inspections or re-inspections.
- ☐ All completed inspection forms (BMP Inspections)
- ☐ Copy of the Declaration of Covenants, Inspection/Maintenance Agreement
- ☐ Any geotechnical reports
- ☐ Any asbuilt routings (hydrology & hydraulic analyses using asbuilt rather than design plan information
- ☐ Mylars

(Note: Good judgment applies. Any item in the active project file which you think needs to be in the asbuilt file should be copied just to be sure.)

Important Items for Review of Record Drawings

(December 19th 2002)

☑ The most important aspect is to look for ***consistency with approved plan***. Any compliance issues as it pertains to the County BMP Manual and Minimum Standards of the Virginia Stormwater Management Handbook (blue manual) should have been raised during review and approval of the plan; however, if there is a distinct hazard to the public's health safety and welfare or a distinct concern, you can still apply minimum standards.

☐ Another important aspect to remember is that this drawing will be of record for future maintenance and inspection of the BMP. Ensure it is presented in a fashion with information and detail to be usable in the future by the owner and by County staff.

☐ Ensure there is a ***certification*** for the record (as-built) drawing. It is a "constructed snapshot" which certifies that the drawing depicts the actual condition of the BMP as constructed.

☐ Proper review of asbuilt drawings includes a full cursory review of the contents of the active project file. This gives a basic understanding of issues that arose and were addressed both during plan review and construction as it relates to the BMP.

☐ ***General***

- ☐ Fully completed certification "packet" provided with drawings.
- ☐ Drawing Set - typically a plan view and detail views.

☐ Drawing set or each drawing is stamped & sealed by appropriate professional.
☐ Project Name and BMP Name (ie. Pond 1 Subdivision North)
☐ Reference to County Plan No. and County BMP ID Code

☐ ***Plan View***

- ☐ Shows contours or spot elevations as constructed.
- ☐ Shows general location for principal and emergency spillways.
- ☐ Shows location of outlet barrel and outlet protection.
- ☐ Configuration conforms with approved plan in size, depth, grading & volume.
- ☐ Bottom of pond elevations provided.
- ☐ Top of dam elevations provided.
- ☐ Embankment side slopes reasonably close to approved plan.
- ☐ Interior side slopes reasonably close to approved plan.
- ☐ Steeper than 3H:1V has matting in the field.
- ☐ Shows inflow pipes and channel locations.
- ☐ Shows any specialty items such as micropools, stilling basins, etc.
- ☐ All pipe sizes per approved plan.
- ☐ All pipe lengths and slopes reasonably close to approved plan.
- ☐ Material types for riser, barrel, inflow pipes, orifices, weirs, low flow devices, outlet protections and emergency spillway lining..
- ☐ Top width of dam reasonably close to approved plan and allows access.
- ☐ Trash Rack/Anti-vortex device types (for principal and low flow orifices).

- ❒ Pretreatment Devices shown (forebays, baffle walls, etc.)
- ❒ Design High Water and Pond Buffer Setback shown (optional)
- ❒ Pond Drain (for wet ponds)

❒ ***Elevations (Plan, Details or Section Views)***

- ❒ Bottom of pond elevation reasonably close to approved plan.
- ❒ Safety and aquatic bench.
- ❒ Lowest elevation on top of dam reasonably close to approved plan top of dam elevations.
- ❒ Design high water elevation is well below top of dam. Freeboard requirements per approved plan; or alternatively, minimum 1 ft. with emergency spillway or 2 ft. without emergency spillway.
- ❒ Emergency spillway crest elevation.
- ❒ Riser crest elevation (ie. top of standpipe opening).
- ❒ Control orifices, slots or weirs in principal flow control structure.
- ❒ Elevation of protruding pipes or structures which connect to the principal flow control structure (such as an EW-11 end wall or perforated pipe)
- ❒ Invert In and Out of Pipe Barrel.
- ❒ Invert Out of pipes which inflow into pond.
- ❒ Elevations of inlets, structures one back from BMP conform with plan.
- ❒ Forebay elevations are reasonably close to approved plan.
- ❒ Micropool elevations are reasonably close to approved plan.

❒ ***Details or Sections*** from approved plan transferred onto Record Drawing and annotated as necessary with construction (asbuilt) information or field changes. Shows approved seepage control methods such as anti-seep collars, toe drains, etc and core trench.

❒ ***Maintenance Plan*** only for plans approved after Year 2000. Shows items necessary step by step for long-term maintenance. Also cleanout elevation or depth.

❒ ***Other Considerations:***

- ❒ Access hatch to riser;
- ❒ Proper access to BMP from public/private road.
- ❒ Facility or appurtenances is within common area, easement or site property border (ie. not constructed offsite)
- ❒ Asbuilt routing may be required if design high water exceeds constructed top of dam or does not meet approved plan freeboard requirements.

- ***Regulatory Design References:***
  - James City County Guidelines for Design and Construction of Stormwater Management BMPs (County BMP Manual)
  - James City County Environmental Division, Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions
  - James City County Environmental Division, Erosion and Sediment Control and Stormwater Management Design Plan Checklists
  - James City County Environmental Division, Stormwater Drainage Conveyance Systems, General Design and Construction Guidelines
  - Virginia Stormwater Management Handbook, Volumes I and II, Latest Edition.

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

County BMP ID Code (if known): MC-063

Name of Facility: Marywood BMP-1 BMP No.: 1 of 5 Date: 10/18/2011

Location: LEFT SIDE OF BRADDOCK ROAD NEXT TO LOT 4

Name of Owner: CENTEX

Name of Inspector: G. JOHNSON

Type of Facility: DETENTION FACILITIES

Weather Conditions: WARM/SUNNY Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner 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 to 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
Embankments and Side Slopes:				
Grass Height	X			
Vegetation Condition		X		SEVERAL AREAS NEED TOPSOIL AND SEED
Tree Growth		X		DEAD TREES NEED TO BE REPLACED
Erosion		X		SEVERAL AREAS NEED TOPSOIL AND SEED
Trash & Debris	X			
Seepage	X			
Fencing or Benches	X			
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation				
Vegetated Conditions		X		SEVERAL DEAD OR DYING PLANTS NEED REPLACED
Trash & Debris		X		TRASH NEEDS TO BE REMOVED
Floating Material	X			
Erosion		X		SEVERE AREAS NEED TOPSOIL AND SEED
Sediment	X			
Dead Plant		X		DEAD PLANTS NEED REPLACED
Aesthetics	X			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☐ None, Dry (Detention Basin)				
Shoreline Erosion	X			
Algae	X			
Trash & Debris		X		REMOVE TRASH FROM POND
Sediment	X			
Aesthetics	X			
Other	—			
Inflows (Describe Types/Locations): 6" PVC PIPE				
Condition of Structure	X			
Erosion	X			
Trash and Debris		X		REMOVE TRASH FROM AROUND STRUCTURE
Sediment	X			
Outlet Protection	X			
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): MODIFIED DI-7				
Condition of Structure	X			
Corrosion	X			
Trash and Debris		X		REMOVE TRASH FROM AROUND STRUCTURE
Sediment	X			
Vegetation	X			
Other	—			
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure	X			
Settlement	X			
Trash & Debris	X			
Erosion/Sediment		X		STONE NEEDS TO BE PLACED BACK ON SLOPES
Outlet Protection	X			STONE NEEDS TO BE PLACED IN RIGHT ANGLES
Other	X			AREA WHERE FLARE IS INSTALLED NEEDS EROSION FIXED
Emergency Spillway (Overflow):				
Vegetation	X			
Lining	X			
Erosion	X			
Trash & Debris	X			
Other	—			
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other	✓			
Surrounding Perimeter Conditions: Good				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			
Other				

Remarks:

OVER ALL CONDITION OF BMP IS GOOD. SEVERAL AREAS NEED TOPSOIL AND SEED. ALSO TRASH NEEDS TO BE REMOVED ALL AROUND THE FACILITY. OUTFALL NEEDS RIP RAP REPLACED/REARRANGED. EROSION OCCURING AT FLANE OF OUTFALL.

Overall Environmental Division Internal Rating: _____

Signature: _____ **Date:** _____

Title: _____

SWMProg\BMP\CoInspProg\InspForms\DetRet.wpd

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

County BMP ID Code (if known): MC-063

Name of Facility: Manywood BMP-1 BMP No.: 1 of 5 Date: 06/11/12

Location: LEFT SIDE OF BRADDOCK RD TO THE RIGHT OF LOT 4

Name of Owner: CENTEX - PULTE GROUP

Name of Inspector: G. Johnson

Type of Facility: DETENTION FACILITY

Weather Conditions: WARM/SUNNY Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner 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 to 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
Embankments and Side Slopes:				
Grass Height	X			
Vegetation Condition	X			
Tree Growth	X			
Erosion	X			
Trash & Debris	X			
Seepage	X			
Fencing or Benches	X			
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation				
Vegetated Conditions	X			
Trash & Debris	X			
Floating Material	X			
Erosion	X			
Sediment	X			
Dead Plant	X			
Aesthetics	X			
Other	X			
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☐ None, Dry (Detention Basin)				
Shoreline Erosion	X			
Algae	X			
Trash & Debris	X			
Sediment	X			
Aesthetics	X			
Other	X			
Inflows (Describe Types/Locations): 6" PVC PIPE				
Condition of Structure	X			
Erosion	X			
Trash and Debris	X			
Sediment	X			
Outlet Protection	X			
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): Matthews DF-1				
Condition of Structure	X			
Corrosion	X			
Trash and Debris		X		
Sediment	X			
Vegetation	X			
Other	X			
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure	X			
Settlement	X			
Trash & Debris	X			
Erosion/Sediment	X			
Outlet Protection	X			
Other				
Emergency Spillway (Overflow):				
Vegetation	X			
Lining	X			
Erosion	X			
Trash & Debris	X			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			
Graffiti	X			
Other				
Surrounding Perimeter Conditions:				
Land Uses	X			
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			
Access /Maintenance Roads or Paths	X			
Other				

Remarks:
ALL ITEMS ON INITIAL INSPECTION SHEET ADDRESSED

Overall Environmental Division Internal Rating: _____

Signature: _____ **Date:** [illegible]/17/2012

Title: Inspector

SWMProg\BMP\CoInspProg\InspForms\DetRet.wpd

Environmental Division

AUG 17 2010

RECEIVED

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: Marywood
Structure/BMP Name: Wet Pond #1
Project Location: Off Jamestown Road, approximately 2000 feet northwest along Spring Road
BMP Location: Easrside of Braddock Road, between lots 4 and 5
County Plan No.: S - 91 - 04

Project Type:
- ☒ Residential
- ☐ Commercial
- ☐ Institutional
- ☐ Public
- ☐ Other
- ☐ Business
- ☐ Office
- ☐ Industrial
- ☐ Roadway

Tax Map/Parcel No.: (47-2) (1-47)
BMP ID Code (if known):
Zoning District: R-1
Land Use: Singel Family Residential
Site Area (sf or acres): 115.3 acres

Brief Description of Stormwater Management/BMP Facility: Wet pond with aquatic bench

Nearest Visible Landmark to SWM/BMP Facility: Braddock Road

Nearest Vertical Ground Control (if known):
☒ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other
Station Number or Name: 319
Datum or Reference Elevation: 103.44
Control Description: James City County Geodetic Station #319
Control Location from Subject Facility: at intersection for John Tyler Highway with Route 199, , approximately 5000 feet northeast of bmp

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: 2007
Facility Monitored by County Representative during Construction: ☒ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: George Nice and Sons
Name of Professional Firm Who Routinely Monitored Construction: _____
Date of Completion for SWM/BMP Facility: 02/2010
Date of Record Drawing/Construction Certification Submittal: March 01, 2010

(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: Centex Homes
Mailing Address: 7025 Harbour View Boulevard, Suite 115
Suffolk, Virginia 23235
Business Phone: 757-215-1200 Fax: _____
Contact Person: Kenneth Stubenhofer 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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Responsible Plan Preparer: Jason A Grimes, P.E.
Title: Project Manager
Plan Name: Marywood
Firm's Project No. 9272-00
Plan Date: December 22, 2004
Sheet No.'s Applicable to SWM/BMP Facility: 1 / 24 / 30 / 31 / ____

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

Name: George Nice and Sons
Mailing Address: 129 Industrial Park
Toano, Virginia 23168
Business Phone: 757-565-2885
Fax: 757-565-1526
Contact Person: Mike Nice
Site Foreman/Supervisor: Jerry Nice
Specialty Subcontractors & Purpose (for BMP Construction Only):

_____
_____
_____
_____
_____
_____
_____

Section 4 – Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer of 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: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: V. Marc Bennett, P.E.
Title: Senior Project Manager

Signature:
Date: 7/26/10

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.

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
Lic. No. 026628
7/26/10
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered Professional Engineer
Or Certified Land Surveyor

Construction Certification

Firm Name: GET Solutions Inc
Mailing Address: 204 Grayson Rd
Virginia Beach, VA 23462
Business Phone: 757-518-1703
Fax: 757-518-1704

Name: D. Mark Scholefield
Title: VP

Signature:
Date: 8/6/2010

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.

COMMONWEALTH OF VIRGINIA
D. MARK SCHOLEFIELD
Lic. No. 033932
8/5/2010
PROFESSIONAL ENGINEER

(Seal)

Virginia Registered
Professional Engineer

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 plans 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.

N/A 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.

XX 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.
XX	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.**
N/A	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.
____	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.
XX	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.)*

XX	A1.	All requirements of Section II, Minimum Standards, apply to Group A facilities.
XX	A2.	Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
XX	A3.	Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
XX	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.
N/A	A5.	Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
N/A	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.
N/A	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).
XX	A8.	No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
XX	A9.	Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
XX	A10.	Low flow orifice has a non-clogging mechanism.
XX	A11.	A pond drain pipe with valve was provided.
XX	A12.	Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
N/A	A13.	End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

GET Solutions, Inc.
Geotechnical • Environmental • Testing

G E T Solutions, Inc.
1592 Penniman Road, Suite E
Williamsburg, VA 23185
www.getsolutionsinc.com

Ph: (757) 564-6452
Fax: (757) 564-6453
Email: jwheeler@getsolutionsinc.com

Transmittal Sheet

To:	Darryl Cook	**From:**	James Wheeler
Company:	JCC	**Date:**	8/9/10 3:34 PM
Re:	Stormwater Management / BMP Facilities Record Drawing and Construction Certification Forms	**Contract Name**	Marywood Subdivision
Copies	3	**Pages**	6

☐ **Urgent** X **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Darryl,

Attached are two copies of the record drawings and two sets of certification forms for Marywood Subd.

Thank you

MC062
S-91-04
BMP #1 (PH-I)
WET POND

Environmental Division
AUG 17 2010
RECEIVED

Kristopher Tweedy

Development Management

101-A Mounts Bay Road, P.O. Box 8784, Williamsburg, VA 23187-8784
P: (757) 253-6671 F: (757) 253-6822
jccEgov.com devman@james-city.va.us

Building Safety and Permits (757) 253-6620 | Engineering and Resource Protection (757) 253-6670 | Planning (757) 253-6685 | Zoning Enforcement (757) 253-6882

January 11, 2012

Centex Homes/Pulte Group
Marywood
ATTN: Ken Stubenhofer
3951Western Parkway Suite 160
Richmond, VA 23233

Re: Marywood Subdivision
County Plan No. S-91-04
County BMP ID Code: MC-062

Dear Ken:

The Engineering and Resource Protection Division has received a record drawing (as built) and construction certification for the stormwater management facility and associated conveyance system components for the above referenced project. The record drawing provides as-built information for a wet pond basin situated in Phase 1 of the Marywood Subdivision.

Based on our review of the project, record drawing submittal, and concurrent field inspection as performed on December 12, 2011 the following items must be addressed prior to the release of surety and for our division to proceed with the closing out of the project:

Record Drawing

1. The record drawing set dated March 10, 2010 is satisfactory. Please forward one reproducible and one blue/black line set of the record drawings to our office.

Construction - Related Items:

2. Vegetation on the downstream side of the embankment is approaching 2 to 4 feet in height and should be maintained to a height of 2- 4 inches prior to the next inspection of the facility. Please ensure this has been provided at the time of the next submittal.

3. Several of the trees and shrubs planted in proximity to the basin have perished and require replacement prior to our releasing the associated bonds. These are located outside of the perimeter fence and down slope of lot 4 approximately 20 feet from the BMP access gate.

4. Please remove all trash and debris from the limits of the pond interior and around the primary structure and aquatic bench. This is necessary to ensure proper and prolonged operation without clogging of the dewatering measures.

5. Downstream of Lot 4 and immediately outside of the fenced area of the basin lies areas of erosion that require attention. These areas are to be properly filled and seeded to promote proper ground cover and stabilization.

6. Stormwater Dewatering Structure. Please provide the following maintenance:

   a. On the slopes surrounding the flared end section at the BMP outfall, there are areas of erosion that require repair. These areas need to be repaired with backfill and properly stabilized prior to reduction or release of any associated bonds or surety.

   b. Clear and remove all vegetation, brush, debris and sediment from area within 20 feet of the BMP outfall.

   c. The dewatering device located on the riser structure has become blocked with leaves and debris. This must be cleared and proper operation must be restored prior to reduction or release of any of the associated bonds or surety.

Once this work is satisfactorily completed, contact our office appropriately for reinspection. We can then proceed with final release of the surety and/or closing out the project. One reproducible and one blue/black line set of the record drawings will be required once the above items are adequately addressed.

Please contact me at 757-253-6702 or the assigned Engineering and Resource Protection Division inspector Greg Johnson at 757-253-6683 should you have any comments or questions.

Sincerely,

William Cain, P.E.
Chief Civil Engineer
Engineering and Resource Protection

cc: V. Marc Bennett AES - via email
D. Mark Sholefield, GET Solutions - via email
Mike Nice, George Nice and Sons- via email

Shared Drive\ Projects\AsBuilts\Reviews\final\S9104.MC062

AES
CONSULTING ENGINEERS

Hampton Roads | Central Virginia | Middle Peninsula

5248 Olde Towne Road, Suite 1, Williamsburg, Virginia 23188
Phone (757) 253-0040 / Fax (757) 220-8994

aesva.com

Letter of Transmittal

ATTN: **William Cain**

CO.: James City County Engineering and Resource Protection

Address:

cc:

DATE	JOB NO.
February 3, 2012	W09272-00

FROM: Marc Bennett

RE Marywood

Environmental Division
FEB 03 2012
RECEIVED

WE ARE SENDING YOU THE FOLLOWING ITEMS: X Attached ☐ Under separate cover via

☐ Original(s) X Print(s) ☐ Plan(s) ☐ Specification(s) ☐ Change Order

☐ Copy of letter(s) X Other: Mylars

COPIES	DATE	No. of Pages	DESCRIPTION
1	03/2010	3	Blackline copes of BMP #1 Record Drawings
1	03/2010	3	Mylar copies of BMP #1 Record Drawings

THESE ARE TRANSMITTED as checked below:

☐ For your approval ☐ For your signature ☐ For review and comment

X For your use ☐ As you requested ☐ As requested by:

☐ Other:

REMARKS:
Bill,
Hope all is well.
As requested in the correspondence of January 11, 2012, we are presenting the attached documents.

Please let me know if you can be if further assistance!

Marc

VIA: ☐Hand Deliver ☐UPS Ground ☐UPS Next Day Air ☐USPS Mail ☐ Other:

If enclosures are not as noted, kindly notify us at once.

Marywood Subdivision

Environmental Design Report

Prepared by

AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188
(757) 253-0040 Fax: (757) 220-8994
http://www.aesva.com

Table of Contents

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- **Channel Adequacy Calculation**
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  b. Section A'-A' Cross Section
  c. Manning's "n" Calculations for Channels A-E

- **Storm System Calculation**
  a. Storm System #2A Report
  b. Storm System #2A Outlet Protection

- **BMP Calculation**
  a. BMP #2 Pond Report
  b. BMP #2 Hydrograph Reports

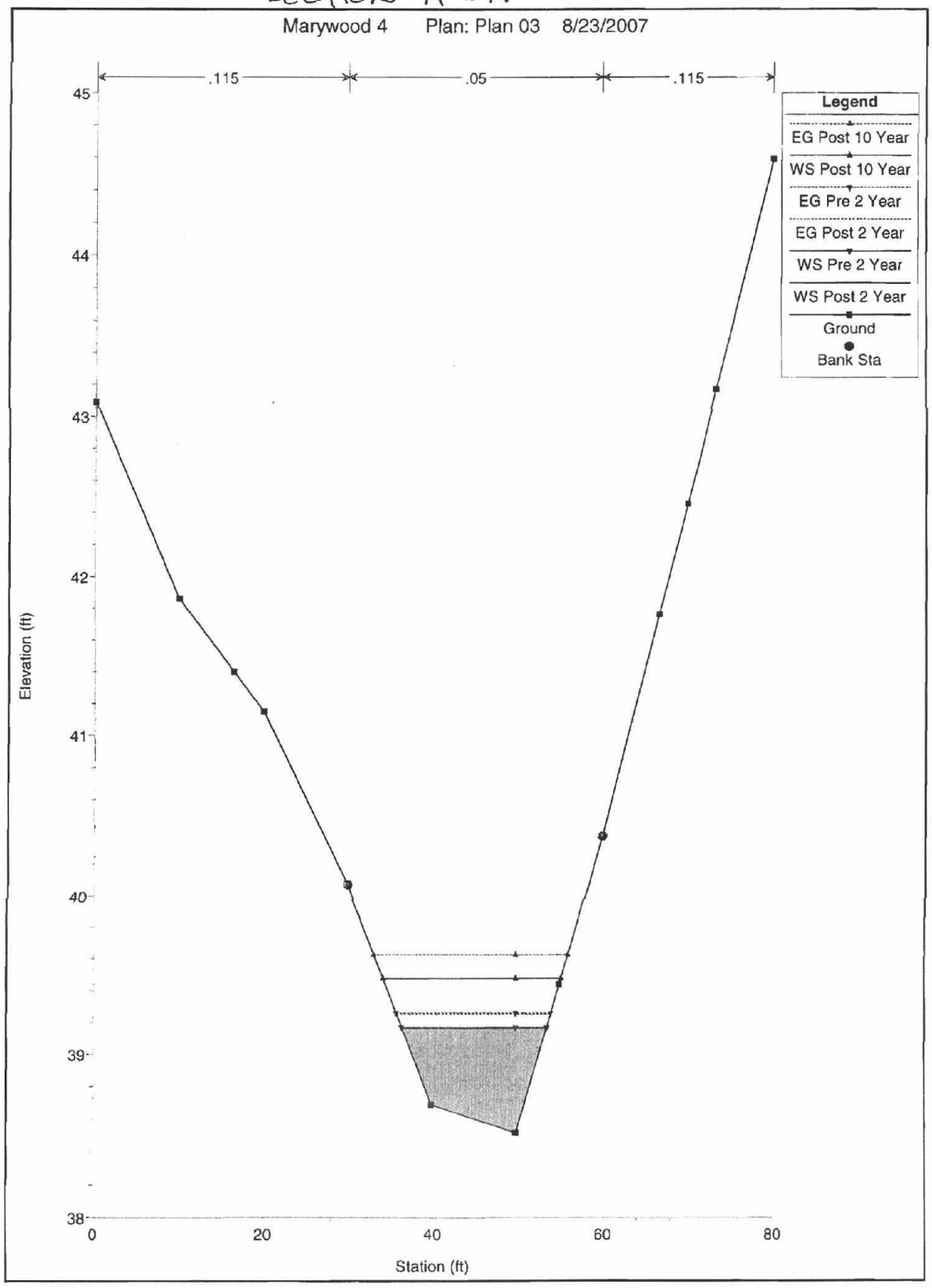
- **Master Clearing and Grading (4 sheets)**

SECTION A' - A'

Plan: Plan 03 Perennial Stream Channel A RS: 1170 Profile: Post 2 Year

E.G. Elev (ft)	39.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.050	
W.S. Elev (ft)	39.16	Reach Len. (ft)	4.74	5.00	5.43
Crit W.S. (ft)		Flow Area (sq ft)		7.51	
E.G. Slope (ft/ft)	0.019087	Area (sq ft)		7.51	
Q Total (cfs)	17.89	Flow (cfs)		17.89	
Top Width (ft)	16.92	Top Width (ft)		16.92	
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)		2.38	
Max Chl Dpth (ft)	0.64	Hydr. Depth (ft)		0.44	
Conv. Total (cfs)	129.5	Conv. (cfs)		129.5	
Length Wtd. (ft)	5.00	Wetted Per. (ft)		17.01	
Min Ch El (ft)	38.52	Shear (lb/sq ft)		0.53	
Alpha	1.00	Stream Power (lb/ft s)		1.25	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	0.00	0.08	0.00
C & E Loss (ft)	0.00	Cum SA (acres)		0.00	

SECTION A' - A'


Marywood 4 Plan: Plan 03 8/23/2007
.115
.05
.115
Legend
EG Post 10 Year
WS Post 10 Year
EG Pre 2 Year
EG Post 2 Year
WS Pre 2 Year
WS Post 2 Year
Ground
Bank Sta
Elevation (ft)
45
44
43
42
41
40
39
38
0
20
40
60
80
Station (ft)

AES CONSULTING ENGINEERS
Williamsburg (757) 253-0040
Gloucester (804) 693-4450
Richmond (804) 330-8040

Project	Marywood		
Project No.	9272		
Subject	Channel		A'-A'
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n
Channels in earth	0.020
Channels cut into rock	0.025
Channels in fine gravel	0.024
Channels in coarse gravel	0.028

n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value
Smooth	The best attainable for the materials involved	0.000
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020

n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value
Change in size or shape occurring gradually	0.000
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015

n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel		A'-A'
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		A'-A'
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

$*n_5 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

n_6 = 0

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 \cdot n_6)$ = 0.05

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Project	Marywood		
Project No.	9272		
Subject	Channel		A-A
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n
Channels in earth	0.020
Channels cut into rock	0.025
Channels in fine gravel	0.024
Channels in coarse gravel	0.028

n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value
Smooth	The best attainable for the materials involved	0.000
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020

n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value
Change in size or shape occurring gradually	0.000
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015

n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel		A-A
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		A-A
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

$*n_5 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

n_6 = 0

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 + n_6)$ = 0.05

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Project	Marywood		
Project No.	9272		
Subject	Channel		B-B
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n
Channels in earth	0.020
Channels cut into rock	0.025
Channels in fine gravel	0.024
Channels in coarse gravel	0.028

n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value
Smooth	The best attainable for the materials involved	0.000
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020

n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value
Change in size or shape occurring gradually	0.000
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015

n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel	B-B	
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		B-B
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

n_6 = 0

$^*n_5 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 + n_6)$ = 0.05

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Project	Marywood		
Project No.	9272		
Subject	Channel		C-C
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n	
Channels in earth	0.020	
Channels cut into rock	0.025	
Channels in fine gravel	0.024	
Channels in coarse gravel	0.028	n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value	
Smooth	The best attainable for the materials involved	0.000	
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005	
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010	
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020	n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value	
Change in size or shape occurring gradually	0.000	
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005	
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015	n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel		C-C
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		C-C
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

n_6 = 0

$^*n_5 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 \cdot n_6)$ = **0.05**

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Project	Marywood		
Project No.	9272		
Subject	Channel		D-D
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n
Channels in earth	0.020
Channels cut into rock	0.025
Channels in fine gravel	0.024
Channels in coarse gravel	0.028

n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value
Smooth	The best attainable for the materials involved	0.000
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020

n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value
Change in size or shape occurring gradually	0.000
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015

n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel		D-D
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		D-D
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

$*n_6 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

n_6 = 0

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 + n_6)$ = 0.05

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Project	Marywood		
Project No.	9272		
Subject	Channel		E-E
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_1)

Character of Channel	Basic n
Channels in earth	0.020
Channels cut into rock	0.025
Channels in fine gravel	0.024
Channels in coarse gravel	0.028

n_1 = 0.020

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_2)

Degree of Irregularity	Surface Comparable To	Modifying Value
Smooth	The best attainable for the materials involved	0.000
Minor	Good dredged channels, slightly eroded or scoured side slopes of canals or drainage channels	0.005
Moderate	Fair to poor dredged channels, moderately sloughed or eroded side slopes of canals or drainage channels	0.010
Severe	Badly sloughed banks of natural streams; badly eroded or sloughed sides of canals or drainage channels; unshaped, jagged and irregular surfaces of channels excavated in rock	0.020

n_2 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_3)

Character of Variations of Size and Shape of Channel Cross Sections	Modifying Value
Change in size or shape occurring gradually	0.000
Large and small sections alternating occasionally or shape changes causing occasional shifting of main flow from side to side	0.005
Large and small sections alternating frequently or shape changes causing frequent shifting of main flow from side to side	0.010 to 0.015

n_3 = 0.005

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

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Project	Marywood		
Project No.	9272		
Subject	Channel		E-E
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Roughness Coefficient Modifier (n_4)

Relative effect of obstructions	Modifying Value
Negligible	0.000
Minor	0.010 to 0.015
Appreciable	0.020 to 0.030
Severe	0.040 to 0.060

n_4 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_5)

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Dense growths of flexible turf grasses or weeds, of which bermudagrass and bluegrass are examples, where the average depth of flow is two or more times the height of the vegetation.	Low	0.005 to 0.010
Supple seedling tree switches such as willow, cottonwood or salt cedar where the average depth of flow is three or more times the height of the vegetation.		
Turf grasses where the average depth of flow is one to two times the height of the vegetation	Medium	0.010 to 0.020
Stemmy grasses, weeds or tree seedlings with moderate cover where the average depth of flow is two to three times the height of the vegetation.		
Bushy growths, moderately dense, similar to willows one to two years old, dormant season, along side slopes with no significant vegetation along bottom, where the hydraulic radius is greater than two.		
Turf grasses where the average depth of flow is about equal to the height of vegetation.	High	0.025 to 0.050
Willow or cottonwood trees 8- to 10-years old intergrown with some weeds and brush, dormant season, where the hydraulic radius is 2 to 4 ft.		
Bushy willows about one year old interwoven with some weeds is full foliage along side slopes, no significant vegetation along channel bottom where hydraulic radius is 2 to 4 ft.		

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Project	Marywood		
Project No.	9272		
Subject	Channel		E-E
Calculated By	MJR	Date	8/15/07

Determination of Manning's "n" for Natural Channels:

Vegetation and Flow Conditions Comparable To:	Degree of Effect on "n"	Range in Modifying
Turf grasses where the average depth of flow is less than one-half the height of the vegetation.	Very High	0.050 to 0.100
Bushy willows about one year old intergrown with weeds along side slopes, dense growth of cattails along channel bottom, all vegetation is full foliage, any value of hydraulic radius up to 10 or 12 ft.		
Trees intergrown with weeds and brush, all vegetation in full foliage, any value of hydraulic radius up to 10 to 12 ft.		

n_5 = 0.010

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

Roughness Coefficient Modifier (n_6)

(Sinuosity) Ratio of meander length to straight length	Degree of meander	Modifying Value
1.0 to 1.2	Minor	0.000
1.2 to 1.5	Appreciable	* $0.15n_5$
1.5 and greater	Severe	* $0.30n_5$

Select: 0

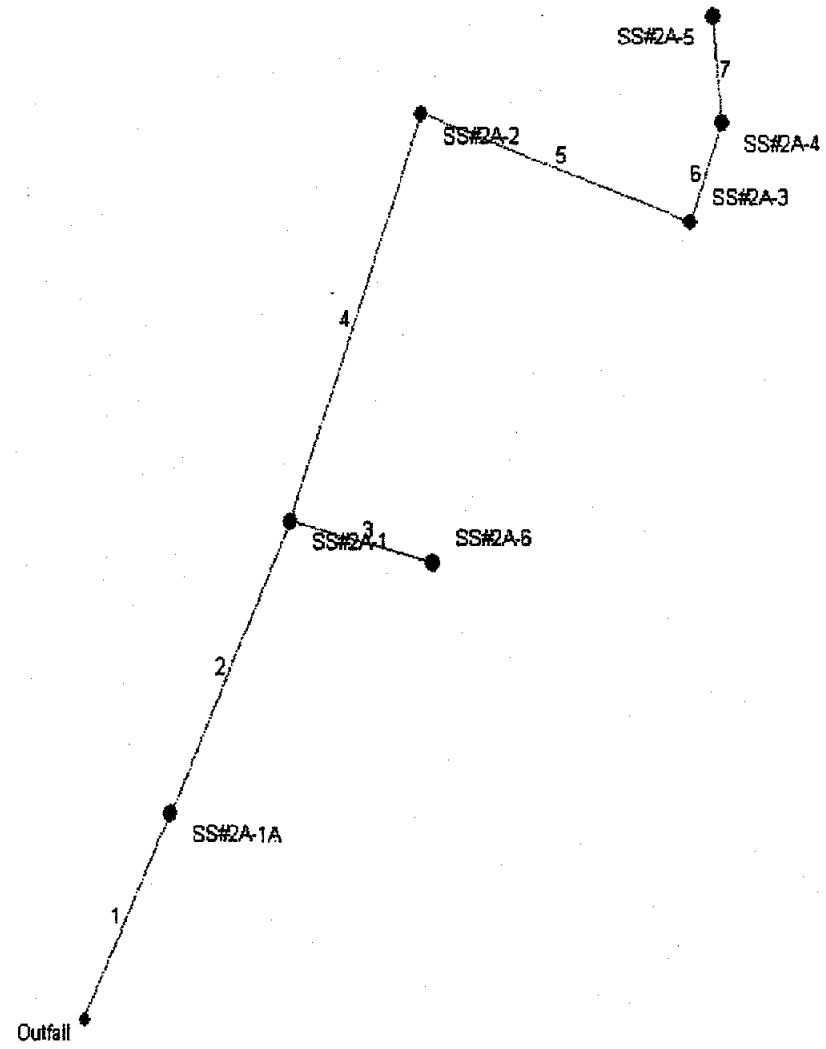
$*n_5 = (n_1 + n_2 + n_3 + n_4 + n_5)$ = 0.05

n_6 = 0

Source: "Estimating Hydraulic Roughness Coefficients," Cowan.

$n = (n_1 + n_2 + n_3 + n_4 + n_5 + n_6)$ = **0.05**

Hydraflow Plan View



Marywood Storm System 2A	No. Lines: 7	08-23-2007

Hydraflow Storm Sewers 2005

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	89.0	0.45	2.91	0.43	0.19	1.29	5.0	9.1	6.2	7.94	39.25	2.53	24	3.01	42.68	40.00	51.27	51.16	55.20	0.00	
2	1	125.0	0.15	2.46	0.43	0.06	1.10	5.0	8.1	6.4	6.97	39.23	2.22	24	3.01	46.44	42.68	51.41	51.29	63.60	55.20	
3	2	64.0	0.25	0.25	0.40	0.10	0.10	5.0	5.0	7.1	0.71	23.62	1.62	15	13.38	55.00	46.44	55.34	51.48	59.00	63.60	
4	2	169.0	0.84	2.06	0.43	0.36	0.93	5.0	7.3	6.5	6.09	10.50	3.45	18	1.00	48.13	46.44	51.98	51.41	60.33	63.60	
5	4	123.0	0.20	1.22	0.49	0.10	0.57	5.0	6.7	6.7	3.82	6.46	3.11	15	1.00	49.36	48.13	52.44	52.01	53.94	60.33	
6	5	41.0	0.81	1.02	0.48	0.39	0.47	5.0	6.4	6.7	3.19	6.46	2.60	15	1.00	49.77	49.36	52.59	52.49	53.94	53.94	
7	6	42.0	0.21	0.21	0.40	0.08	0.08	5.0	5.0	7.1	0.60	17.91	1.51	15	7.69	53.00	49.77	53.31	52.69	57.00	53.94	

Marywood Storm System 2A | Number of lines: 7 | Run Date: 08-23-2007

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs.

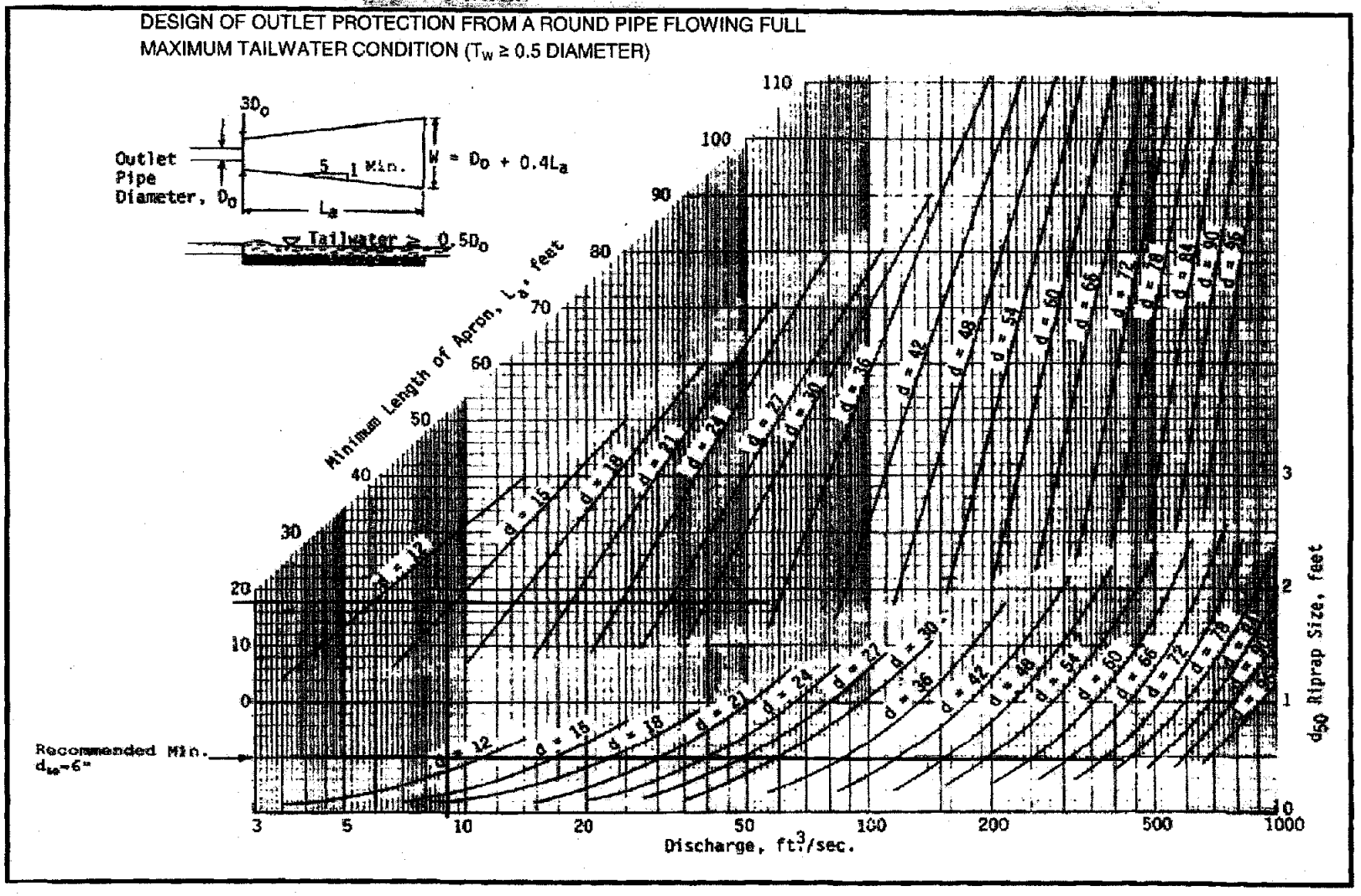
Best Possible Copy

CONSULTING ENGINEERS

Williamsburg (757) 253-0040
Gloucester (804) 693-4450
Richmond (804) 330-8040

Project: Maywood
Project No.: [illegible]
Subject: Outlet Protection
Date: [illegible], 2007
Calculated By: MRP

Outlet Location: SS#2A Outfall



Source: USDA-SCS

Plate 3.18-4

Q =	7.94	cfs	$3D_0$ =	72	in	W =	14 ft
D_0 =	24	in	L_a =	18	ft	d_{50} =	0.5 ft

Depth = >1 ft

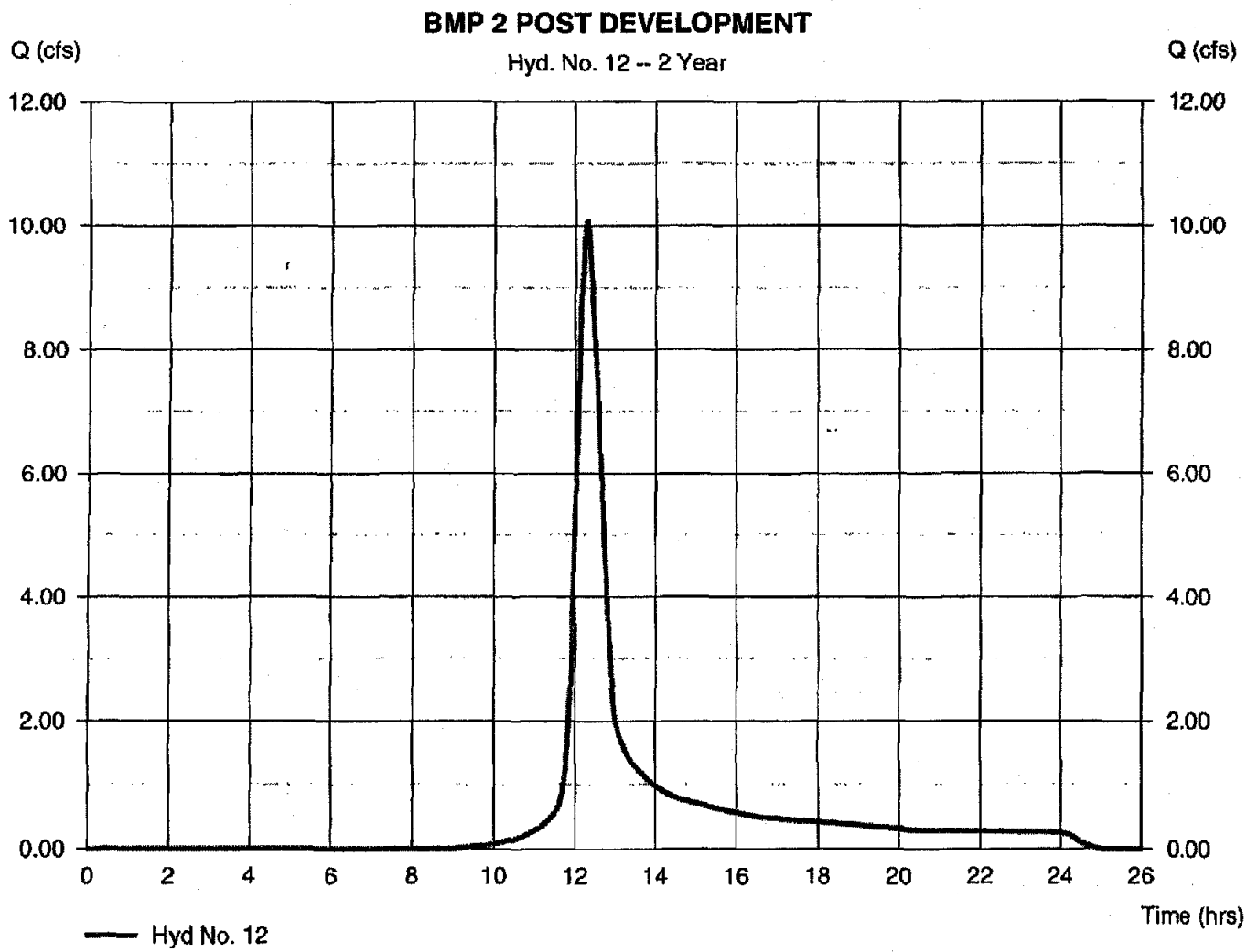
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 10.07 cfs
Storm frequency	= 2 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 49,244 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



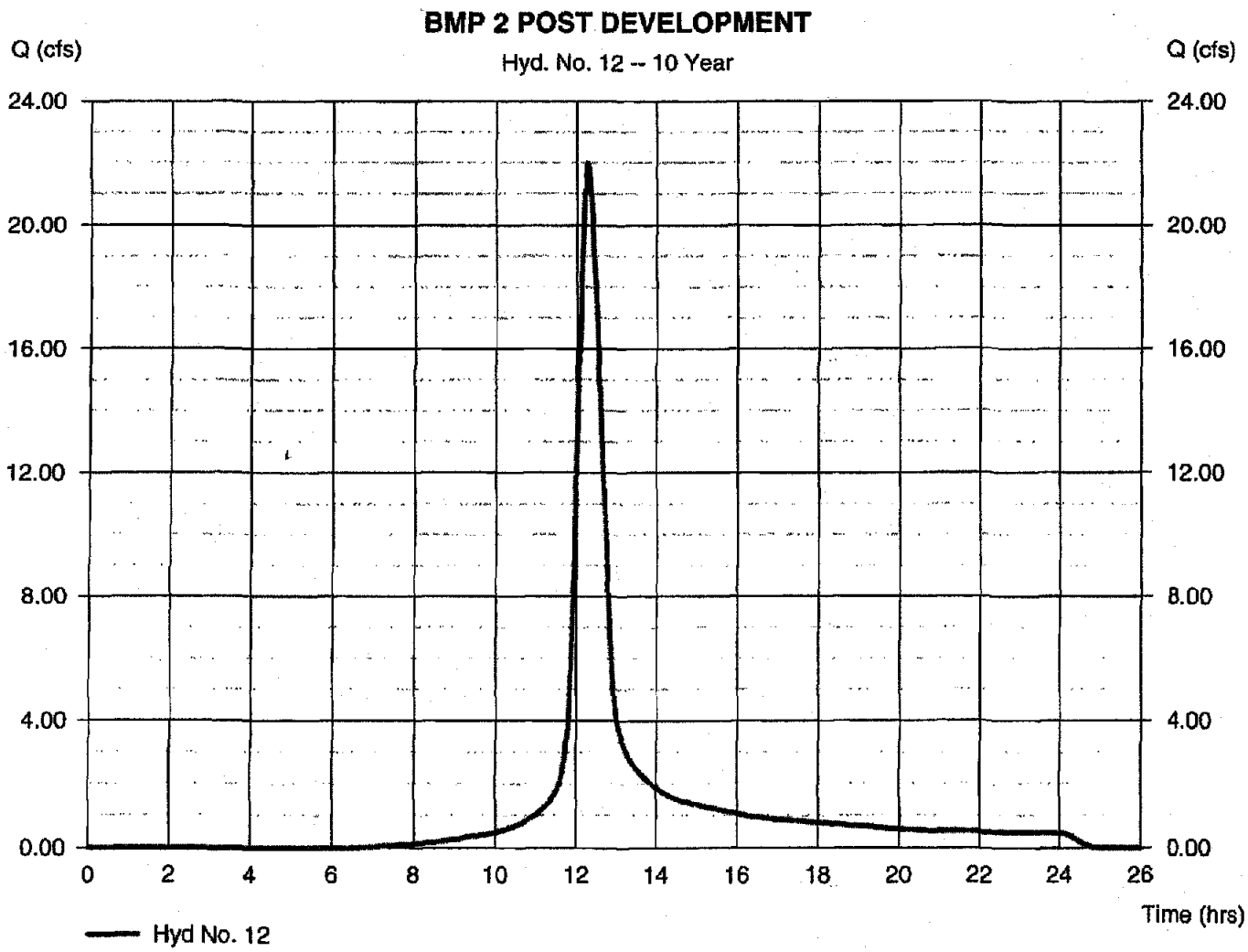
Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 22.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 106,698 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 5.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



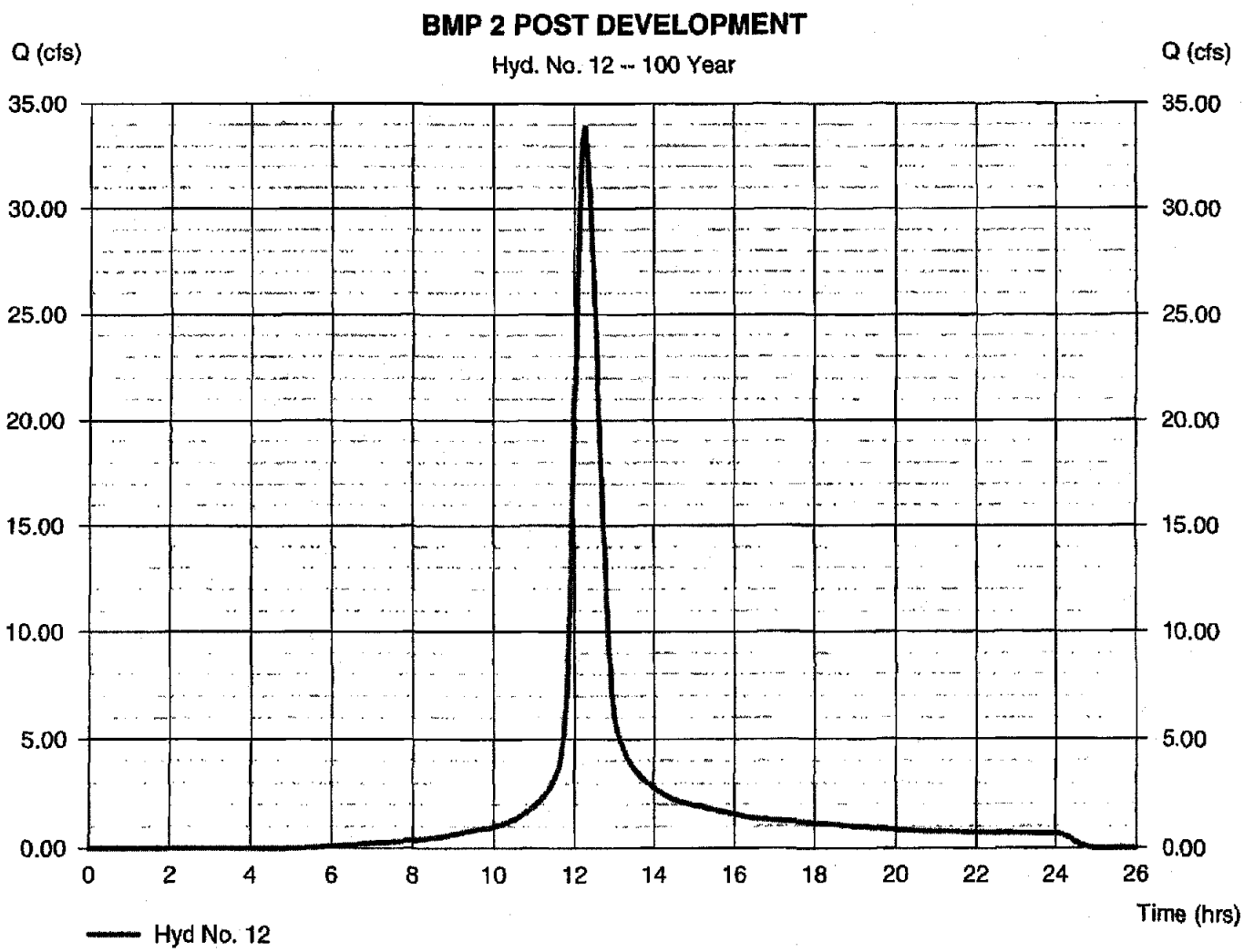
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 12

BMP 2 POST DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 33.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 165,505 cuft
Drainage area	= 7.940 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 38.00 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

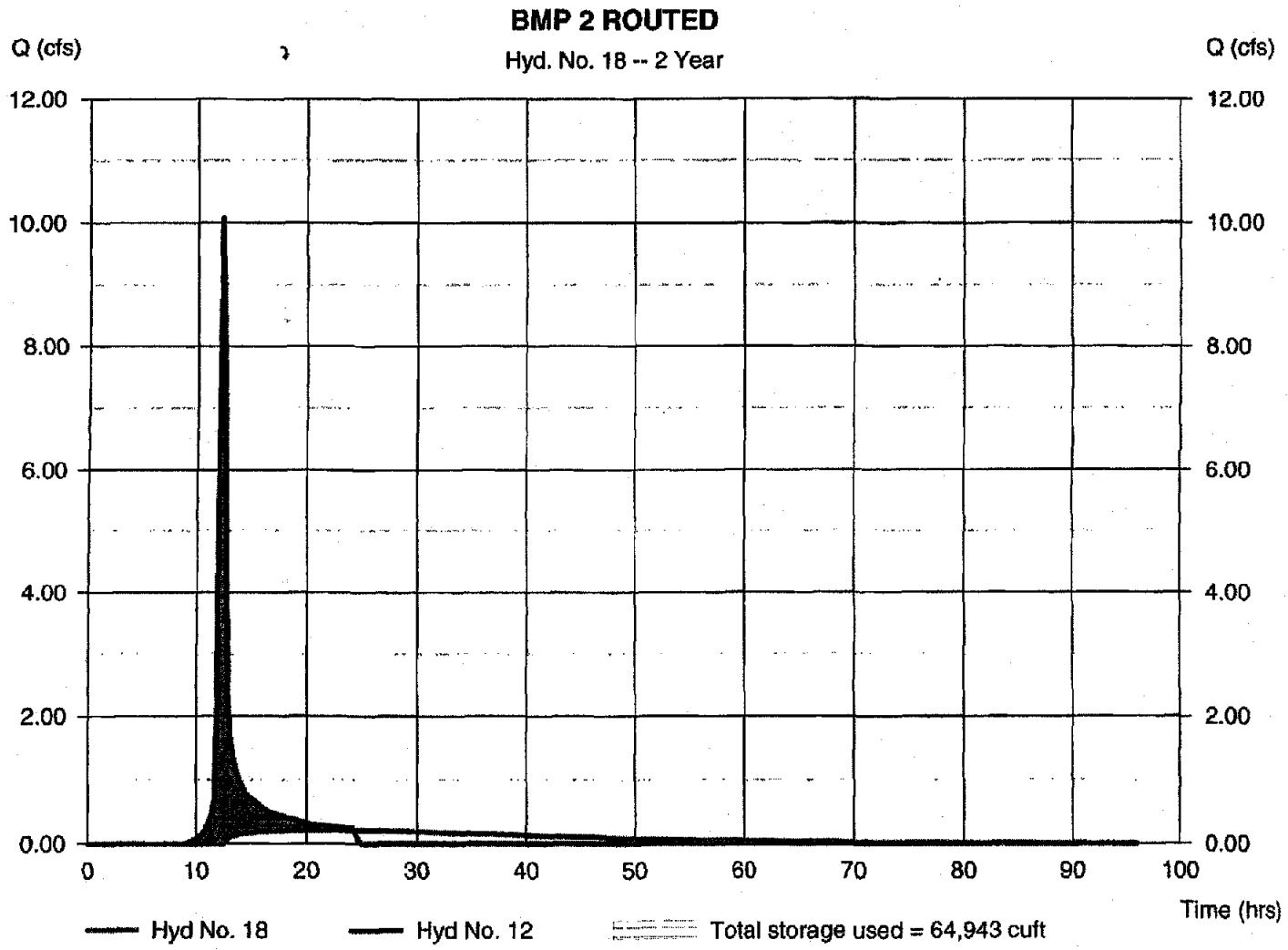
Hydraflow Hydrographs by Intelisolve v9.23 | Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 1454 min
Time interval	= 2 min	Hyd. volume	= 26,208 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 48.98 ft
Reservoir name	= BMP 2	Max. Storage	= 64,943 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



Hydrograph Report

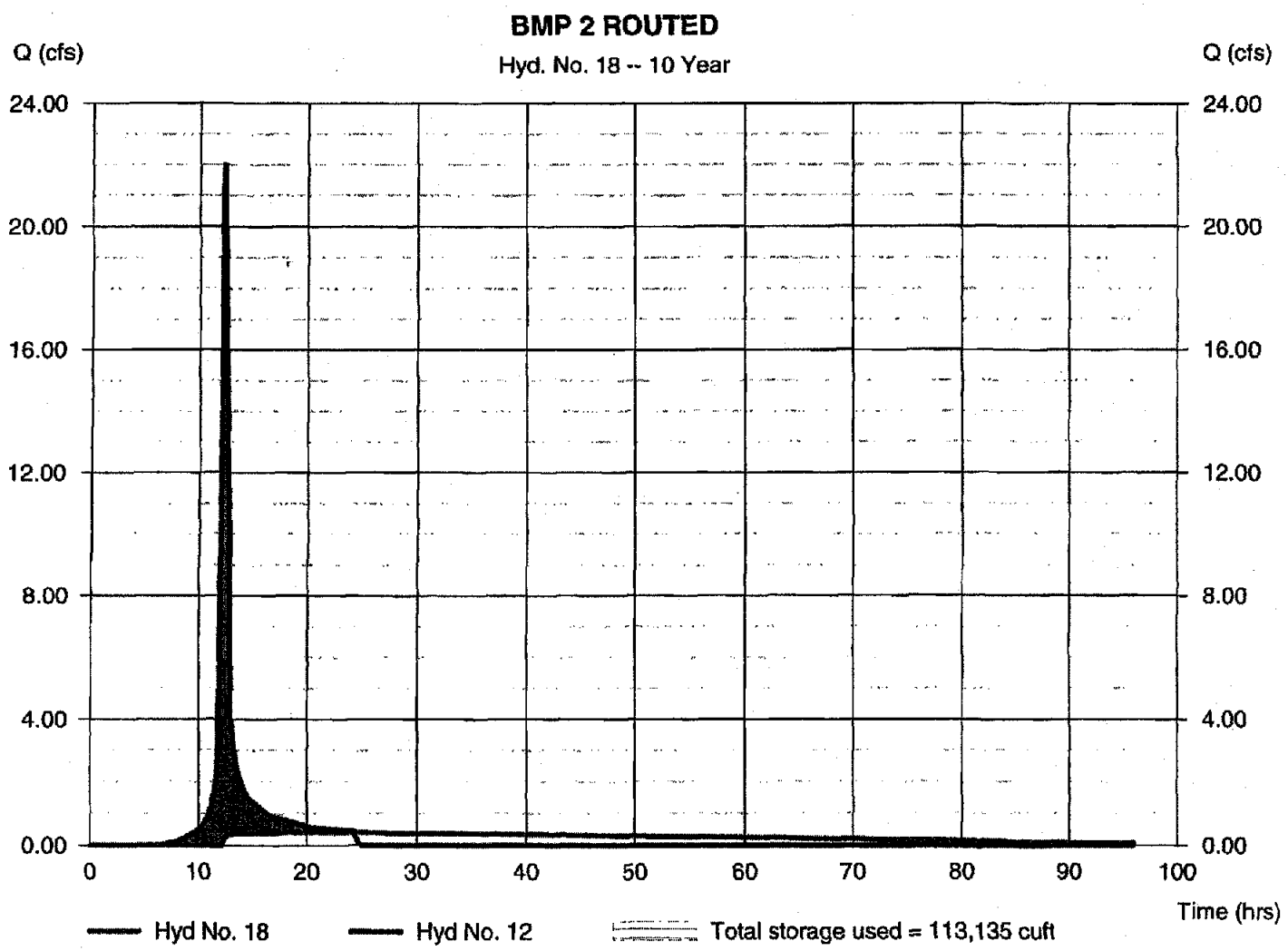
Hydraflow Hydrographs by Intelisolve v9.23 | Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.417 cfs
Storm frequency	= 10 yrs	Time to peak	= 1452 min
Time interval	= 2 min	Hyd. volume	= 80,459 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 51.24 ft
Reservoir name	= BMP 2	Max. Storage	= 113,135 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



Hydrograph Report

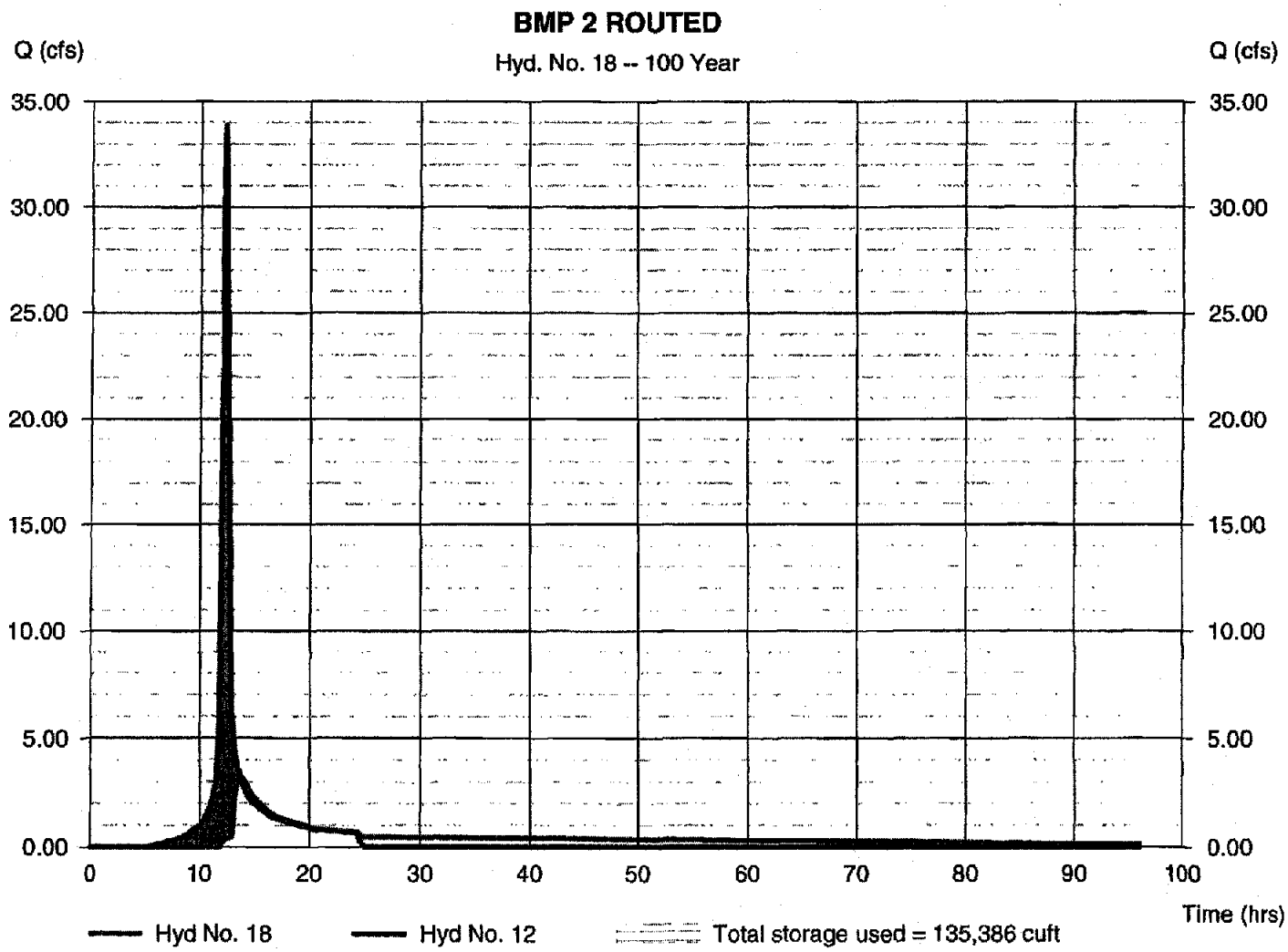
Hydraflow Hydrographs by Intellisolve v9.23 — Thursday, Aug 23, 2007

Hyd. No. 18

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 3.240 cfs
Storm frequency	= 100 yrs	Time to peak	= 822 min
Time interval	= 2 min	Hyd. volume	= 135,744 cuft
Inflow hyd. No.	= 12 - BMP 2 POST DEVELOPMENT	Max. Elevation	= 52.15 ft
Reservoir name	= BMP 2	Max. Storage	= 135,386 cuft

Storage Indication method used. Wet pond routing start elevation = 46.00 ft.



Development Management
101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F. 757-253-6822
devman@james-city.va.us

jamescitycountyva.gov

Building Safety and Permits 757-253-6620
Engineering and Resource Protection 757-253-6670
Planning 757-253-6685
Zoning Enforcement 757-253-6671

March 24, 2012

Virginia Enterprises
ATTN: George E. Fiscella
600 Thimble Shoals, Suite 200
Newport News, Virginia 23606

Re: Pointe at Jamestown Phase 2A
County Plan No. SP-093-05
County BMP ID Code: PC-270

Dear Mr. Fiscella:

The Engineering and Resource Protection Division has received a record drawing (as built) and construction certification for the stormwater management facility and associated conveyance system components for the above referenced project. The record drawing provides as-built information for the recently installed drainage network and infiltration basin located to the southeast of Lot 173.

Based on our review of the project, record drawing submittal, and concurrent field inspection as performed on March 24, 2012, the following items are required to be addressed prior to the release of the posted bonds and surety for this project and for our division to proceed with the closing out of the project:

Construction Certification:

1. In accordance with the Note # 20 Sheet C-7 of the approved plan, record drawings (asbuilts) and construction certifications were required for the onsite stormwater management/BMP. While a Record Drawing Certification was provided in the submittal package, a construction certification from a Virginia Licensed Professional Engineer was not. Please ensure that this information is contained in the next submittal.

Record Drawing:

2. Provide information in the record drawing relative to the concrete weirs installed within the concrete ditch. Provide elevations and inverts for each.

3. Underdrain Gate Valve. Provide information in the record drawings indicating the position of the gate valve be it in the open or closed position at the time of the survey.

Construction - Related Items:

4. Remove trash and debris from the forebay area of the infiltration basin.

5. Remove trash, concrete, and miscellaneous construction material from within the confinements of the infiltration basin and riser structure.

6. Repair the subsided areas around the underdrain and inspection port caps.

7. Provide end caps for all observation and inspection ports.
8. Repair the subsidence between the structure and gate valve immediately in front of the riser structure.

9. Provide proper stabilization throughout all related construction areas.

10. Steps. Provide steps in all manhole structures with depths of 4 feet or greater.

11. Doghouse Manhole Structure. The "Straddle Manhole" as indicated in the approved plan does not appear to be installed per the appropriate specification in the VDOT Drainage Manual and information from a qualified engineer will be required to verify that the structure is sound and that settling of the manhole will not be detrimental to the integrity of the system.

12. HDPE. Provide information to show that the materials used in the construction of the drainage system were installed consistent with the provisions of ASTM D-2321. The initial pipe section between the existing wet pond and the first manhole structure appears to be crushed somewhere in the middle of the pipe, and it appears to be the result of construction traffic traversing the alignment. This may require the segment to be replaced prior to the release of the posted bonds and surety for the project. Please investigate the need to repair or replace this pipe prior to the next submittal of these record drawings.

13. Sediment. The entirety of the pipe network associated with "System 1" as labeled in the approved plan set is in need of cleaning as well as the associated sediment plume in the downstream BMP. All work must be completed prior to the reduction or release of the bonds associated with this project. Please ensure that all work has been accomplished prior to the resubmittal of these record drawings.

14. Erosion and Sediment Control. The recently installed swales associated with lots 163 through 166 have either not been installed or have silted in to the point that they are no longer effective to convey stormwater to their intended location. Prior to the next submittal of these record drawings, please ensure that all swales in this area have been installed, are appropriately stabilized, and are functioning as intended.

Once this work is satisfactorily completed, contact our office appropriately for re-inspection. We can then proceed with final release of the surety and/or closing out the project. One reproducible and one blue/black line set of the record drawings will be required once the above items are adequately addressed.

Please contact me at 757-253-6702 or the assigned Engineering and Resource Protection Division inspector at 757-253-6683 should you have any comments or questions.

Sincerely,

William Cain, P.E.
Chief Civil Engineer
Engineering and Resource Protection

cc: Daniel DeYoung (Design Engineer DJG) Fax: 757-253-0673
Harry McPherson (E.W. Muller) Fax: 757-249-1655
Virginia Enterprises JoAnn Armstrong Email: joann@veihomes.com.
Greg Johnson, inspector- FYI

\\jccdeptstore\dmo1\DMData\environmental\Projects\AsBuilts\Reviews\Fina\SP9305.PC270

NOTE: PRIOR TO CONSTRUCTION A SEPARATE PLAN TO LOCATE THE PASSIVE RECREATION TRAILS MUST BE SUBMITTED AND APPROVED BY JAMES CITY COUNTY ENVIRONMENTAL DIVISION. THE LOCATION OF PASSIVE RECREATION TRAILS ARE TO BE FIELD VERIFIED BY COUNTY ENVIRONMENTAL STAFF TO ENSURE TRAILS ARE PROPERLY LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.

Environmental Division
FEB 03 2012
RECEIVED

WETPOND BMP #1 AS-BUILT

FOR

MARYWOOD SUBDIVISION

JAMES CITY COUNTY, VIRGINIA

DECEMBER 22, 2004

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	OVERALL SUBDIVISION LAYOUT & SHEET INDEX
3A	ENVIRONMENTAL INVENTORY PLAN
3B	ENVIRONMENTAL INVENTORY PLAN
4	OVERALL UTILITY PLAN
5	OVERALL DRAINAGE PLAN
6	PRELIMINARY PLAT
7	PRELIMINARY PLAT
8	PRELIMINARY PLAT
9	PRELIMINARY PLAT
10	INITIAL EROSION & SEDIMENT CONTROL PLAN
11	INITIAL EROSION & SEDIMENT CONTROL PLAN
12	INITIAL EROSION & SEDIMENT CONTROL PLAN
13	INITIAL EROSION & SEDIMENT CONTROL PLAN
14	FINAL EROSION & SEDIMENT CONTROL PLAN
15	FINAL EROSION & SEDIMENT CONTROL PLAN
16	FINAL EROSION & SEDIMENT CONTROL PLAN
17	FINAL EROSION & SEDIMENT CONTROL PLAN
18	ROAD AND UTILITY PLAN
19	ROAD AND UTILITY PLAN
20	ROAD AND UTILITY PLAN
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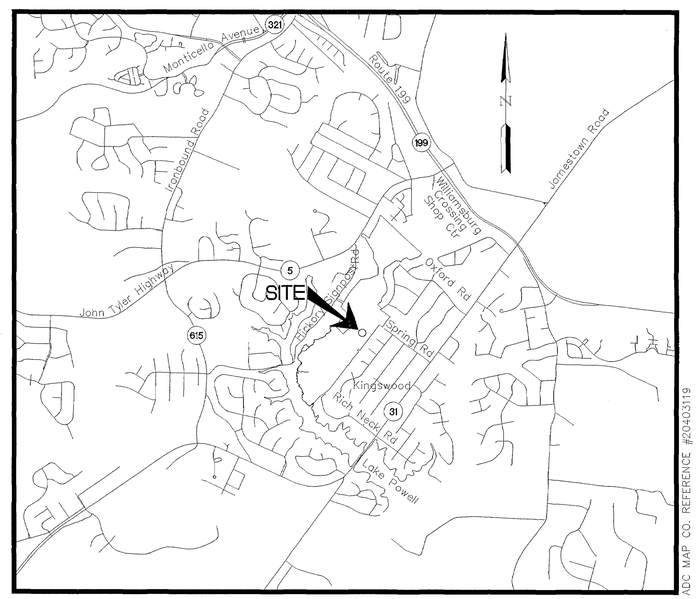
24	GRADING AND DRAINAGE PLAN
25	GRADING AND DRAINAGE PLAN
26	ROAD AND UTILITY PROFILE
27	ROAD AND UTILITY PROFILE
28	ROAD AND UTILITY PROFILE
29	ROAD AND UTILITY PROFILE
30	STORMWATER MANAGEMENT
30A	STORMWATER MANAGEMENT
31	STORMWATER MANAGEMENT DETAILS
32	ROAD AND DRAINAGE NOTES & DETAILS
32A	ROAD AND DRAINAGE NOTES & DETAILS
33	NOTES AND DETAILS
34	GRINDER PUMP NOTES AND DETAILS
35	EROSION & SEDIMENT CONTROL DETAILS SHEET
36	JAMESTOWN ROAD INTERSECTION IMPROVEMENTS
L1	BMP#1 LANDSCAPE PLAN
L2	BMP#2 LANDSCAPE PLAN AND NOTES & DETAILS



VICINITY MAP (APPROX. SCALE 1"=2000')

ADC MAP CO. REFERENCE #20403119

SITE DATA:

TAX MAP PARCEL No.	(47-2)(1-47)
ZONING:	R-1
PROJECT AREA:	115.28 ACRES / 5,021,410 SF
DISTURBED AREA:	22.72 ACRES / 989,567 SF
WETLAND DISTURBED AREA:	0.40 ACRES / 17,500 SF
WATERSHED:	MILL CREEK (LAKE POWELL) WATERSHED
NUMBER OF LOTS:	90
FLOOD HAZARD MAP:	FEMA PANEL NUMBER 510201 0045 B ZONE X: AREAS DETERMINED TO BE OUTSIDE 500 YEAR FLOOD PLAIN

OWNER INFORMATION:

CENTEX HOMES
7025 HARBOUR VIEW BLVD., SUITE 115
SUFFOLK, VA 23435
ATTENTION: DAVID MURRAY
TELEPHONE: (757) 215-1260
FAX: (757) 215-1261

RESPONSIBLE LAND DISTURBER:

"THE PROFESSIONAL WHOSE SEAL IS AFFIXED HEREON SHALL ACT AS THE "RESPONSIBLE LAND DISTURBER" FOR PURPOSES OF PLAN APPROVAL ONLY. PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT, THE OWNER OR DEVELOPER SHALL PROVIDE THE NAME OF A "RESPONSIBLE LAND DISTURBER" WHO SHALL ASSUME RESPONSIBILITY AS THE "RESPONSIBLE LAND DISTURBER" FOR THE CONSTRUCTION PHASE OF THE PROJECT. THE OWNER OR DEVELOPER SHALL PROVIDE WRITTEN NOTIFICATION SHOULD THE "RESPONSIBLE LAND DISTURBER" CHANGE DURING CONSTRUCTION."

NOTES:

1. SETBACKS:
   FRONT = 35'; SIDE = 15'; REAR = 35'
   IF LOT IS LESS THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 100 FT.
   IF LOT IS MORE THAN 1 ACRE, MINIMUM WIDTH AT SETBACK LINE IS 150 FT.
   SPECIAL PROVISIONS FOR CORNER LOTS
   A) OF THE 2 SIDES OF A CORNER LOT, THE FRONT OF THE LOT SHALL BE DEEMED TO BE THE SHORTER OF THE 2 SIDES FRONTING THE STREETS.
   B) EACH CORNER LOT SHALL HAVE A MINIMUM WIDTH AT THE SETBACK LINE OF 125 FT.
2. ALL PROPOSED UTILITIES SHOWN ARE TO BE PLACED UNDERGROUND AS PER THE CURRENT JAMES CITY COUNTY SUBDIVISION ORDINANCE SECTION 19-33.
3. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON THE SITE. CALL 1-800-552-7001.
4. ALL EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH THE STATE PRIVATE WELL REGULATIONS AND THE JAMES CITY COUNTY CODE.
5. ALL DRAINAGE EASEMENTS AND STORM WATER ATTENUATION BASINS ARE TO BE DEDICATED TO THE HOMEOWNERS ASSOCIATION.
6. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE BMPS OR THEIR STRUCTURES AND SHALL BE SAVED HARMLESS FROM ANY DAMAGES.
7. ALL RESIDENTIAL SUBDIVISION SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE.
8. NEW PROPERTY MONUMENTS WILL BE INSTALLED PER SECTIONS 19-34 THROUGH 19-36 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
9. ALL NEW STREET SIGNS SHALL BE INSTALLED PER SECTION 19-55 OF THE JAMES CITY COUNTY SUBDIVISION ORDINANCE.
10. THE CONTRACTOR SHALL AT ALL TIMES POSSESS AND MAINTAIN A CURRENT COPY OF THE HRPDC REGIONAL STANDARDS AND THE JAMES CITY SERVICE AUTHORITY STANDARDS AND SPECIFICATIONS AT THE SITE AND READILY AVAILABLE FOR IMMEDIATE REFERENCE.
11. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREAS SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SECTION 23-7(c) OF THE JAMES CITY COUNTY CODE.
12. DISTURBANCE TO TOPOGRAPHY WITH SLOPES EQUAL TO OR GREATER THAN 25% IS PROHIBITED UNLESS A WAIVER HAS BEEN OBTAINED FROM JAMES CITY COUNTY. TOPOGRAPHY SHOWN ON THESE PLANS ARE REASONABLY ACCURATE FOR LAND FORM, HOWEVER THIS TOPOGRAPHY MAY NOT ACCURATELY LOCATE OR SHOW STEEPLY SLOPED GROUND PLANES. PRIOR TO ANY LOT DISTURBANCE, THE HOMEOWNER SHALL IDENTIFY AREAS OF 25% OR GREATER SLOPES AND SHALL SECURE ALL NECESSARY APPROVALS THROUGH THE ENVIRONMENTAL DIVISION TO DISTURB STEEP SLOPES..
13. SECURITY LIGHTS, WHERE NOTED, REFER TO STREET LIGHTS INSTALLED FOR SECURITY AND NIGHT TIME ILLUMINATION OF THE ADJACENT STREET. THESE LIGHTS, POLES AND LUMINARS WILL NOT BE MAINTAINED OR REPLACED BY VDOT.
14. A LAND DISTURBING PERMIT, SILTATION AGREEMENT WITH SURETY, AND A PRE-CONSTRUCTION CONFERENCE IS REQUIRED FOR THIS PROJECT.
15. ONLY JCSA PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON THE EXISTING WATER MAINS AND SANITARY FORCE MAINS.
16. THE CONTRACTOR IS TO PLACE AN RPA BUFFER SIGN AT THE INTERSECTION OF EACH LOT LINE WITH AN RPA BUFFER. THE STANDARD JAMES CITY COUNTY RPA BUFFER SIGN IS TO BE LOCATED AT THE LIMIT OF THE BUFFER. SIGNS ARE AVAILABLE FROM MR. WAYLAND BASS, THE JAMES CITY COUNTY ENGINEER, AT A FEE OF $30 / SIGN. TELEPHONE: 757-253-6671 FOR FURTHER INFORMATION.
17. ALL STORM PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) SMOOTH WALL UNLESS OTHERWISE NOTED.
18. STORM STRUCTURES SHALL CONFORM TO VDOT ROAD & BRIDGE STANDARDS AND SPECIFICATIONS. ALL MANHOLES SHALL INCLUDE INLET SHAPING (IS-1) AND MANHOLES DEEPER THAN 4 FEET SHALL HAVE STEPS (ST-1). PIPE BEDDING SHALL BE IN ACCORDANCE WITH VDOT PB-1 AND MANUFACTURERS SPECIFICATIONS.
19. NATURAL OPEN SPACE AREAS SHALL REMAIN IN AN UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES REFERENCED ON THE DEED OF EASEMENT.
20. CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS ARE TO BE SUBMITTED TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION FOR REVIEW AND APPROVAL BEFORE APPLICABLE, INDIVIDUAL SINGLE-FAMILY BUILDING PERMIT APPLICATIONS ARE SUBMITTED FOR REVIEW.
21. SURVEY DATA PROVIDED BASED UPON JAMES CITY COUNTY GEODETIC CONTROL NAD-83 ESTABLISHED FROM MONUMENT 318.

THIS PROJECT DOES NOT RELY ON EXISTING LAKE POWELL TO MEET STORMWATER MANAGEMENT CRITERIA

THIS PLAN WAS GRANTED PRELIMINARY APPROVAL BY THE JAMES CITY COUNTY PLANNING COMMISSION ON DECEMBER 5, 2005.

EROSION AND SEDIMENTATION CONTROL LEGEND

SF	SILT FENCE (SPEC. 3.05)
SSF	SUPER SILT FENCE (SPEC. 3.05)
IP	INLET PROTECTION (SPEC. 3.07)
CE	CONSTRUCTION ENTRANCE (SPEC. 3.02)
CD	CHECK DAM (SPEC. 3.20)
RR	RIP RAP (SPEC. 3.19)
OP	OUTLET PROTECTION (SPEC. 3.18)
CIP	CULVERT INLET PROTECTION (SPEC. 3.08-1 WITH STONE COMBIN. INSTEAD OF SILT FENCE)
ST	TEMPORARY SEDIMENT TRAP (SPEC. 3.13)
PS	PERMANENT SEEDING (SPEC. 3.32)
TP	TREE PROTECTION (SPEC. 3.38)
SCC	STORMWATER CONVEYANCE CHANNEL (SPEC. 3.17)
SB	SEDIMENT BASIN (SPEC. 3.14)
CRS	CONSTRUCTION ROAD STABILIZATION (SPEC. 3.03)
DD	DIVERSION DIKE (SPEC. 3.12)
BB	BRUSH BARRIER (SPEC. 3.06)

NOTE: SEE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK FOR EROSION CONTROL SPECIFICATIONS (SPEC.) AND DETAILS.

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	GRINDER PUMP CONNECTION	GPC
	CLEAN OUT	CO
	WATER METER	WM
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREE LINE	
	LIMITS OF CLEARING	
	REVERSE ROLL TOP GUTTER	
26.1	GROUND ELEVATION	26.1
	PROPOSED TOP OF CURB ELEV.	TOC ELEV.
	STRAW BALE BARRIER	
	RIP RAP	
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	SIGN	
	CUT/FILL	C F

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

Thomas C. Sublett 3/01/10
THOMAS C. SUBLETT DATE

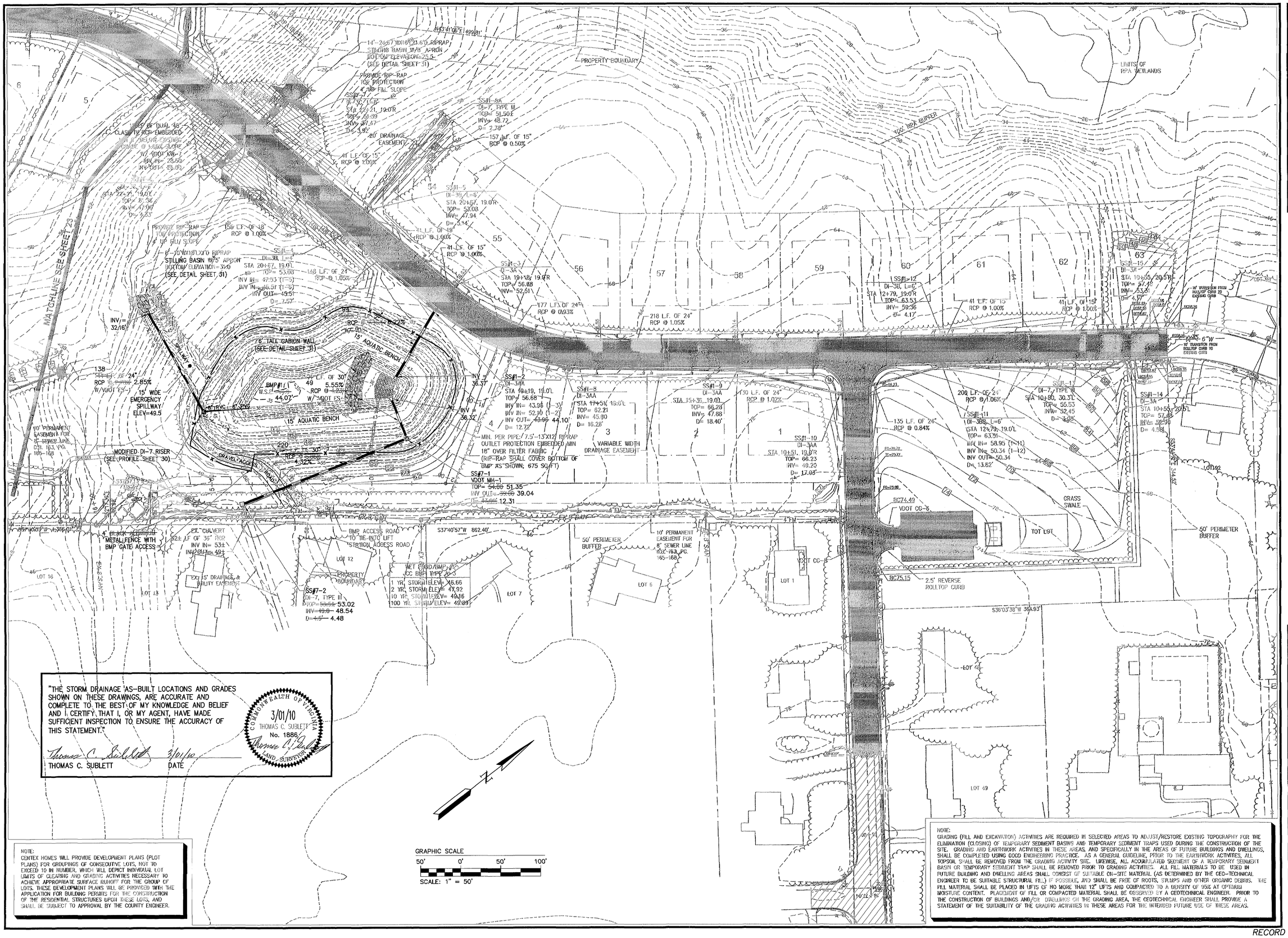
COMMONWEALTH OF VIRGINIA
3/01/10
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

ES
CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

No.	DATE	REVISION / COMMENT / NOTE	BY
1	3/10	RECORD DRAWINGS	VMB

RECORD DRAWING-3/10



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COMMONWEALTH OF VIRGINIA 3/01/10 THOMAS C. SUBLETT No. 1886 LAND SURVEYOR

THOMAS C. SUBLETT — DATE 3/01/10

NOTE:
CENTEX HOMES WILL PROVIDE DEVELOPMENT PLANS (PLOT PLANS) FOR GROUPINGS OF CONSECUTIVE LOTS, NOT TO EXCEED 10 IN NUMBER, WHICH WILL DEPICT INDIVIDUAL LOT LIMITS OF CLEARING AND GRADING ACTIVITIES NECESSARY TO ACHIEVE APPROPRIATE SURFACE RUNOFF FOR THE GROUP OF LOTS. THESE DEVELOPMENT PLANS WILL BE PROVIDED WITH THE APPLICATION FOR BUILDING PERMITS FOR THE CONSTRUCTION OF THE RESIDENTIAL STRUCTURES UPON THESE LOTS, AND SHALL BE SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.

NOTE:
GRADING (FILL AND EXCAVATION) ACTIVITIES ARE REQUIRED IN SELECTED AREAS TO ADJUST/RESTORE EXISTING TOPOGRAPHY FOR THE ELIMINATION (CLOSING) OF TEMPORARY SEDIMENT BASINS AND TEMPORARY SEDIMENT TRAPS USED DURING THE CONSTRUCTION OF THE SITE. GRADING AND EARTHWORK ACTIVITIES IN THESE AREAS, AND SPECIFICALLY IN THE AREAS OF FUTURE BUILDINGS AND DWELLINGS, SHALL BE COMPLETED USING GOOD ENGINEERING PRACTICE. AS A GENERAL GUIDELINE, PRIOR TO THE EARTHWORK ACTIVITIES, ALL TOPSOIL SHALL BE REMOVED FROM THE GRADING ACTIVITY SITE. LIKEWISE, ALL ACCUMULATED SEDIMENT OF A TEMPORARY SEDIMENT BASIN OR TEMPORARY SEDIMENT TRAP SHALL BE REMOVED PRIOR TO GRADING ACTIVITIES. ALL FILL MATERIALS TO BE USED IN FUTURE BUILDING AND DWELLING AREAS SHALL CONSIST OF SUITABLE ON-SITE MATERIAL (AS DETERMINED BY THE GEO-TECHNICAL ENGINEER TO BE SUITABLE STRUCTURAL FILL) IF POSSIBLE, AND SHALL BE FREE OF ROOTS, STUMPS AND OTHER ORGANIC DEBRIS. THE FILL MATERIAL SHALL BE PLACED IN LIFTS OF NO MORE THAN 12" LIFTS AND COMPACTED TO A DENSITY OF 95% AT OPTIMUM MOISTURE CONTENT. PLACEMENT OF FILL OR COMPACTED MATERIAL SHALL BE OBSERVED BY A GEOTECHNICAL ENGINEER. PRIOR TO THE CONSTRUCTION OF BUILDINGS AND/OR DWELLINGS ON THE GRADING AREA, THE GEOTECHNICAL ENGINEER SHALL PROVIDE A STATEMENT OF THE SUITABILITY OF THE GRADING ACTIVITIES IN THESE AREAS FOR THE INTENDED FUTURE USE OF THESE AREAS.

No.	DATE	REVISION / COMMENT / NOTE	BY
1	3/10	RECORD DRAWINGS	WB

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

WETPOND BMP #1 AS-BUILT
MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
AES	JFS
Scale	Date
1" = 50'	3/01/10

Project No. 9272

Drawing No. 24

RECORD DRAWING–3/10

Use the inner circles for creating the view named "PlotHalf" to be used with the JDL 5000 plotter for Half scale plots
Use the outer circles for creating the view named "Plot" to be used with the JDL 5000 plotter

Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Thursday, Aug 23, 2007

Pond No. 2 - BMP 2

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 40.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	40.00	1,596	0	0
2.00	42.00	3,124	4,720	4,720
4.00	44.00	4,777	7,901	12,621
6.00	46.00	6,531	11,308	23,929
8.00	48.00	16,238	22,769	46,698
10.00	50.00	21,003	37,241	83,939
12.00	52.00	26,162	47,165	131,104
14.00	54.00	31,741	57,903	189,007

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	0.00	0.00
Span (in)	= 18.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 40.00	48.00	0.00	0.00
Length (ft)	= 126.00	0.00	0.00	0.00
Slope (%)	= 3.97	0.00	0.00	n/a
N-Value	= .013	.013	.000	n/a
Orifice Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	15.00	0.00	0.00
Crest El. (ft)	= 52.00	53.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	0.00	0.00
Weir Type	= Riser	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	40.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
2.00	4,720	42.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
4.00	12,621	44.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
6.00	23,929	46.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
8.00	46,698	48.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.000
10.00	83,939	50.00	0.33 IC	0.32 IC	---	---	0.00	0.00	---	---	---	---	0.324
12.00	131,104	52.00	0.47 IC	0.47 IC	---	---	0.00	0.00	---	---	---	---	0.465
14.00	189,007	54.00	30.49 OC	0.05 IC	---	---	30.44 s	39.00	---	---	---	---	69.48

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL RESULTS ARE NEEDED PRIOR TO FINAL APPROVAL.

3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.

4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON-SITE. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN ANOTHER AREA ON THE SITE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENTATION AT EARTHWORK AND STOCKPILE LOCATIONS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS, UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

8. A RECORD DRAWING (AS-BUILT) SHALL BE SUBMITTED, REVIEWED, AND APPROVED PRIOR TO RELEASE OF THE POSTED BOND / SURETY.

GEOTECHNICAL ENGINEER'S EARTHWORK RECOMMENDATIONS

1. PRIOR TO INITIATION OF EARTHWORK OPERATIONS, ANY STREAM FLOWS SHOULD BE DIVERTED SO THAT SURFACE WATER DOES NOT ENTER AREAS OF FILL PLACEMENT. THIS COULD BE ACCOMPLISHED WITH DIVERSION DITCHES AND SUMP PUMPS.

2. SUBGRADE PREPARATION SHOULD INCLUDE REMOVAL OF TOPSOIL, ORGANIC MATERIAL, AND ANY STREAM SEDIMENT, COBBLES, OR OTHER POROUS MATERIALS FROM BELOW THE DAM EMBANKMENTS. REMOVAL OF THESE MATERIALS SHOULD BE EXTENDED TO AT LEAST 5 FEET BEYOND THE PLANNED EDGE OF THE DAM EMBANKMENTS. EMBANKMENT SUBGRADES SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT TO ASSURE THAT SUITABLE SUBGRADE MATERIALS HAVE BEEN EXPOSED.

3. THE FOLLOWING FILL TYPES ARE RECOMMENDED ON THIS PROJECT

DAM EMBANKMENT FILL: INORGANIC SOILD MATERIAL CLASSIFIED AS SC, CL, CH, OR ML CONTAINING AT LEAST 35% FINES (SILT AND CLAY) AND HAVING A MAXIMUM LIQUID LIMIT OF 60. MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE DAM EMBANKMENT FILL MATERIALS.

SOIL LINER FILL (SOIL WHICH WILL BE USED IN POND BOTTOMS TO RESTRICT SEEPAGE): INORGANIC SOILD MATERIAL CLASSIFIED AS CL, ML, MH, OR CH CONTAINING AT LEAST 60% FINES (SILT AND CLAY). MAXIMUM ROCK SIZE SHOULD BE LIMITED TO 6 INCHES. THE GEOTECHNICAL ENGINEER SHOULD BE CALLED ON AS THE IMPOUNDMENTS ARE MADE TO HELP IDENTIFY FOR THE CONTRACTOR SUITABLE SOIL LINER FILL MATERIALS.

4. ALL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH LOOSE LIFTS (4 INCHES FOR LIGHT COMPACTION EQUIPMENT) AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THE SOIL'S OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. COMPACTION SHOULD BE ACCOMPLISHED USING SHEEPSFOOT ROLLERS, OR A VIBRATORY DRUM ROLLER FOR MORE GRANULAR SOILS, UNTIL A MINIMUM DENSITY OF 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698) IS ACHIEVED. CARE SHOULD BE EXERCISED TO ACHIEVE THOROUGH COMPACTION ON SLOPING SURFACES. A QUALIFIED SOILS TECHNICIAN UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO PROVIDE ON TO PROVIDE COMPACTION TESTING DURING THE FILL PLACEMENT TO ASSURE THAT THE MINIMUM COMPACTION REQUIREMENTS ARE BEING MET. AT LEAST 1 TEST PER 5,000 SQUARE FEET PER LIFT SHOULD BE PERFORMED. COMPACTION TESTING IN TRENCHES SHOULD BE PERFORMED AT A RATE OF AT LEAST 1 TEST PER 50 LINEAR FEET PER LIFT.

5. THE POND SUBGRADES SHOULD BE THOROUGHLY COMPACTED TO MINIMIZE SEEPAGE LOSS. THIS SHOULD BE ACCOMPLISHED BY SCARIFYING THE SUBGRADE TO A DEPTH OF 8 INCHES, MOISTURE CONDITIONING THE SOILS TO WITHIN +/- 3% OF OPTIMUM MOISTURE CONTENT, AND COMPACTING TO A DRY DENSITY OF AT LEAST 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698). BOTH SHEEPSFOOT AND SMOOTH DRUM COMPACTION EQUIPMENT SHOULD BE USED.

6. FILL SOILS COMPRISING A SOIL LINER SYSTEM SHOULD BE COMPACTED TO THE SPECIFICATIONS OF PARAGRAPH 4 ABOVE. FILL SOILS OF AN AMENDED SOIL LINER SYSTEM SHOULD BE PREPARED IN ACCORDANCE WITH THE AMENDMENT MANUFACTURER'S SPECIFICATIONS.

7. IT IS EXPECTED THAT MOST SOILS EXCAVATED FROM THE IMPOUNDMENTS WILL BE WET OF THEIR OPTIMUM MOISTURE CONTENT. EXCESSIVELY WET SOILS SHOULD BE SPREAD, MANIPULATED, AND MOISTURE CONDITIONED TO WITHIN +/- 3% OF THEIR OPTIMUM MOISTURE CONTENT PRIOR TO COMPACTION. THE CONTRACTOR SHOULD CONSIDER THIS IN THE SCHEDULE AND EQUIPMENT PLANNING.

8. ZONES OF PERCHED WATER WERE ENCOUNTERED IN SOME LOCATIONS ABOVE THE POND BOTTOM ELEVATIONS. THESE WILL RESULT IN SEEPAGE INTO THE EXCAVATIONS, AND ACCUMULATION OF WATER IN THE PONDS DURING CONSTRUCTION SHOULD BE ANTICIPATED. SEEPAGE FROM THE POND SIDE SLOPES MAY OCCUR AT ANY LOCATION, RESULTING IN LOCALIZED SLOUGHING. PERMANENT STABILIZATION OF THESE SEEPAGE ZONES BY INSTALLATION OF SUBSURFACE DRAIN LINES MAY BE REQUIRED DURING CONSTRUCTION.

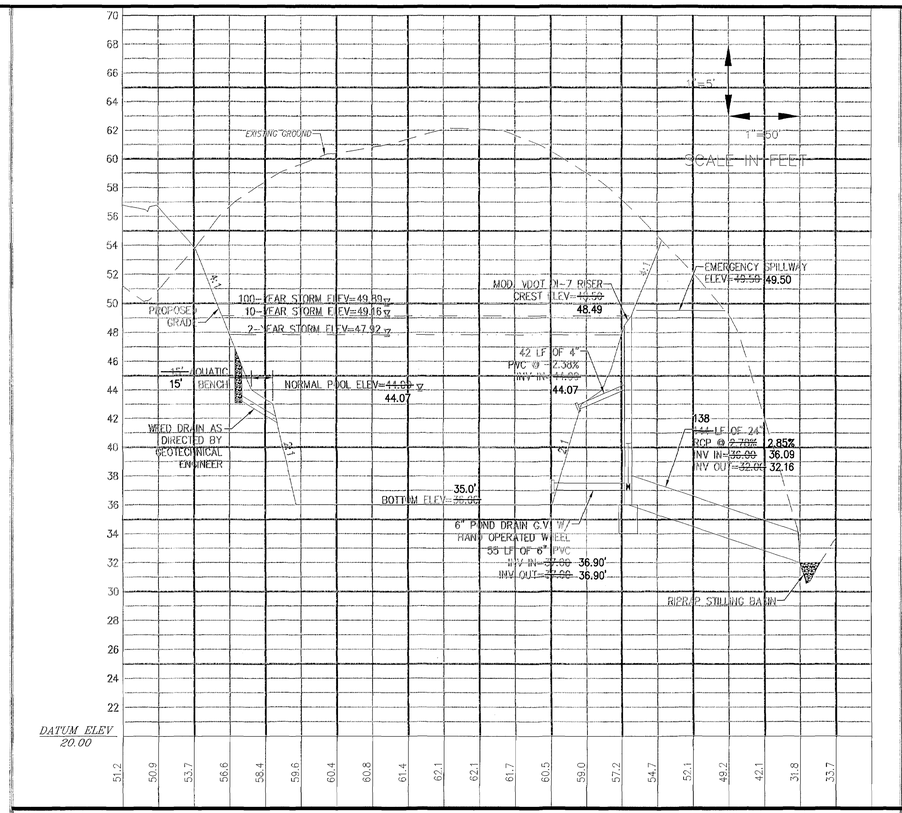
9. DAM MAINTENANCE IS AN ESSENTIAL REQUIREMENT FOR ASSURING THAT DAMS PERFORM AS INTENDED OVER TIME. THE EMBANKMENT SHOULD BE PERIODICALLY INSPECTED FOR INDICATIONS OF SEEPAGE AND EROSION. TREES SHOULD BE KEPT FROM GROWING ON THE EMBANKMENTS. HEAVY GRASS GROWTH SHOULD BE MAINTAINED, AND ANIMAL BURROWS SHOULD BE FILLED. PIPES SHOULD BE INSPECTED FOR INDICATIONS OF LEAKAGE OR FOR THE PRESENCE OF SEDIMENT, WHICH MIGHT INDICATE LEAKAGE. IF DETERIORATION WHICH MIGHT COMPROMISE THE PERFORMANCE OR SAFETY OF THE DAM IS OBSERVED, A QUALIFIED GEOTECHNICAL ENGINEER SHOULD BE CALLED ON TO ASSIST IN THE REPAIR.

CONVERSION OF SEDIMENT BASIN INTO BMP FACILITIES

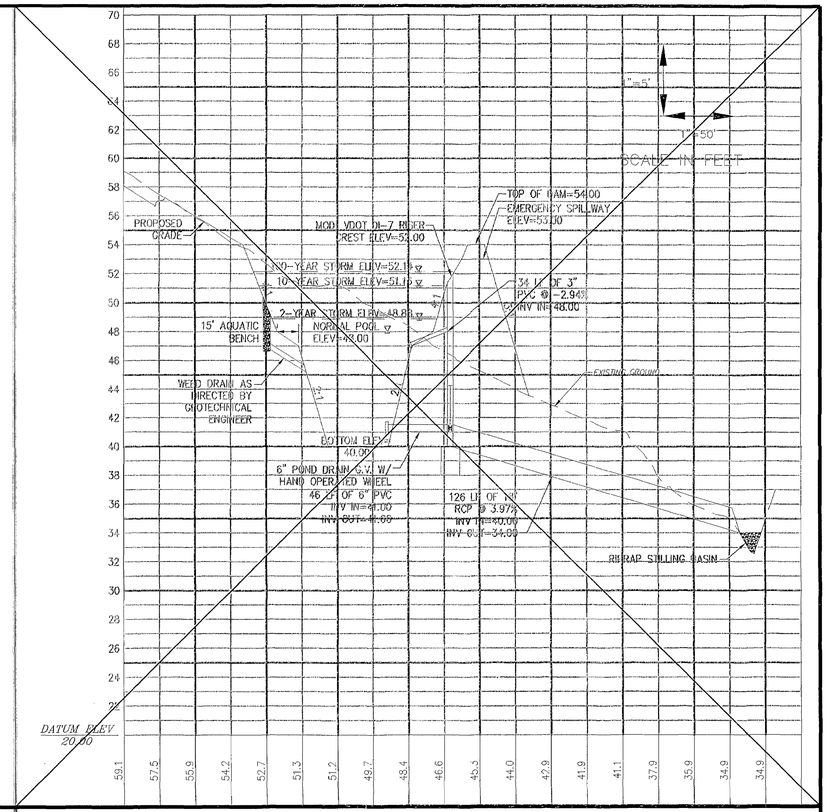
THE FACILITY WILL INITIALLY FUNCTION AS A SEDIMENT BASIN UNITIL J.C.C. ENVIRONMENTAL DIVISION GIVES WRITTEN CONCURRENCE TO MODIFY THE SEDIMENT BASIN. AT SUCH TIME ANY EXCESS EARTH OR SEDIMENT SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. POND CONTOURS SHALL BE REGRADED TO FINAL DESIGN (PER PLANS). THE DEWATERING ORIFICE SHALL BE REMOVED AND THE LOW FLOW ORIFICE VALVE SHALL BE OPENED AND THE MICROPOOL CREATED.

POND NOTES:

1. RISER AND BARREL PIPE SHALL BE WATERTIGHT CLASS III CONCRETE MEETING THE REQUIREMENTS OF ASTM C361.
2. BMP SHALL FUNCTION AS A SEDIMENT BASIN DURING CONSTRUCTION. CONTRACTOR SHALL MONITOR BMP FOR SEDIMENTATION DURING CONSTRUCTION. ONCE WRITTEN DIRECTION TO REMOVE FINAL SEDIMENT CONTROL FEATURES HAS BEEN GIVEN, CONTRACTOR SHALL REMOVE ANY ACCUMULATED SEDIMENT FROM THE FOREBAY AND ESTABLISH AQUATIC PLANTINGS.
3. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER MANAGEMENT POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE SAME.



BMP #1



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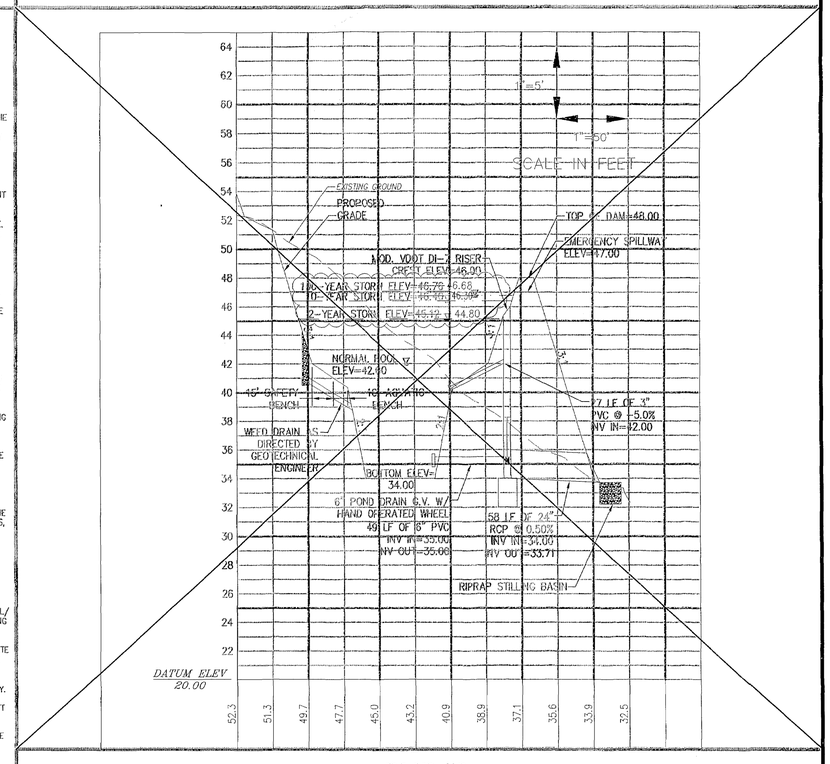

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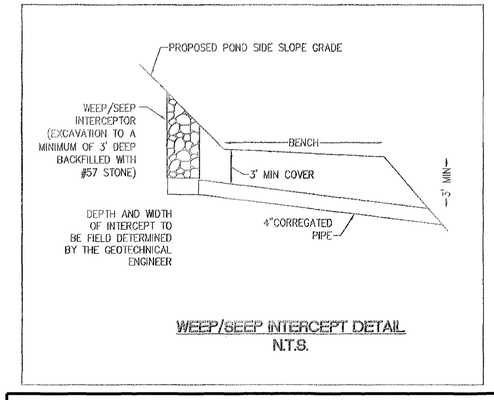

WEEP/SEEP INTERCEPT DETAIL
N.T.S.

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Thomas C. Sublett 3/01/10
THOMAS C. SUBLETT DATE

COMMONWEALTH OF VIRGINIA
3/01/10
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT THE BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST. INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS OR COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING: THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/APPROVAL OF THE COUNTY.

10. YEARLY INSPECTIONS OF SEDIMENT FOREBAYS SHALL BE PERFORMED. AT ANY TIME MORE THAN 2 FEET OF SEDIMENT HAS ACCUMULATED FOREBAYS SHOULD BE DEWATERED AND SEDIMENT REMOVED.

11. SHOULD MAINTENANCE REQUIRE DEWATERING OF THE FACILITY, A DEWATERING DEVICE APPROVED BY THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION SHALL BE USED THAT IS RATED TO HANDLE THE MAXIMUM DISCHARGE OF THE DEWATERING PUMP. DISCHARGE FROM DEWATERING SHALL BE FOCUSED INTO THE DOWNSTREAM OUTLET PROTECTION OR THROUGH THE BMP OUTFALL BARREL.

No.	DATE	REVISION / COMMENT / NOTE	BY
1	3/10	RECORD DRAWINGS	WJB

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
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WILLIAMSBURG • RICHMOND

WETPOND BMP #1 AS-BUILT
MARYWOOD SUBDIVISION

JAMESTOWN DISTRICT — JAMES CITY COUNTY — VIRGINIA

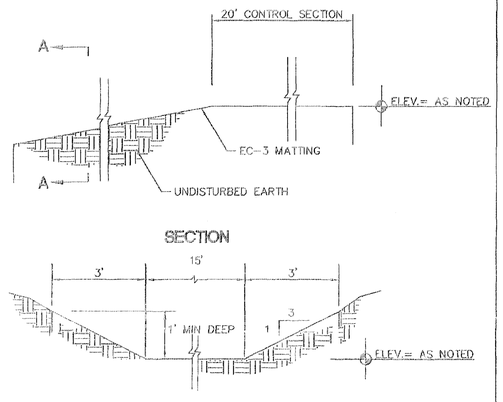
Designed	Drawn
AES	JFS
Scale	Date
NOTED	3/01/10

Project No. 9272

Drawing No. 30

RECORD DRAWING-3/10

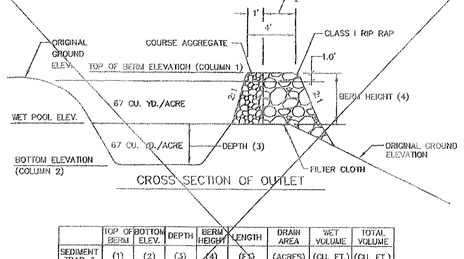
Use the outer circles for creating the view named "PlotHalf" to be used with the JDL 5000 plotter for Half scale plots
Use the inner circles for creating the view named "PlotHalf" to be used with the JDL 5000 plotter



CROSS-SECTION AT CONTROL SECTION

EMERGENCY SPILLWAY

N.T.S.



CROSS SECTION OF OUTLET

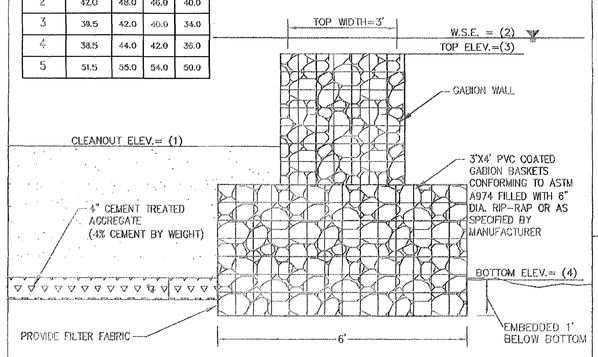
SEDIMENT TRAP #	TOP OF BERM (1)	BOTTOM ELEV. (2)	DEPTH (3)	BERM HEIGHT (4)	LENGTH (FT)	DRAIN AREA (ACRES)	WET VOLUME (CU. FT.)	TOTAL VOLUME (CU. FT.)
1	52.0	49.0	2'	2'	6.0	0.77	3,849	6,383
2	48.0	44.0	2'	2'	15.0	2.94	6,102	14,219
3	50.0	46.0	2'	2'	14.0	2.30	4,028	5,618
4	50.0	46.0	2'	2'	18.0	2.98	5,319	7,119
5	66.0	62.0	2'	2'	9.0	1.44	3,413	8,196
6	64.0	60.0	2'	2'	13.0	2.05	3,922	6,822
7	70.0	66.0	2'	2'	6.0	0.86	3,360	7,482
8	54.0	50.0	2'	2'	14.0	2.30	4,440	10,497

8T

SEDIMENT TRAP

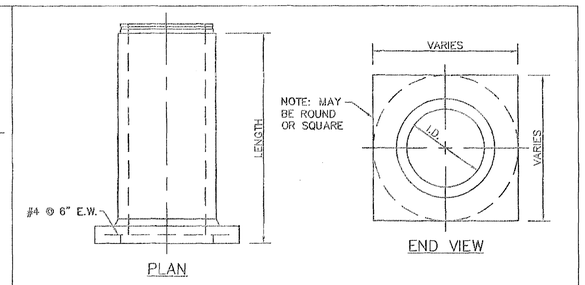
N.T.S.

BMP #	(1) CLEANOUT ELEV.	(2) W.S.E.	(3) TOP ELEV.	(4) BOTTOM ELEV.
1	38.5	44.07	42.0	36.2
2	42.0	48.0	46.0	40.0
3	39.5	42.0	40.0	34.0
4	38.5	44.0	42.0	36.0
5	51.5	55.0	54.0	50.0



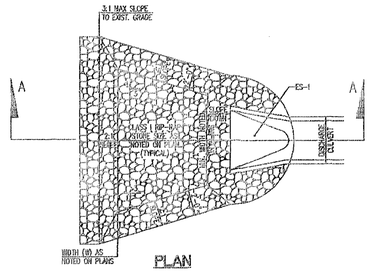
FOREBAY BARRIER

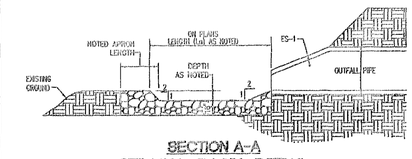
N.T.S.



PRE-CAST CONCRETE ANTI-SEEP COLLAR

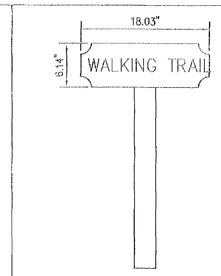
N.T.S.





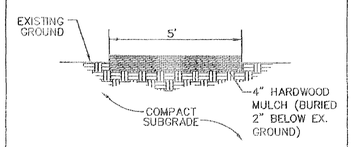
SECTION A-A
STILLING BASIN DETAIL

NOT TO SCALE



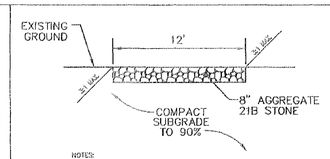
WALKING TRAIL SIGN DETAIL

N.T.S.



PASSIVE RECREATION TRAIL

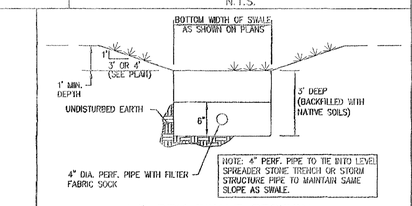
N.T.S.



NOTES:
1. ROADWAY SHALL BE INSTALLED AT A LESS THAN 15% GRADE.
2. ROAD SHALL NOT HAVE A CROSS SLOP IN EXCESS OF 6%

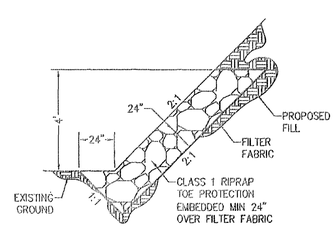
BMP ACCESS ROAD

N.T.S.



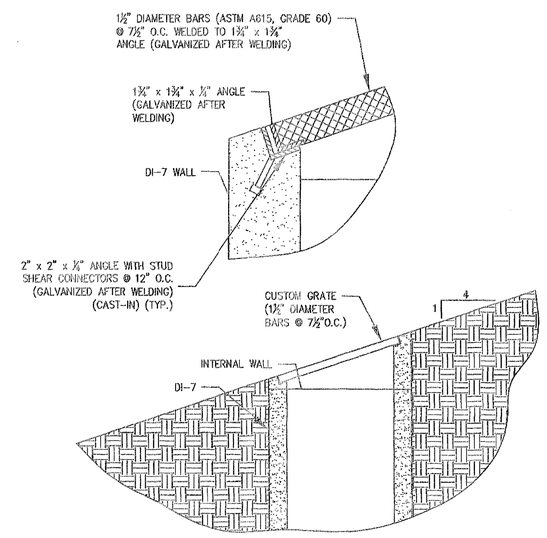
LID DRY SWALE SECTION

NOT TO SCALE



TOE PROTECTION DETAIL

NOT TO SCALE



MODIFIED DI-7 (BMP #1-5) TRASH RACK DETAIL

"THE STORM DRAINAGE AS-BUILT LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

COMMONWEALTH OF VIRGINIA
3/01/10
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

Thomas C. Sublett 3/01/10
THOMAS C. SUBLETT DATE

No.	DATE	REVISION / COMMENT / NOTE	BY
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JAMESTOWN DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
AES	JFS
Scale	Date
NOTED	3/01/10

Project No. 9272

Drawing No. 31

RECORD DRAWING–3/10

Use the outer circles for creating the view named "PlotFull" to be used with the JDL 5000 plotter
Use the inner circles for creating the view named "PlotHalf" to be used with the JDL 5000 plotter for Half scale plots