GC-008

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

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

COPY

COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 9th day of August, 20 07, between JAMES RIVER BAPTIST CHURCH, and all successors in interest, ("COVENANTOR(S),") owner(s) of the following property:

Street Address: 4931 Centerville Rd. Williamsburg, Va. 23188
Legal Description: James River Baptist Church
Project Name: James River Baptist Church/Multi-Ministry Building
Document No. _____, Deed Book 28, 81, & 84 ,Page No. 230, 217, & 551;
Instrument No. _____, and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

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

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

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

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

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

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.

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

Instrument #070024680
Recorded on Sept. 4, 2007

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)

D. Steven Mallory, Trustee

Print Name/Title Douglas S. Mallory, Trustee

ATTEST:

Gwen C. Schatzer

COVENANTOR(S)

Richard W. Aadahl Trustee

Print Name/Title Richard W. Aadahl, Trustee

ATTEST:

Gwen C. Schatzer

COVENANTOR(S)

James H. Richardson Trustee

Print Name/Title James H. Richardson, Trustee

ATTEST:

Gwen C. Schatzer

COMMONWEALTH OF VIRGINIA

~~CITY~~/COUNTY OF James City

I hereby certify that on this 16th day of August, 2007, before the subscribed, a Notary Public of the State of Virginia, personally appeared D.S. Mallory, R.W. Aadahl, & J.H. Richardson and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 16th day of August, 2007.

Gwen C. Schatzman 361448
Notary Public

My Commission expires: 11/30/09

GWEN C. SCHATZMAN
Notary Public
Commonwealth of Virginia
My Commission Exps. Nov. 30, 2009

Approved as to form:

County Attorney

This Declaration of Covenants prepared by:

L Bruce Abbott
(Print Name)

Project Engineer AES
(Title)

5248 Olde Towne Rd.
(Address)

Williamsburg, Va. 23188
(City) (State) (Zip)

(757) 253-0040
(Phone Number)

drainage1.pre

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: Multi-Ministry Building - James River Baptist Church
Structure/BMP Name:
Project Location: 4931 Centerville Road
BMP Location: Southwest Corner of Property
County Plan No.: SP - 044 - 06

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

Tax Map/Parcel No.: 3040100001
BMP ID Code (if known): GCC08
Zoning District: A1
Land Use: Church
Site Area (sf or acres): 5.81

Brief Description of Stormwater Management/BMP Facility: Wet Pond

Nearest Visible Landmark to SWM/BMP Facility: James River Baptist Church Building

Nearest Vertical Ground Control (if known):
☒ JCC Geodetic Ground Control ☐ USGS ☐ Temporary ☐ Arbitrary ☐ Other
Station Number or Name: 313
Datum or Reference Elevation: 97.45
Control Description: A 3 1/4" Disk in concrete located in grass median at Manchester Road.
Control Location from Subject Facility: 0.65 mi. south of site

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: 9/07
Facility Monitored by County Representative during Construction: ☒ Yes ☐ No ☐ Unknown
Name of Site Work Contractor Who Constructed Facility: Reeds Enterprises, LLC
Name of Professional Firm Who Routinely Monitored Construction: ECS Mid-Atlantic, LLC
Date of Completion for SWM/BMP Facility: 5/08
Date of Record Drawing/Construction Certification Submittal: 5/08

(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: James River Baptist Church
Mailing Address: 4931 Centerville Road
Williamsburg, Va. 23188
Business Phone: (757) 258-0303 Fax:
Contact Person: Bruce Abbott 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
Williamsburg, Va. 23188
Business Phone: (757) 253-0040
Fax: (757) 220-8994
Responsible Plan Preparer: Mark Richardson P.E.
Title: Senior Project Manager
Plan Name: Multi-Ministry Building James River Baptist Church
Firm's Project No. 9552
Plan Date: 4/14/06
Sheet No.'s Applicable to SWM/BMP Facility: 1 / 5 / 7 / / /

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

Name: Reeds Enterprises, LLC
Mailing Address: 145 Saw mill road
williamsburg, Va. 23188
Business Phone: (757) 259-9011
Fax: (757) 282-2468
Contact Person: Wayne Reed
Site Foreman/Supervisor: Scott Lindsay
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 Roade
Suite 1, Williamsburg, VA 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: Nicholas Botta, P.E.
Title: Project Engineer

Signature:
Date: 8-21-08

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
NICHOLAS BOTTA
Lic. No. 024730
8-21-08
PROFESSIONAL ENGINEER

_____ (Seal)

Virginia Registered Professional Engineer
Or Certified Land Surveyor

Construction Certification

Firm Name: ECS Mid-Atlantic,LLC
Mailing Address: 108 Ingram Road, Unit 1
Williamsburg, Va. 23188
Business Phone: (757) 229-6677
Fax: (757) 229-9978

Name: Michael J. Galli
Title: Vice President

Signature:
Date: 6/2/08

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
MICHAEL J. GALLI
Lic. No. 030684
6/2/08
PROFESSIONAL ENGINEER

_____ (Seal)

Virginia Registered
Professional Engineer

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

Project Name: James River Baptist Church
County Plan No.: SP-044-06
Stormwater Management Facility: GC008
BMP Phase #: ☐ I ☐ II ☐ III
- ☐ Information Package Received. Date/By: 8-26-08
- ☐ Completeness Check:
  - ☑ Record Drawing — Date/By: 8-26-08 (resubmitted) AES
  - ☑ Construction Certification — Date/By: 8-26-08 ECS
  - ☑ BD/CC Standard Forms (Required for all BMPs after Feb 1st 2001Only)
  - ☑ Insp/Maint Agreement # / Date: 8/9/07
  - ☑ BMP Maintenance Plan Location: Sheet 7 - approved plan
  - ☐ Other:
- ☑ Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
  - ☑ Yes ☐ No — Location: Sheet 7 - approved plan
- ☑ Assign **County BMP ID Code #**: Code: GC008
- ☑ Preliminary Input/Log into Division's "As-Built Tracking Log"
- ☑ Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
- ☑ Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
- ☑ Active Project File Review (correspondence, H&H, design computations, etc.).
- ☑ Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.).
- ☑ Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
- ☑ Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
- ☑ Final Inspection (FI) Performed — Date: 12/3/08
- ☑ Record Drawing (RD) Review — Date: 9/08
- ☑ Construction Certification (CC) Review — Date: 9/08
- ☑ Actions:
  - ☑ No comments.
  - ☐ Comments. Letter Forwarded. Date:
  - ☐ Record Drawing (RD)
  - ☐ Construction Certification (CC)
  - ☐ Construction-Related (CR)
  - ☐ Site Issues (SI)
  - ☐ Other :
- ☑ Second Submission: 6/08 & 8/08
- ☑ Reinspection (if necessary): all reinspections completed as of 12/3/08
- ☑ Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
- ☑ Complete "Surety Request Form".
- ☑ Check/Clean active file of any remaining material and finish "As-Built" file.
- ☑ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
- ☑ Copy Final Inspection Report into County BMP Inspection Program file.
- ☑ Obtain Digital Photographs of BMP and save into County BMP Inventory.
- ☑ Request mylar/reproducible from As-Built plan preparer.
- ☑ Complete "As-built Tracking Log".
- ☐ Last check of BMP Access Database (County BMP Inventory).
- ☐ Add BMP to JCC Hydrology & Hydraulic database (optional).
- ☐ Add BMP to Municipal BMP list (if a County-owned facility)
- ☐ Add BMP to PRIDE BMP ratings database.

Final Sign-Off

Inspector: [signature] Date: 12/4/08

Chief Engineer: [signature] Date: 12/4/08

*** See separate checklist, if needed.

RECEIVED
AUG 20 2008
ENVIRONMENTAL DIVISION

BMP RECORD DRAWING

FOR

MULTI-MINISTRY BUILDING

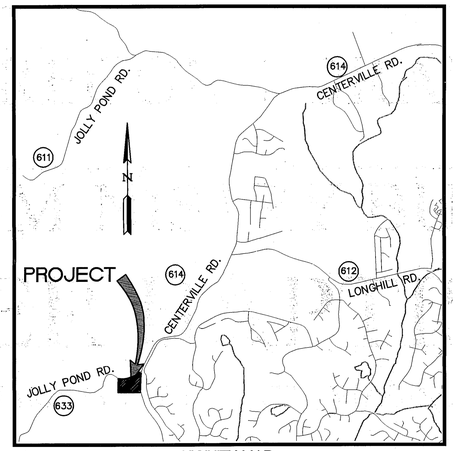
JAMES RIVER BAPTIST CHURCH

JAMES CITY COUNTY, VIRGINIA

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	FM
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
SCO	AIR RELEASE ASSEMBLY	
	CLEAN OUT	
WM	WATER METER	
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EXISTING TREELINE	
	LIMITS OF CLEARING	
	RIP RAP	
	CURB	
	CURB AND GUTTER	
	REVERSE GUTTER PAN	
	EDGE OF PAVEMENT	
125.1	EXISTING GROUND ELEVATION	
	PROPOSED SPOT GRADE	TC0.00
80	CONTOUR	80
	HIGH POINT	HP
	LOW POINT	LP

INDEX OF SHEETS



VICINITY MAP

VICINITY MAP (APPROX. SCALE 1"=2000')
JCC SP-044-06

DATE: APRIL 14, 2006
AES PROJECT NO.: 9552-00

"THE BMP AND DRAINAGE STRUCTURE 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
7/31/2008
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

Thomas C. Sublett 7/31/08
THOMAS C. SUBLETT DATE

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

GENERAL NOTES

1. OWNER: TRUSTEES OF JAMES RIVER BAPTIST CHURCH
   4931 CENTERVILLE ROAD
   WILLIAMSBURG, VIRGINIA 23188
   TAX MAP PARCEL #(30-4)(1-1)
   CONTACT: CHARLES HENRY
   5021 JOHN TYLER HIGHWAY
   WILLIAMSBURG, VIRGINIA 23185
   (757)-229-1048
2. THE SITE IS CURRENTLY ZONED GENERAL AGRICULTURAL DISTRICT, A-1.
3. PROPOSED 1 STORY BUILDING WITH AVERAGE HEIGHT OF 21'-4".
4. THIS SITE LIES WITHIN THE GORDON CREEK WATERSHED.
5. ALL UTILITIES SHALL BE PLACED UNDERGROUND.
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SHALL NOTIFY MISS UTILITY (1-800-552-7001) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION OR DEMOLITION.
7. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO ALL SITE CONDITIONS PRIOR TO CONSTRUCTION.
8. EXISTING UTILITY LOCATIONS INDICATED ARE APPROXIMATE. FIELD VERIFY PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCEMENT OF WORK TO INCLUDE, BUT NOT LIMITED TO JAMES CITY COUNTY LAND DISTURBANCE, BUILDING, UTILITY (JCSA).
10. A LAND DISTURBING PERMIT AND SILTATION AGREEMENT, WITH SURETY ARE REQUIRED FOR THIS PROJECT BY OWNER.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF CONSTRUCTION EFFORTS WITH VIRGINIA NATURAL GAS, VIRGINIA POWER, VERIZON TELEPHONE, APPROPRIATE CABLE COMPANY, JAMES CITY SERVICE AUTHORITY, AND OTHERS THAT MAY BE REQUIRED.
12. CONTOUR INTERVAL IS 1 FOOT.
13. BENCHMARK: JAMES CITY COUNTY STATION NO. 313
    EASTING(X) 11977685.399, NORTHING(Y) 3634781.641, ELEVATION 97.45
    HORIZONTAL DATUM: JAMES CITY COUNTY GEODETIC CONTROL NETWORK
    VIRGINIA STATE PLANE COORDINATE SYSTEM - SOUTH ZONE
    NAD 83 (1994 VA HARN)
    VERTICAL DATUM: JAMES CITY COUNTY
    GEODETIC CONTROL NETWORK, NGVD 29
14. ANY EXISTING, UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
15. STORM STRUCTURES, PIPING, AND BEDDING SHALL CONFORM TO THE VDOT ROAD AND BRIDGE STANDARDS AND VDOT SPECIFICATIONS. ALL STRUCTURES SHALL HAVE INLET SHAPING IN ACCORDANCE WITH IS-1 AND STEPS IN ACCORDANCE WITH ST-1. ALL PIPE BEDDING SHALL BE IN ACCORDANCE WITH PB-1 AND MANUFACTURER'S SPECIFICATIONS AND GUIDELINES.
16. STORM PIPES SPECIFIED AS HDPE SHALL BE HIGH DENSITY POLYETHYLENE CONFORMING TO AASHTO M-294, TYPE S SPECIFICATIONS AND HAVE A SMOOTH INNER WALL. PIPE CONNECTIONS SHALL BE WATERTIGHT USING GASKETS AND GROUT. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND MANUFACTURER'S RECOMMENDATIONS.
17. ALL OBJECTIONABLE AND DELETERIOUS MATERIAL IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN A STATE APPROVED FACILITY MEETING THE REQUIREMENTS OF ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
18. THE STORMWATER MANAGEMENT/BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS/HER INSPECTION OF THE SWM/BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM/BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.
19. THE CONTRACTOR SHALL REFER TO THE "REPORT OF SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING ANALYSIS" BY ECS MID-ATLANTIC, LLC, DATED JULY 28, 2006 FOR CONSTRUCTION SPECIFICATIONS.

LAND USE SUMMARY TABLE

TOTAL SITE AREA	=	253,248 S.F.-100% 5.81 A.C.
EXISTING BUILDING	=	10,108 S.F.- 4.0%
PROPOSED BUILDING	=	9,683 S.F.- 3.8%
TOTAL BUILDING	=	19,791 S.F.- 7.8%
EXISTING IMPERVIOUS AREA	=	36,359 S.F.- 14.4%
PROPOSED IMPERVIOUS AREA *	=	27,076 S.F.- 10.7%
TOTAL IMPERVIOUS AREA * (* INCLUDES GRAVEL)	=	63,435 S.F.- 25.1%
EXISTING OPEN SPACE AREA	=	206,781 S.F.- 81.6%
PROPOSED OPEN SPACE AREA	=	170,022 S.F.- 67.1%
DISTURBED AREA	=	2.40 A.C.

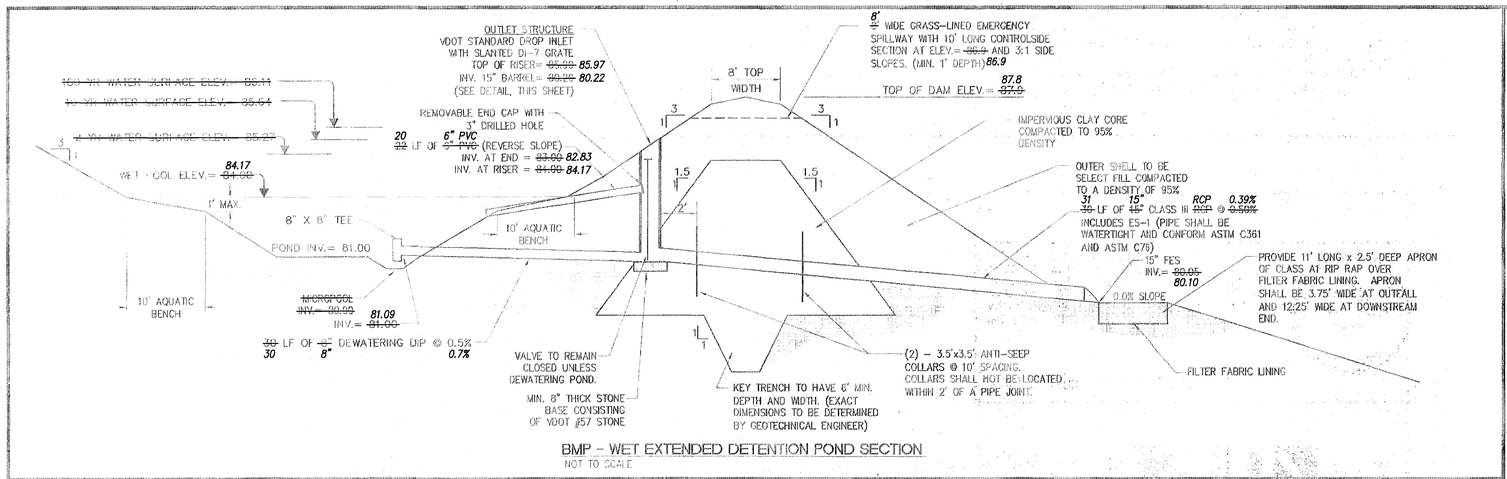
PARKING

86 EX. PARKING SPACES INCLUDES (2) HANDICAPPED
- 4 EX. PARKING SPACES (DELETED)
+ 38 NEW PAVED SPACES INCLUDES (4) HANDICAPPED
+ 15 NEW GRAVEL SPACES
=135 TOTAL INCLUDES (6) HANDICAPPED

APPROVAL DATE	No.	DATE		BY
	3	7/12/07	REVISED PER JCSA COMMENTS	LBA
	2	12/8/06	REVISED PER COUNTY COMMENTS	BBS
	1	8/25/06	REVISED PER COUNTY COMMENTS	BBS

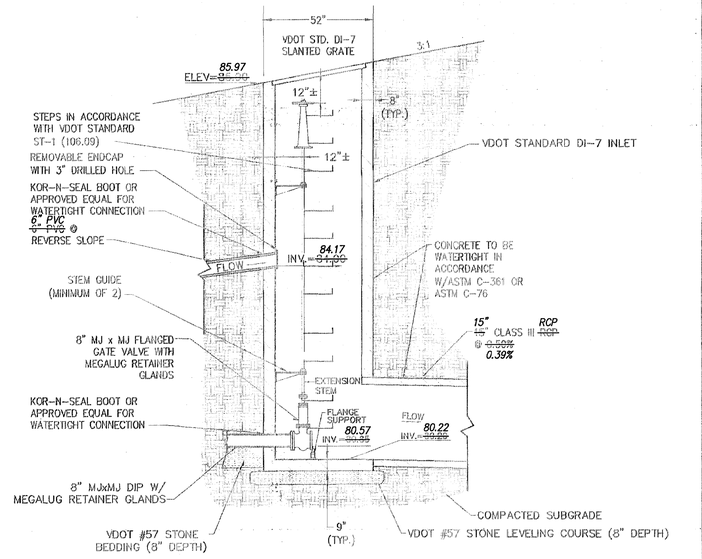
JAMES RIVER BAPTIST CHURCH
JOB # 9552-00

RECORD DRAWINGS.: 7/31/2008



BMP - WET EXTENDED DETENTION POND SECTION

NOT TO SCALE



CROSS SECTION

BMP OUTFALL STRUCTURE

NOT TO SCALE

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 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 AREAS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE SWM 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.

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. IF THE SEDIMENT REACHES THE DEPTH OF 1.5 FT. ABOVE THE BOTTOM OF SEDIMENT FOREBAY (i.e. CLEANOUT ELEVATION 82.5), REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, CLEAN THE RISER BOTTOM AND OUTLET PIPE OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA.
2. PERFORM MAINTENANCE MOWING OF POND GRASSES 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.
3. PERFORM SOIL SAMPLING ON STABILIZED POND 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 POND AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACE, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDING AS LISTED IN THE DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME, FERTILIZE AND OVERSEED IN ACCORDANCE WITH THE CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VESCH.
5. PERFORM QUARTERLY INSPECTIONS OF THE 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.
6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, 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 INTEGRITY OF THE STRUCTURE.
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE DETENTION FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.
8. PERFORM YEARLY OBSERVATIONS OF PERIMETER AREAS SURROUNDING THE FACILITY TO ENSURE CHANGES IN LAND USE, TOPOGRAPHY OR ACCESS HAVE NOT OCCURRED AND DO NOT AFFECT THE OPERATION, MAINTENANCE, ACCESS OR SAFETY FEATURES AS PROVIDED. APPROPRIATE ACTION IS REQUIRED TO ENSURE ADEQUACY AND TO PROVIDE A CLEAR, SAFE PASSAGE FOR MAINTENANCE VEHICLES TO THE EMBANKMENT AND PRINCIPLE FLOW CONTROL STRUCTURES.
9. INSPECT AND EXERCISE POND DRAIN VALVE ON AN ANNUAL BASIS.
10. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT THE REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
11. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/ APPROVAL OF JAMES CITY COUNTY.
12. DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AFTER THE FIRST GROWING SEASON. THE POND SLOPE SHOULD BE MAINTAINED IN A NATURAL STATE WITH THE EXCEPTION THAT CHOKING VINES AND NON-NATIVE INVASIVE SPECIES SHOULD BE REMOVED BY HAND METHODS ONLY AT THE ONSET OF THE SECOND GROWING SEASON.

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, MATERIALS, 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 THE PROPERTY. 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 AN AREA ON THE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS 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. 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 8-INCH LOOSE THICKNESS 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 RECOMMENDATIONS. 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 CL OR CH, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE CL OR CH CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 8-INCH LOOSE THICKNESS LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, MOISTURE CONDITIONED TO WITHIN -1%/+3% OF THE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A MINIMUM 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.
7. IN ORDER TO MAINTAIN A WET POOL, THE BOTTOM SURFACE OF THE BMP, ALONG WITH THE SIDE SLOPES TO A HEIGHT AT LEAST 4 FEET ABOVE THE BOTTOM, SHALL CONSIST OF A LAYER OF LOW PERMEABILITY SOIL, SUCH AS CL OR CH, AT LEAST 2 FEET THICK. IF A WET POOL IS UNABLE TO BE ESTABLISHED AND MAINTAINED, THE CONTRACTOR SHALL EXCAVATE THE BOTTOM MATERIAL AND REINSTALL A LOW PERMEABILITY SOIL AT THE DIRECTION OF THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER.
8. THE STORMWATER MANAGEMENT/BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS/HER INSPECTION OF THE SWM/BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM/BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STOEMWATER MANAGEMENT/BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.

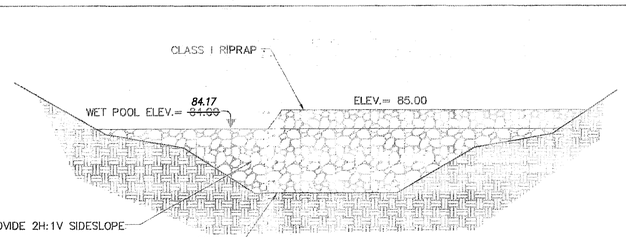
DAM CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL REFER TO THE "REPORT OF SUBSURFACE AND GEOTECHNICAL ENGINEERING ANALYSIS" PREPARED BY ECS MID-ATLANTIC, LLC, DATED JULY 28, 2006 FOR SPECIFICATIONS ON THE CONSTRUCTION OF THE BMP FACILITY, INCLUDING THE EMBANKMENT.
2. THE GEOTECHNICAL SUBSURFACE EXPLORATION REPORT AT THE PROPOSED DAM SITE HAS BEEN PERFORMED TO ENSURE SUITABILITY OF THE SUBGRADE. THE GEOTECHNICAL INVESTIGATION HAS DETERMINED THE SUITABILITY OF THE FILL MATERIAL. THESE RECOMMENDATIONS ARE HEREBY MADE A PART OF THE DAM'S CONSTRUCTION SPECIFICATIONS. A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT SHALL BE ON SITE DURING CONSTRUCTION TO ENSURE PROPER MATERIALS AND DAM CONSTRUCTION METHODS ARE UTILIZED. FOLLOWING DAM CONSTRUCTION, THE GEOTECHNICAL CONSULTANT SHALL PROVIDE WRITTEN DOCUMENTATION, SIGNED BY A PROFESSIONAL ENGINEER, THAT THE DAM WAS BUILT IN ACCORDANCE WITH THEIR RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. THE GEOTECHNICAL CONSULTANT SHALL COORDINATE WITH THE DESIGN ENGINEER IN ORDER TO COMPLETE THE JCC ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BMP FACILITIES CONSTRUCTION AND AS-BUILT CERTIFICATION FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE DAM CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL CONSULTANT IN ORDER TO ENSURE ON-SITE MONITORING.
3. SITE PREPARATION:
THE CONTRACTOR SHALL STRIP ALL AREAS OF THE PERMANENT COVER IN CONSTRUCTION AREA TO REMOVE ALL UNSUITABLE MATERIALS. THE UNSUITABLE MATERIALS TO BE REMOVED BY STRIPPING SHALL INCLUDE ALL TOPSOIL, DEBRIS AND VEGETATIVE MATTER, INCLUDING STUMPS AND ROOTS, AND ALL OTHER MATERIALS WHICH MAY BE UNSUITABLE FOR USE IN THE PERMANENT CONSTRUCTION.
4. EMBANKMENT:
THE EXPOSED SUB GRADE SOILS SHALL BE CAREFULLY INSPECTED BY THE GEOTECHNICAL ENGINEER. ANY UNSUITABLE MATERIALS THUS EXPOSED SHALL BE REMOVED AND REPLACED WITH A WELL COMPACTED, SUITABLE MATERIAL. DENSITY TESTING, AT THE DISCRETION OF THE OWNER/GEOTECHNICAL ENGINEER, SHALL BE PERFORMED AT THIS TIME. THE EMBANKMENT SHALL BE KEYED INTO THE UNDISTURBED (EXISTING) SOIL STRATUM. EMBANKMENT SHOULD BE KEYED AT LEAST 4 FEET INTO THE STRATUM OR AS SPECIFIED BY THE GEOTECHNICAL ENGINEER (WIDTH=8 FT. MIN.) THE EMBANKMENT FOUNDATION AND ABUTMENTS SHALL BEAR ON FIRM AND STABLE EXISTING SUB-GRADE WHICH HAS BEEN PREPARED SO AS TO REMOVE ALL ORGANIC, LOOSE, AND GENERALLY UNSUITABLE MATERIAL. ALL MATERIALS TO BE USED FOR BACKFILL OR COMPACTED FILL SHALL BE INSPECTED AND, IF NECESSARY, TESTED BY THE GEOTECHNICAL ENGINEER IN ACCORDANCE WITH ASTM D2487 PRIOR TO PLACEMENT, TO DETERMINE IF THEY ARE SUITABLE FOR THE INTENDED USE. THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREAS. IT SHALL BE CLEAN MINERAL SOIL FREE OF ROOTS, WOOD VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIALS. MATERIALS TO BE USED FOR THE CONSTRUCTION OF THE SHELL SHALL BE SELECT BACKFILL FREE OF STUMPS, ROOTS, ROCKS, TRASH, ETC. AND SHALL BE MORE PERVIOUS THAN THE IMPERVIOUS CLAY CORE. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED A MINIMUM OF 4 INCHES PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL'S MOISTURE CONTENT SHALL BE +/-3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D2216. ALL MATERIAL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND IN CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL. FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN ACCORDANCE WITH ASTM SPECIFICATION D-698, STANDARD PROCTOR METHOD. FINISHED GRADES SHALL BE MERGED NATURALLY INTO THE EXISTING GRADES AND NOT EXCEED A SLOPE GREATER THAN 3:1.
5. CUTOFF TRENCH/KEY TRENCH:
THE TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE MINIMUM DEPTH SHALL BE AS SHOWN ON THE PLANS AND SHALL EXTEND UP BOTH ABUTMENTS. THE BOTTOM WIDTH SHALL BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTING EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1.
6. PRINCIPAL SPILLWAY:
THE BOTTOM OF THE SPILLWAY RISER FOUNDATION BASE EXCAVATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE FOUNDATION'S BASE. ALL JOINTS IN THE PRINCIPAL SPILLWAY STRUCTURE SHALL BE WATERTIGHT CONSTRUCTION. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL OR ANTI-SEEP COLLARS. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. VEGETATIVE STABILIZATION:
FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETATIVE COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL:	AT LEAST 4" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.
LIME:	4,000#/ACRE (90#/1,000 S.F.)
SEED:	KENTUCKY 31 TALL FESCUE 250#/ACRE (8#/1,000 S.F.)
FERTILIZER:	10/10/10 MIX, 1,000#/ACRE FALL (23#/1,000 S.F.)
MULCH:	STRAW OR HAY (LOCALLY OBTAINED) 4,000#/ACRE (90#/1,000 S.F.)

CONSTRUCTION SEQUENCE

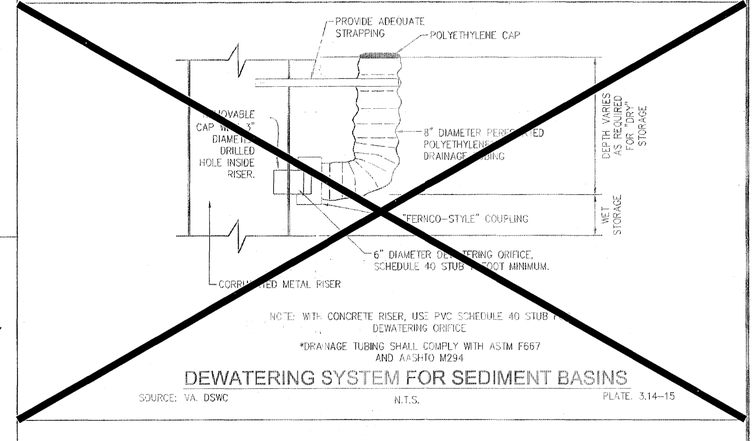
1. PRIOR TO OBTAINING LAND DISTURBING PERMIT, THE CONTRACTOR SHALL OBTAIN A VSMP PERMIT (VIRGINIA STORMWATER MANAGEMENT PROGRAM) FROM DCR (VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION).
2. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION PRIOR TO BEGINNING ANY WORK AT THE SITE.
3. CONTACT "MISS UTILITY" FOR PUBLIC SERVICES AND HAVE A PRIVATE UTILITY LOCATOR FOR PRIVATE SERVICES.
4. INSTALL CONSTRUCTION ENTRANCE, SAFETY FENCE, SILT FENCE, AND TREE PROTECTION.
5. INSTALL SEDIMENT BASIN (SEE DAM CONSTRUCTION NOTES) AND DIVERSION DIKE WITH RIPRAP-LINED CHANNEL.
6. INSTALL GRASS LINED CHANNEL TO RIPRAP-LINED CHANNEL IN SEDIMENT BASIN.
7. CLEAR AND GRUB REMAINDER OF SITE, AND DEMOLISH AND REMOVE ALL DEMOLITION ITEMS.
8. INSTALL UTILITIES AND STORM SEWER.
9. GRADE PARKING LOT AND INSTALL FILL DIVERSION PER VESCH SPEC. 3.10 AND RIGHT-OF-WAY DIVERSION PER VESCH SPEC. 3.11. ADJUST DIVERSIONS DURING FILL OPERATION.
10. PREPARE BUILDING PAD AND ADJUST DIVERSIONS AS NECESSARY.
11. CONSTRUCT BUILDING.
12. CONSTRUCT PROPOSED SIDEWALKS, CURB, AND CURB & GUTTER.
13. CONSTRUCT PARKING LOT AND STRIPING.
14. PREPARE FINAL GRADING AND PLANT LANDSCAPING.
15. PLANT PERMANENT SEEDING AND MULCH.
16. PROVIDE FINAL CLEANOUT OF SEDIMENT BASIN AND CONVERT TO BMP AFTER FINAL SITE STABILIZATION.
17. REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES WITHIN THIRTY DAYS OF FINAL SITE STABILIZATION, BUT ONLY AFTER APPROVAL IS OBTAINED FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL INSPECTOR.



FOREBAY BARRIER

BMP SECTION A-A

NOT TO SCALE



NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

*DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

DEWATERING SYSTEM FOR SEDIMENT BASINS

SOURCE: VA. DSWC N.T.S. PLATE. 3.14-15

No.	DATE	REVISION / COMMENT / NOTE	BY
3	7/12/07	REVISED PER VDSA COMMENTS	LBA
2	12/8/06	REVISED PER COUNTY COMMENTS	SBS
1	8/25/06	REVISED PER COUNTY COMMENTS	SBS

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

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND • GLOUCESTER

STORMWATER MANAGEMENT/BMP PLAN

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

JAMES CITY COUNTY VIRGINIA

POWHATAN DISTRICT

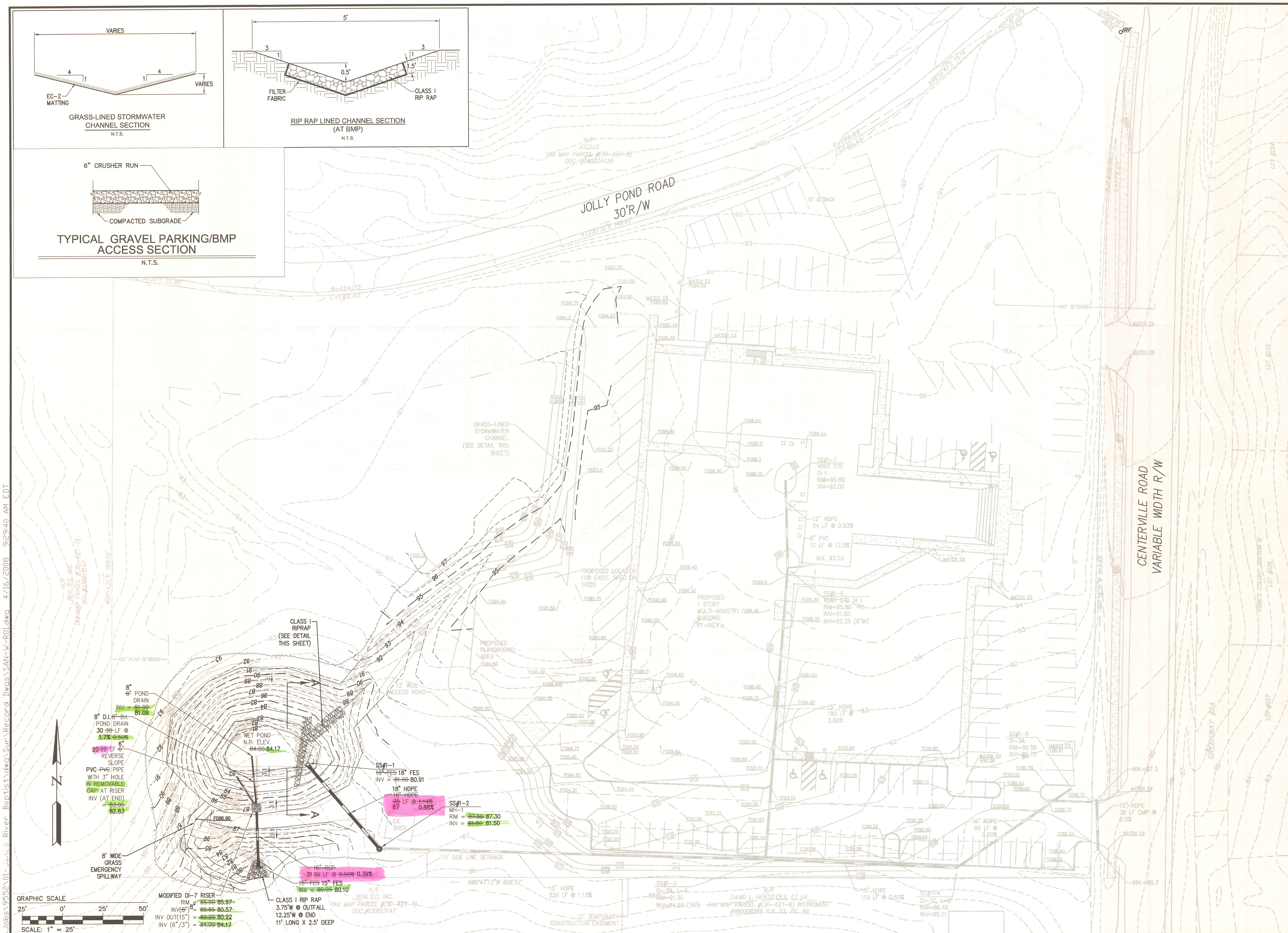
Designed	Drawn
NB	LBA
Scale	Date
N.T.S	4/14/06

Project No. 9552

Drawing No. 7 AS-BUILT

S:\Jobs\9552\01-James River Baptist\dwg\Sur\Record Dwgs\SAN-W-R01.dwg 4/16/2008 9:29:40 AM EDT

RECORD DRAWINGS.: 7/31/2008



VARIES
EC-2 MATTING
GRASS-LINED STORMWATER CHANNEL SECTION
N.T.S.
5'
0.5'
1.5'
FILTER FABRIC
CLASS I RIP RAP
RIP RAP LINED CHANNEL SECTION
(AT BMP)
N.T.S.
6" CRUSHER RUN
COMPACTED SUBGRADE
TYPICAL GRAVEL PARKING/BMP ACCESS SECTION
N.T.S.
JOLLY POND ROAD
30'R/W
CENTERVILLE ROAD
VARIABLE WIDTH R/W
GRASS-LINED STORMWATER CHANNEL (SEE DETAIL THIS SHEET)
PROPOSED LOCATION FOR EXIST. SHED ON SKIDS
PROPOSED 1 STORY MULTI-MINISTRY BUILDING
PROPOSED PLAYGROUND AREA
12' WIDE ACCESS ROAD
CLASS I RIPRAP (SEE DETAIL THIS SHEET)
SS#1-7 VDOT STD DI I RIM=95.80 INV=92.00
12" HDPE 54 LF @ 0.93%
6" PVC 10 LF @ 12.5%
INV. 93.5±
SS#1-6 VDOT STD DI I RIM=95.80 INV=91.50 INV=92.25 (6"IN)
15" HDPE 180 LF @ 3.89%
SS#1-5 DI-3A RIM=89.55 INV=88.73
15" HDPE 32 LF CMP @ 2.0%
15" HDPE 86 LF @ 0.60%
15" HDPE 238 LF @ 1.13%
15" HDPE 119 LF @ 0.60%
SS#1-3
SS#1-4
8" POND DRAIN INV = 81.00 81.09
8" D.I.6" D.I. POND DRAIN 30 LF @ 1.7% 0.56%
20 LF 6" REVERSE SLOPE PVC PIPE WITH 3" HOLE IN REMOVABLE CAP AT RISER INV (AT END) = 83.00 82.83
WET POND N.P. ELEV. 84.00 84.17
SS#1-1 18" FES 18" FES INV = 81.00 80.91
18" HDPE 67 LF @ 0.88%
SS#1-2 MH-1 RIM = 87.50 87.30 INV = 81.80 81.50
15" RCP 31 LF @ 0.39%
15" FES 15" FES INV = 80.05 80.10
8' WIDE GRASS EMERGENCY SPILLWAY
MODIFIED DI-7 RISER RIM = 85.00 85.97 INV(8") = 80.65 80.57 INV OUT(15") = 80.20 80.22 INV (6"/3") = 84.00 84.17
CLASS I RIP RAP 3.75'W @ OUTFALL 12.25'W @ END 11' LONG X 2.5' DEEP
15' SIDE LINE SETBACK
10' TEMPORARY CONSTRUCTION EASEMENT
N/F REALTEC, INC.
N/F DAVID L. HERTZLER,II, ET UX
N
GRAPHIC SCALE
25' 0' 25' 50'
SCALE: 1" = 25'
S:\Jobs\9552\01-James River Baptist\dwg\Sur\Record Dwgs\SAN-W-R01.dwg 4/16/2008 9:29:40 AM EDT

RECORD DRAWINGS.: 7/31/2008

No.	DATE	REVISION / COMMENT / NOTE	BY

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

RECORD DRAWING
SITE & UTILITIES PLAN
MULTI-MINISTRY BUILDING
JAMES RIVER BAPTIST CHURCH

POWHATAN DISTRICT — JAMES CITY COUNTY — VIRGINIA

Designed	Drawn
AES	MEG
Scale	Date
1"=25'	4/14/06
Project No.	
9552	
Drawing No.	
5 AS-BUILT	

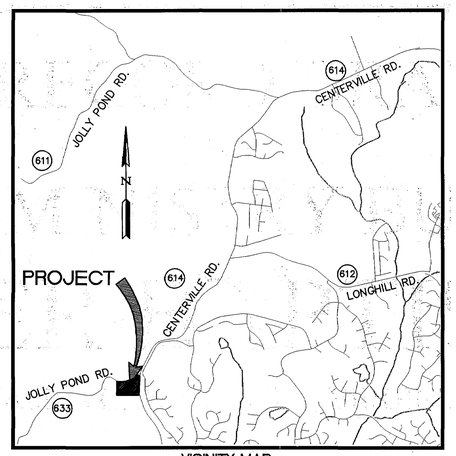
RECEIVED
AUG 26 2008
ENVIRONMENTAL DIVISION

BMP RECORD DRAWING
FOR
MULTI-MINISTRY BUILDING
JAMES RIVER BAPTIST CHURCH
JAMES CITY COUNTY, VIRGINIA

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	FM
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
SCO	CLEAN OUT	
WM	WATER METER	
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EXISTING TREELINE	
	LIMITS OF CLEARING	
	RIP RAP	
	CURB	
	CURB AND GUTTER	
	REVERSE GUTTER PAN	
	EDGE OF PAVEMENT	
123.1	EXISTING GROUND ELEVATION	
	PROPOSED SPOT GRADE	TC0.00
80	CONTOUR	80
	HIGH POINT	HP
	LOW POINT	LP

INDEX OF SHEETS



VICINITY MAP

VICINITY MAP (APPROX. SCALE 1"=2000')
JCC SP-044-06

DATE: APRIL 14, 2006
AES PROJECT NO.: 9552-00

"THE BMP AND DRAINAGE STRUCTURE 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
7/31/2008
THOMAS C. SUBLETT
No. 1886
LAND SURVEYOR

THOMAS C. SUBLETT — DATE 7/31/08

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

GENERAL NOTES

1. OWNER: TRUSTEES OF JAMES RIVER BAPTIST CHURCH
4931 CENTERVILLE ROAD
WILLIAMSBURG, VIRGINIA 23188
TAX MAP PARCEL #(30-4)(1-1)
CONTACT: CHARLES HENRY
5021 JOHN TYLER HIGHWAY
WILLIAMSBURG, VIRGINIA 23185
(757)-229-1048
2. THE SITE IS CURRENTLY ZONED GENERAL AGRICULTURAL DISTRICT, A-1.
3. PROPOSED 1 STORY BUILDING WITH AVERAGE HEIGHT OF 21'-4".
4. THIS SITE LIES WITHIN THE GORDON CREEK WATERSHED.
5. ALL UTILITIES SHALL BE PLACED UNDERGROUND.
6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SHALL NOTIFY MISS UTILITY (1-800-552-7001) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION OR DEMOLITION.
7. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO ALL SITE CONDITIONS PRIOR TO CONSTRUCTION.
8. EXISTING UTILITY LOCATIONS INDICATED ARE APPROXIMATE. FIELD VERIFY PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCEMENT OF WORK TO INCLUDE, BUT NOT LIMITED TO JAMES CITY COUNTY LAND DISTURBANCE, BUILDING, UTILITY (JCSA).
10. A LAND DISTURBING PERMIT AND SILTATION AGREEMENT, WITH SURETY ARE REQUIRED FOR THIS PROJECT BY OWNER.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF CONSTRUCTION EFFORTS WITH VIRGINIA NATURAL GAS, VIRGINIA POWER, VERIZON TELEPHONE, APPROPRIATE CABLE COMPANY, JAMES CITY SERVICE AUTHORITY, AND OTHERS THAT MAY BE REQUIRED.
12. CONTOUR INTERVAL IS 1 FOOT.
13. BENCHMARK: JAMES CITY COUNTY STATION NO. 313
EASTING(X) 11977685.399, NORTHING(Y) 3834781.641, ELEVATION 97.45
HORIZONTAL DATUM: JAMES CITY COUNTY GEODETIC CONTROL NETWORK
VIRGINIA STATE PLANE COORDINATE SYSTEM - SOUTH ZONE
NAD 83 (1994 VA HARN)
VERTICAL DATUM: JAMES CITY COUNTY
GEODETIC CONTROL NETWORK, NGVD 29
14. ANY EXISTING, UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
15. STORM STRUCTURES, PIPING, AND BEDDING SHALL CONFORM TO THE VDOT ROAD AND BRIDGE STANDARDS AND VDOT SPECIFICATIONS. ALL STRUCTURES SHALL HAVE INLET SHAPING IN ACCORDANCE WITH IS-1 AND STEPS IN ACCORDANCE WITH ST-1. ALL PIPE BEDDING SHALL BE IN ACCORDANCE WITH PB-1 AND MANUFACTURER'S SPECIFICATIONS AND GUIDELINES.
16. STORM PIPES SPECIFIED AS HDPE SHALL BE HIGH DENSITY POLYETHYLENE CONFORMING TO AASHTO M-294, TYPE S SPECIFICATIONS AND HAVE A SMOOTH INNER WALL. PIPE CONNECTIONS SHALL BE WATERTIGHT USING GASKETS AND GROUT. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND MANUFACTURER'S RECOMMENDATIONS.
17. ALL OBJECTIONABLE AND DELETERIOUS MATERIAL IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN A STATE APPROVED FACILITY MEETING THE REQUIREMENTS OF ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
18. THE STORMWATER MANAGEMENT/BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS/HER INSPECTION OF THE SWM/BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM/BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.
19. THE CONTRACTOR SHALL REFER TO THE "REPORT OF SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING ANALYSIS" BY ECS MID-ATLANTIC, LLC, DATED JULY 28, 2006 FOR CONSTRUCTION SPECIFICATIONS.

LAND USE SUMMARY TABLE

TOTAL SITE AREA	=	253,248 S.F.-100% 5.81 A.C.
EXISTING BUILDING	=	10,108 S.F.- 4.0%
PROPOSED BUILDING	=	9,683 S.F.- 3.8%
TOTAL BUILDING	=	19,791 S.F.- 7.8%
EXISTING IMPERVIOUS AREA	=	36,359 S.F.- 14.4%
PROPOSED IMPERVIOUS AREA *	=	27,076 S.F.- 10.7%
TOTAL IMPERVIOUS AREA * (* -INCLUDES GRAVEL)	=	63,435 S.F.- 25.1%
EXISTING OPEN SPACE AREA	=	206,781 S.F.- 81.6%
PROPOSED OPEN SPACE AREA	=	170,022 S.F.- 67.1%
DISTURBED AREA	=	2.40 A.C.

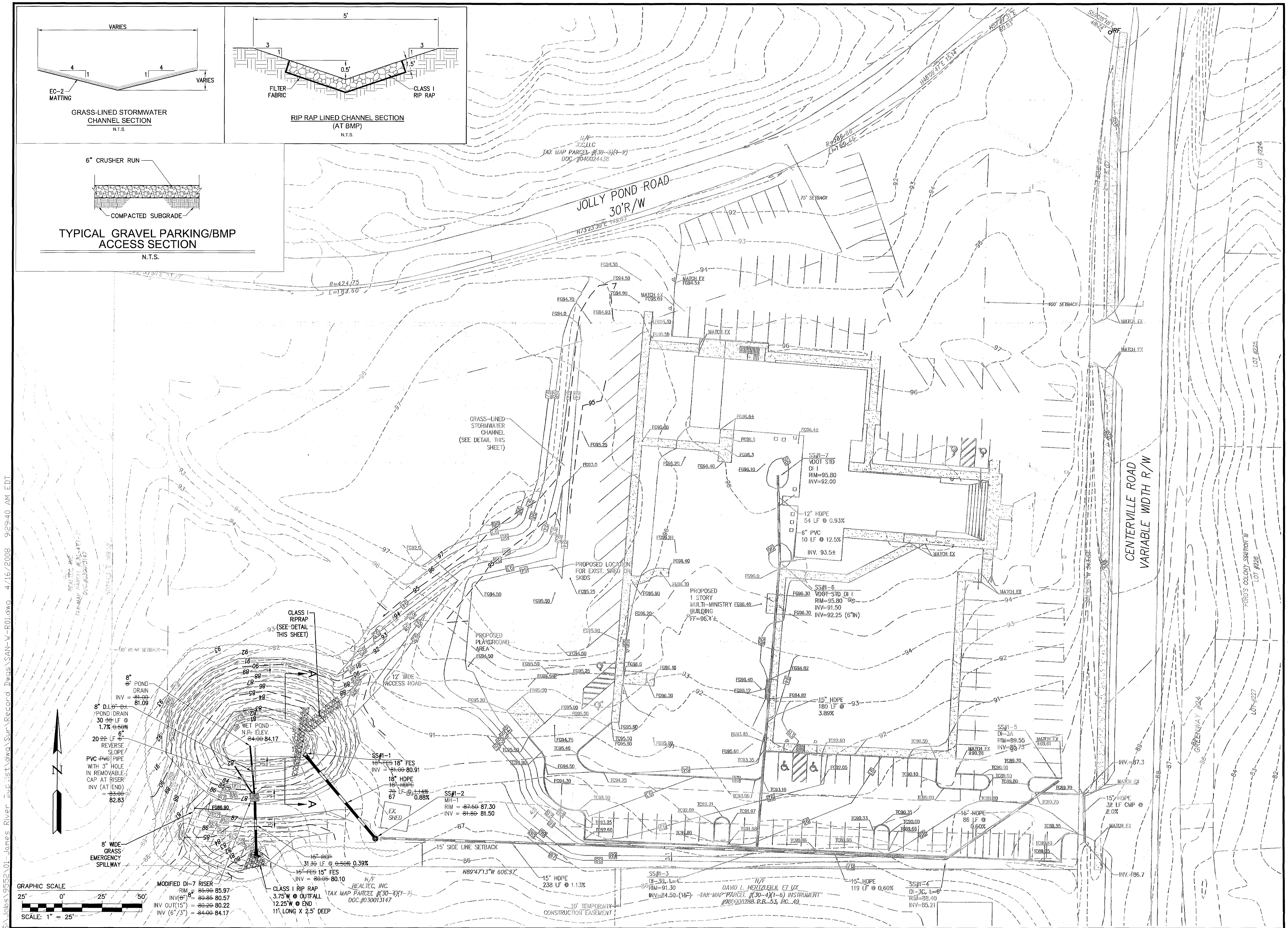
PARKING

86 EX. PARKING SPACES INCLUDES (2) HANDICAPPED
- 4 EX. PARKING SPACES (DELETED)
+ 38 NEW PAVED SPACES INCLUDES (4) HANDICAPPED
+ 15 NEW GRAVEL SPACES
=135 TOTAL INCLUDES (6) HANDICAPPED

APPROVAL DATE	No.	DATE		BY
	3	2/12/07	REVISED PER JCSA COMMENTS	LBA
	2	12/8/06	REVISED PER COUNTY COMMENTS	BBS
	1	9/25/06	REVISED PER COUNTY COMMENTS	BBS

JAMES RIVER BAPTIST CHURCH
JOB # 9552-00

RECORD DRAWINGS.: 7/31/2008



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

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND • GLOUCESTER

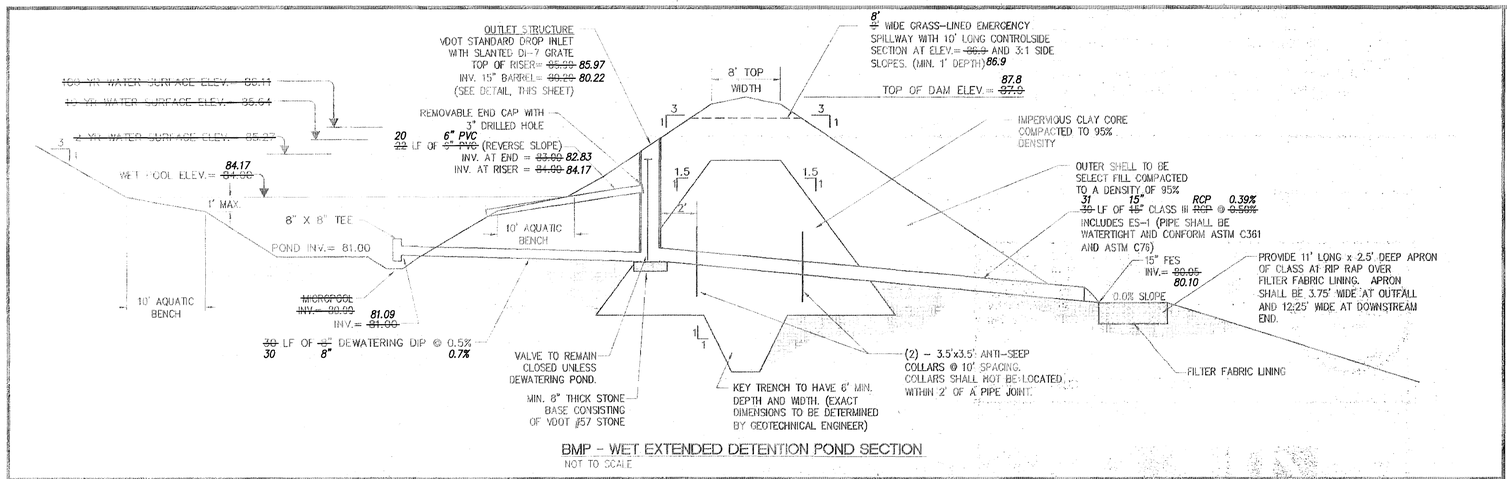
RECORD DRAWING
SITE & UTILITIES PLAN
MULTI-MINISTRY BUILDING
JAMES RIVER BAPTIST CHURCH

POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

No.	DATE	REVISION / COMMENT / NOTE	BY

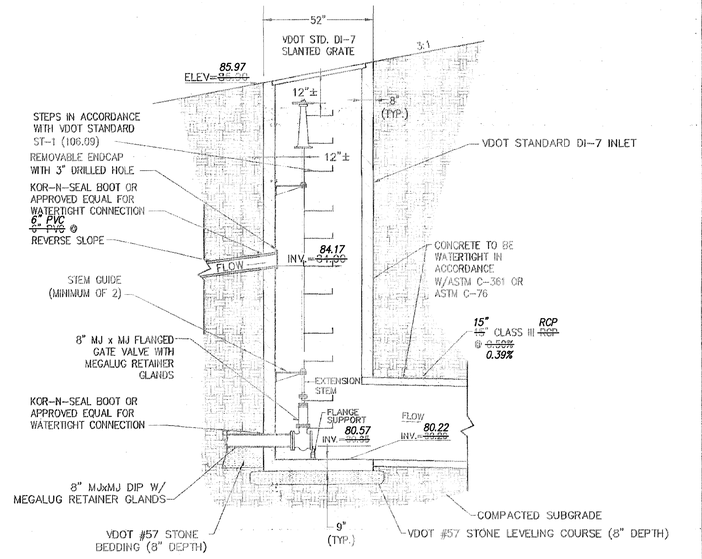
Designed: AES	Drawn: MEG
Scale: 1"=25'	Date: 4/14/06
Project No. 9552	
Drawing No. 5 AS-BUILT	

RECORD DRAWINGS.: 7/31/2008



BMP - WET EXTENDED DETENTION POND SECTION

NOT TO SCALE



CROSS SECTION

BMP OUTFALL STRUCTURE

NOT TO SCALE

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 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 AREAS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE SWM 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.

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. IF THE SEDIMENT REACHES THE DEPTH OF 1.5 FT. ABOVE THE BOTTOM OF SEDIMENT FOREBAY (i.e. CLEANOUT ELEVATION 82.5), REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, CLEAN THE RISER BOTTOM AND OUTLET PIPE OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA.
2. PERFORM MAINTENANCE MOWING OF POND GRASSES 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.
3. PERFORM SOIL SAMPLING ON STABILIZED POND 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 POND AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACE, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDING AS LISTED IN THE DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME, FERTILIZE AND OVERSEED IN ACCORDANCE WITH THE CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VESCH.
5. PERFORM QUARTERLY INSPECTIONS OF THE 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.
6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, 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 INTEGRITY OF THE STRUCTURE.
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE DETENTION FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.
8. PERFORM YEARLY OBSERVATIONS OF PERIMETER AREAS SURROUNDING THE FACILITY TO ENSURE CHANGES IN LAND USE, TOPOGRAPHY OR ACCESS HAVE NOT OCCURRED AND DO NOT AFFECT THE OPERATION, MAINTENANCE, ACCESS OR SAFETY FEATURES AS PROVIDED. APPROPRIATE ACTION IS REQUIRED TO ENSURE ADEQUACY AND TO PROVIDE A CLEAR, SAFE PASSAGE FOR MAINTENANCE VEHICLES TO THE EMBANKMENT AND PRINCIPLE FLOW CONTROL STRUCTURES.
9. INSPECT AND EXERCISE POND DRAIN VALVE ON AN ANNUAL BASIS.
10. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT THE REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
11. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/ APPROVAL OF JAMES CITY COUNTY.
12. DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AFTER THE FIRST GROWING SEASON. THE POND SLOPE SHOULD BE MAINTAINED IN A NATURAL STATE WITH THE EXCEPTION THAT CHOKING VINES AND NON-NATIVE INVASIVE SPECIES SHOULD BE REMOVED BY HAND METHODS ONLY AT THE ONSET OF THE SECOND GROWING SEASON.

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, MATERIALS, 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 THE PROPERTY. 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 AN AREA ON THE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS 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. 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 8-INCH LOOSE THICKNESS 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 RECOMMENDATIONS. 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 CL OR CH, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE CL OR CH CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 8-INCH LOOSE THICKNESS LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, MOISTURE CONDITIONED TO WITHIN -1%/+3% OF THE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A MINIMUM 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.
7. IN ORDER TO MAINTAIN A WET POOL, THE BOTTOM SURFACE OF THE BMP, ALONG WITH THE SIDE SLOPES TO A HEIGHT AT LEAST 4 FEET ABOVE THE BOTTOM, SHALL CONSIST OF A LAYER OF LOW PERMEABILITY SOIL, SUCH AS CL OR CH, AT LEAST 2 FEET THICK. IF A WET POOL IS UNABLE TO BE ESTABLISHED AND MAINTAINED, THE CONTRACTOR SHALL EXCAVATE THE BOTTOM MATERIAL AND REINSTALL A LOW PERMEABILITY SOIL AT THE DIRECTION OF THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER.
8. THE STORMWATER MANAGEMENT/BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS/HER INSPECTION OF THE SWM/BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM/BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STOEMWATER MANAGEMENT/BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.

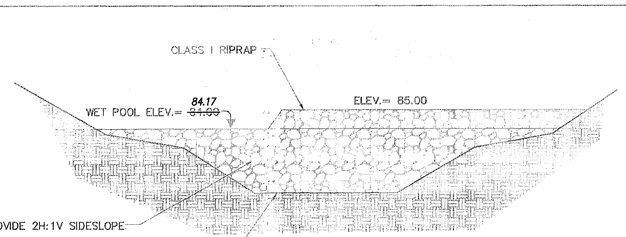
DAM CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL REFER TO THE "REPORT OF SUBSURFACE AND GEOTECHNICAL ENGINEERING ANALYSIS" PREPARED BY ECS MID-ATLANTIC, LLC, DATED JULY 28, 2006 FOR SPECIFICATIONS ON THE CONSTRUCTION OF THE BMP FACILITY, INCLUDING THE EMBANKMENT.
2. THE GEOTECHNICAL SUBSURFACE EXPLORATION REPORT AT THE PROPOSED DAM SITE HAS BEEN PERFORMED TO ENSURE SUITABILITY OF THE SUBGRADE. THE GEOTECHNICAL INVESTIGATION HAS DETERMINED THE SUITABILITY OF THE FILL MATERIAL. THESE RECOMMENDATIONS ARE HEREBY MADE A PART OF THE DAM'S CONSTRUCTION SPECIFICATIONS. A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT SHALL BE ON SITE DURING CONSTRUCTION TO ENSURE PROPER MATERIALS AND DAM CONSTRUCTION METHODS ARE UTILIZED. FOLLOWING DAM CONSTRUCTION, THE GEOTECHNICAL CONSULTANT SHALL PROVIDE WRITTEN DOCUMENTATION, SIGNED BY A PROFESSIONAL ENGINEER, THAT THE DAM WAS BUILT IN ACCORDANCE WITH THEIR RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. THE GEOTECHNICAL CONSULTANT SHALL COORDINATE WITH THE DESIGN ENGINEER IN ORDER TO COMPLETE THE JCC ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BMP FACILITIES CONSTRUCTION AND AS-BUILT CERTIFICATION FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE DAM CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL CONSULTANT IN ORDER TO ENSURE ON-SITE MONITORING.
3. SITE PREPARATION:
THE CONTRACTOR SHALL STRIP ALL AREAS OF THE PERMANENT COVER IN CONSTRUCTION AREA TO REMOVE ALL UNSUITABLE MATERIALS. THE UNSUITABLE MATERIALS TO BE REMOVED BY STRIPPING SHALL INCLUDE ALL TOPSOIL, DEBRIS AND VEGETATIVE MATTER, INCLUDING STUMPS AND ROOTS, AND ALL OTHER MATERIALS WHICH MAY BE UNSUITABLE FOR USE IN THE PERMANENT CONSTRUCTION.
4. EMBANKMENT:
THE EXPOSED SUB GRADE SOILS SHALL BE CAREFULLY INSPECTED BY THE GEOTECHNICAL ENGINEER. ANY UNSUITABLE MATERIALS THUS EXPOSED SHALL BE REMOVED AND REPLACED WITH A WELL COMPACTED, SUITABLE MATERIAL. DENSITY TESTING, AT THE DISCRETION OF THE OWNER/GEOTECHNICAL ENGINEER, SHALL BE PERFORMED AT THIS TIME. THE EMBANKMENT SHALL BE KEYED INTO THE UNDISTURBED (EXISTING) SOIL STRATUM. EMBANKMENT SHOULD BE KEYED AT LEAST 4 FEET INTO THE STRATUM OR AS SPECIFIED BY THE GEOTECHNICAL ENGINEER (WIDTH=8 FT. MIN.) THE EMBANKMENT FOUNDATION AND ABUTMENTS SHALL BEAR ON FIRM AND STABLE EXISTING SUB-GRADE WHICH HAS BEEN PREPARED SO AS TO REMOVE ALL ORGANIC, LOOSE, AND GENERALLY UNSUITABLE MATERIAL. ALL MATERIALS TO BE USED FOR BACKFILL OR COMPACTED FILL SHALL BE INSPECTED AND, IF NECESSARY, TESTED BY THE GEOTECHNICAL ENGINEER IN ACCORDANCE WITH ASTM D2487 PRIOR TO PLACEMENT, TO DETERMINE IF THEY ARE SUITABLE FOR THE INTENDED USE. THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREAS. IT SHALL BE CLEAN MINERAL SOIL FREE OF ROOTS, WOOD VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIALS. MATERIALS TO BE USED FOR THE CONSTRUCTION OF THE SHELL SHALL BE SELECT BACKFILL FREE OF STUMPS, ROOTS, ROCKS, TRASH, ETC. AND SHALL BE MORE PERVIOUS THAN THE IMPERVIOUS CLAY CORE. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED A MINIMUM OF 4 INCHES PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL'S MOISTURE CONTENT SHALL BE +/-3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D2216. ALL MATERIAL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND IN CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL. FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN ACCORDANCE WITH ASTM SPECIFICATION D-698, STANDARD PROCTOR METHOD. FINISHED GRADES SHALL BE MERGED NATURALLY INTO THE EXISTING GRADES AND NOT EXCEED A SLOPE GREATER THAN 3:1.
5. CUTOFF TRENCH/KEY TRENCH:
THE TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE MINIMUM DEPTH SHALL BE AS SHOWN ON THE PLANS AND SHALL EXTEND UP BOTH ABUTMENTS. THE BOTTOM WIDTH SHALL BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTING EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1.
6. PRINCIPAL SPILLWAY:
THE BOTTOM OF THE SPILLWAY RISER FOUNDATION BASE EXCAVATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE FOUNDATION'S BASE. ALL JOINTS IN THE PRINCIPAL SPILLWAY STRUCTURE SHALL BE WATERTIGHT CONSTRUCTION. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL OR ANTI-SEEP COLLARS. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. VEGETATIVE STABILIZATION:
FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETATIVE COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL:	AT LEAST 4" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.
LIME:	4,000#/ACRE (90#/1,000 S.F.)
SEED:	KENTUCKY 31 TALL FESCUE 250#/ACRE (8#/1,000 S.F.)
FERTILIZER:	10/10/10 MIX, 1,000#/ACRE FALL (23#/1,000 S.F.)
MULCH:	STRAW OR HAY (LOCALLY OBTAINED) 4,000#/ACRE (90#/1,000 S.F.)

CONSTRUCTION SEQUENCE

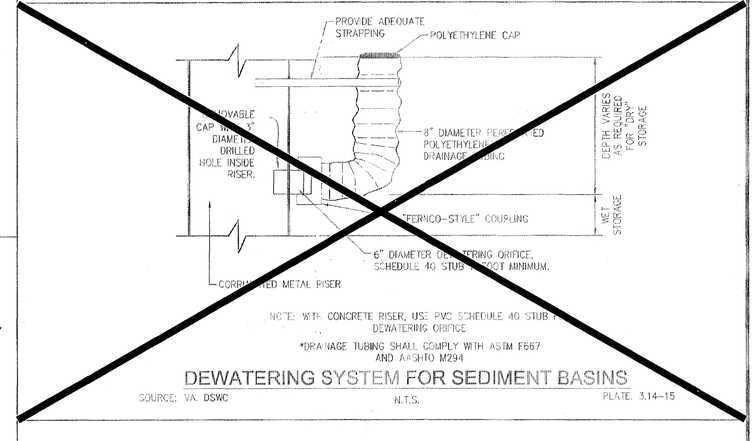
1. PRIOR TO OBTAINING LAND DISTURBING PERMIT, THE CONTRACTOR SHALL OBTAIN A VSMP PERMIT (VIRGINIA STORMWATER MANAGEMENT PROGRAM) FROM DCR (VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION).
2. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION PRIOR TO BEGINNING ANY WORK AT THE SITE.
3. CONTACT "MISS UTILITY" FOR PUBLIC SERVICES AND HAVE A PRIVATE UTILITY LOCATOR FOR PRIVATE SERVICES.
4. INSTALL CONSTRUCTION ENTRANCE, SAFETY FENCE, SILT FENCE, AND TREE PROTECTION.
5. INSTALL SEDIMENT BASIN (SEE DAM CONSTRUCTION NOTES) AND DIVERSION DIKE WITH RIPRAP-LINED CHANNEL.
6. INSTALL GRASS LINED CHANNEL TO RIPRAP-LINED CHANNEL IN SEDIMENT BASIN.
7. CLEAR AND GRUB REMAINDER OF SITE, AND DEMOLISH AND REMOVE ALL DEMOLITION ITEMS.
8. INSTALL UTILITIES AND STORM SEWER.
9. GRADE PARKING LOT AND INSTALL FILL DIVERSION PER VESCH SPEC. 3.10 AND RIGHT-OF-WAY DIVERSION PER VESCH SPEC. 3.11. ADJUST DIVERSIONS DURING FILL OPERATION.
10. PREPARE BUILDING PAD AND ADJUST DIVERSIONS AS NECESSARY.
11. CONSTRUCT BUILDING.
12. CONSTRUCT PROPOSED SIDEWALKS, CURB, AND CURB & GUTTER.
13. CONSTRUCT PARKING LOT AND STRIPING.
14. PREPARE FINAL GRADING AND PLANT LANDSCAPING.
15. PLANT PERMANENT SEEDING AND MULCH.
16. PROVIDE FINAL CLEANOUT OF SEDIMENT BASIN AND CONVERT TO BMP AFTER FINAL SITE STABILIZATION.
17. REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES WITHIN THIRTY DAYS OF FINAL SITE STABILIZATION, BUT ONLY AFTER APPROVAL IS OBTAINED FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL INSPECTOR.



FOREBAY BARRIER

BMP SECTION A-A

NOT TO SCALE



NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

*DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

DEWATERING SYSTEM FOR SEDIMENT BASINS

SOURCE: VA. DSWC N.T.S. PLATE. 3.14-15

No.	DATE	REVISION / COMMENT / NOTE	BY
3	7/12/07	REVISED PER VDSA COMMENTS	LBA
2	12/8/06	REVISED PER COUNTY COMMENTS	SBS
1	8/25/06	REVISED PER COUNTY COMMENTS	SBS

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

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND • GLOUCESTER

STORMWATER MANAGEMENT/BMP PLAN

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

JAMES CITY COUNTY VIRGINIA

POWHATAN DISTRICT

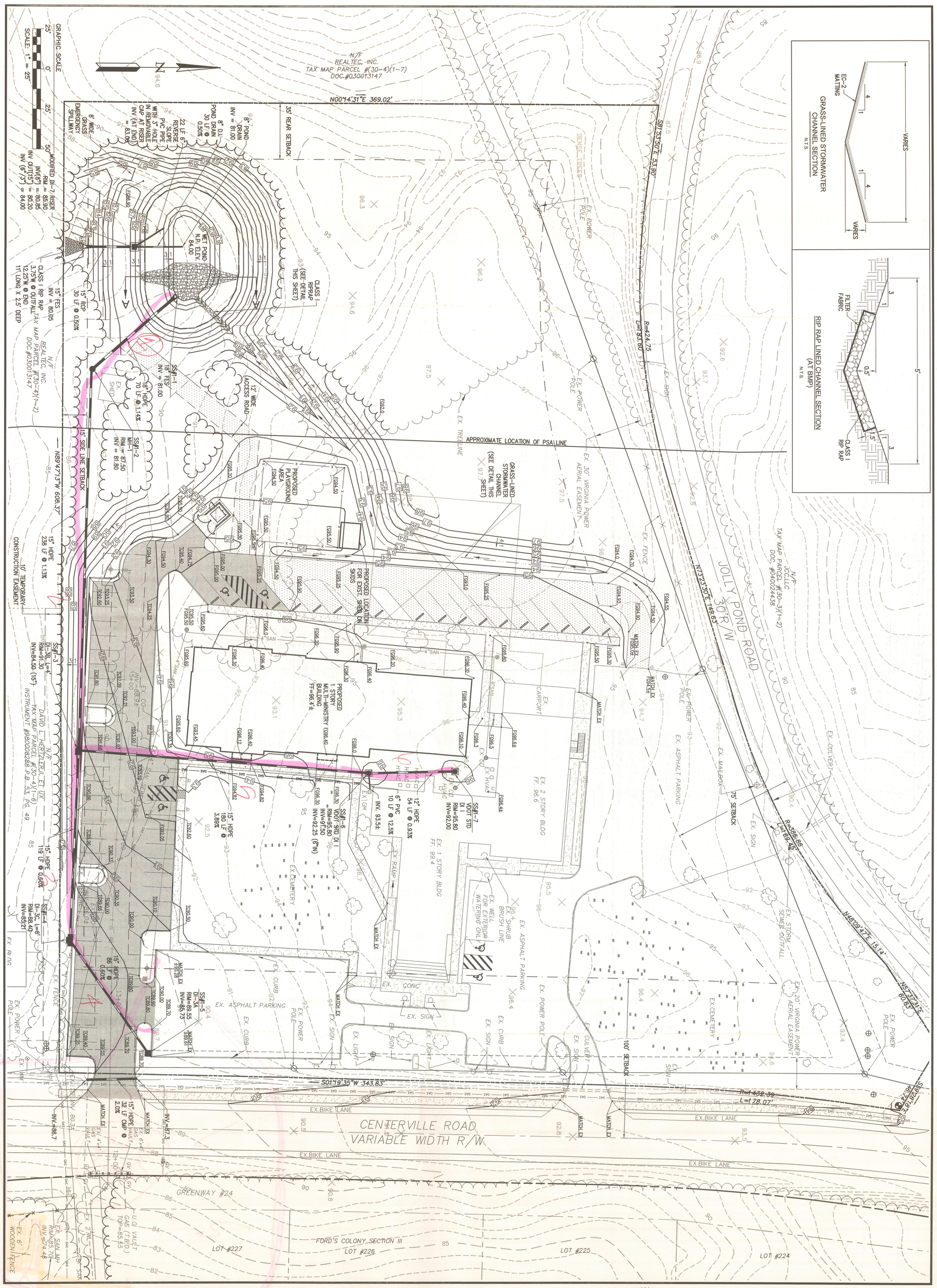
Designed	Drawn
NB	LBA
Scale	Date
N.T.S	4/14/06

Project No. 9552

Drawing No. 7 AS-BUILT

S:\Jobs\9552\01-James River Baptist\dwg\Sur\Record Dwgs\SAN-W-R01.dwg 4/16/2008 9:29:40 AM EDT

RECORD DRAWINGS.: 7/31/2008



3	2/12/07	REVISED PER JCSA COMMENTS	LBA
2	12/8/06	REVISED PER COUNTY COMMENTS	BBS
1	8/25/06	REVISED PER COUNTY COMMENTS	BBS
No.	DATE	REVISION / COMMENT / NOTE	BY

Drawing No. 5

Project No. 9552

Designed NB | Drawn LBA

Scale 1"=25' | Date 4/14/06

GRADING & DRAINAGE PLAN

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

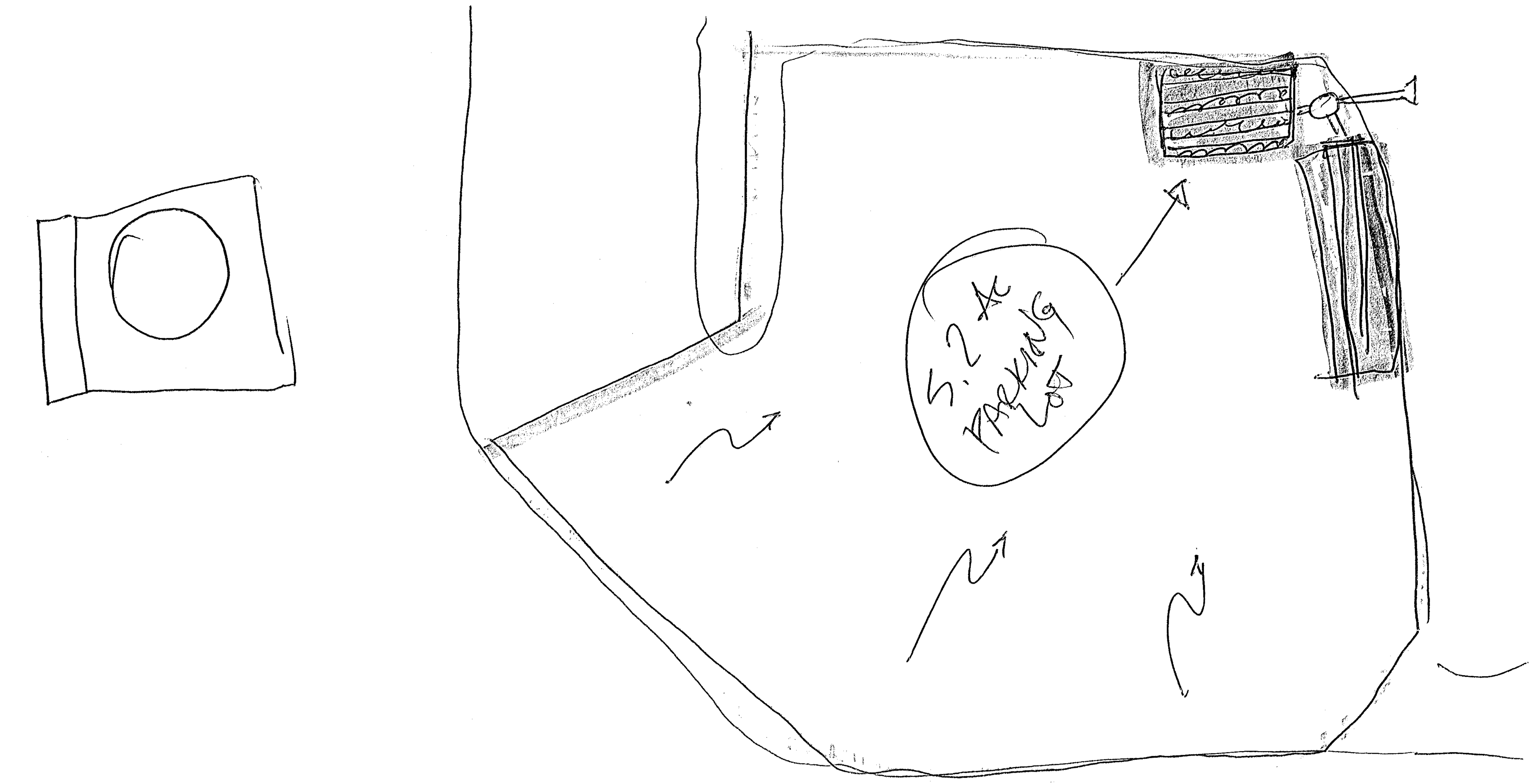
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

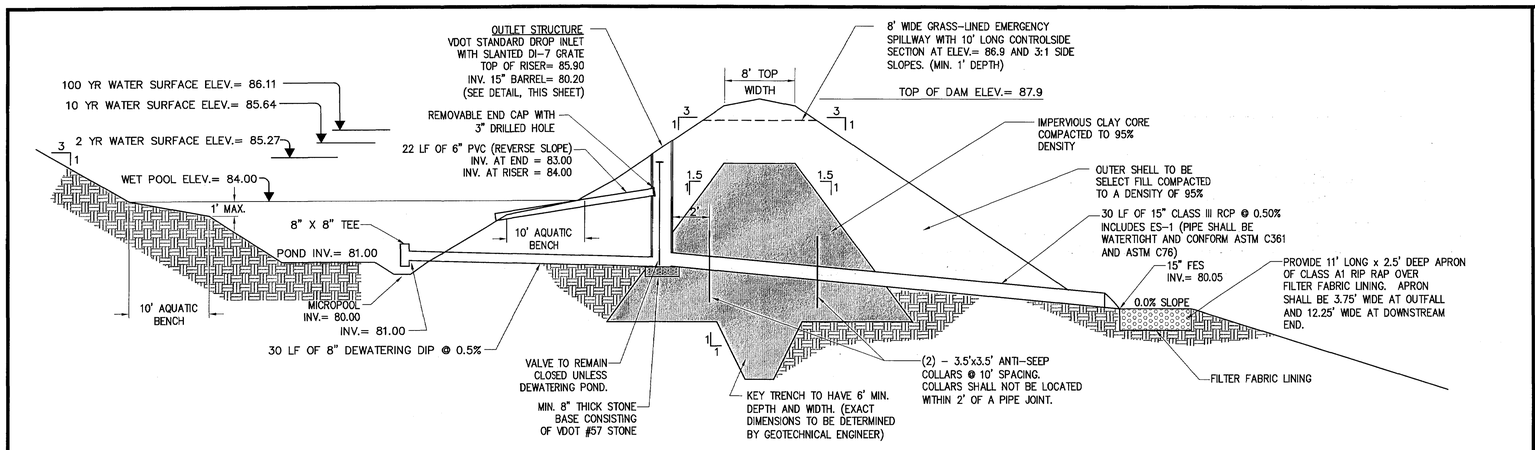
AES CONSULTING ENGINEERS

WILLIAMSBURG • RICHMOND • GLOUCESTER

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

COMMONWEALTH OF VIRGINIA
MARK A. RICHARDSON
No. 035306
2/12/07
PROFESSIONAL ENGINEER


5.2 Ac
PARKING
LOT



BMP - WET EXTENDED DETENTION POND SECTION

NOT TO SCALE

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 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 AREAS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE SWM 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.

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. IF THE SEDIMENT REACHES THE DEPTH OF 1.5 FT. ABOVE THE BOTTOM OF SEDIMENT FOREBAY (i.e. CLEANOUT ELEVATION 82.5), REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, CLEAN THE RISER BOTTOM AND OUTLET PIPE OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA.
2. PERFORM MAINTENANCE MOWING OF POND GRASSES 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.
3. PERFORM SOIL SAMPLING ON STABILIZED POND 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 POND AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACE, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDING AS LISTED IN THE DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME, FERTILIZE AND OVERSEED IN ACCORDANCE WITH THE CURRENT SEEDING RECOMMENDATIONS OR REQUIREMENTS OF THE VESCH.
5. PERFORM QUARTERLY INSPECTIONS OF THE 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.
6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, 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 INTEGRITY OF THE STRUCTURE.
7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE DETENTION FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.
8. PERFORM YEARLY OBSERVATIONS OF PERIMETER AREAS SURROUNDING THE FACILITY TO ENSURE CHANGES IN LAND USE, TOPOGRAPHY OR ACCESS HAVE NOT OCCURRED AND DO NOT AFFECT THE OPERATION, MAINTENANCE, ACCESS OR SAFETY FEATURES AS PROVIDED. APPROPRIATE ACTION IS REQUIRED TO ENSURE ADEQUACY AND TO PROVIDE A CLEAR, SAFE PASSAGE FOR MAINTENANCE VEHICHLES TO THE EMBANKMENT AND PRINCIPLE FLOW CONTROL STRUCTURES.
9. INSPECT AND EXERCISE POND DRAIN VALVE ON AN ANNUAL BASIS.
10. RECORD KEEPING. THE OWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT THE REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
11. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/ APPROVAL OF JAMES CITY COUNTY.
12. DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AFTER THE FIRST GROWING SEASON. THE POND SLOPE SHOULD BE MAINTAINED IN A NATURAL STATE WITH THE EXCEPTION THAT CHOKING VINES AND NON-NATIVE INVASIVE SPECIES SHOULD BE REMOVED BY HAND METHODS ONLY AT THE ONSET OF THE SECOND GROWING SEASON.

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, MATERIALS, 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 THE PROPERTY. 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 AN AREA ON THE PROPERTY AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES NEEDED TO CONTROL AS 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. 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 8-INCH LOOSE THICKNESS 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 RECOMMENDATIONS. 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 CL OR CH, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.
6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE CL OR CH CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 8-INCH LOOSE THICKNESS LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, MOISTURE CONDITIONED TO WITHIN -1%/+3% OF THE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A MINIMUM 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.
7. IN ORDER TO MAINTAIN A WET POOL, THE BOTTOM SURFACE OF THE BMP, ALONG WITH THE SIDE SLOPES TO A HEIGHT AT LEAST 4 FEET ABOVE THE BOTTOM, SHALL CONSIST OF A LAYER OF LOW PERMEABILITY SOIL, SUCH AS CL OR CH, AT LEAST 2 FEET THICK. IF A WET POOL IS UNABLE TO BE ESTABLISHED AND MAINTAINED, THE CONTRACTOR SHALL EXCAVATE THE BOTTOM MATERIAL AND REINSTALL A LOW PERMEABILITY SOIL AT THE DIRECTION OF THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER.
8. THE STORMWATER MANAGEMENT/BMP FACILITIES SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWING(S) AND CONSTRUCTION CERTIFICATION PRIOR TO RELEASE OF THE POSTED BOND/SURETY. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT HIS/HER INSPECTION OF THE SWM/BMP CONSTRUCTION ACTIVITY IS PERFORMED DURING AND FOLLOWING CONSTRUCTION OF THE SWM/BMP IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STOEMWATER MANAGEMENT/BMP FACILITIES DESIGN GUIDELINES HANDBOOK, DATED AUGUST 30, 2000.

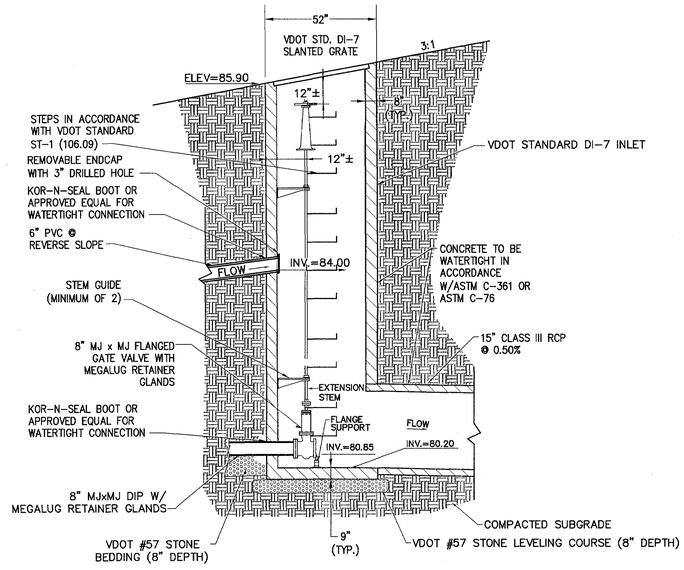
DAM CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL REFER TO THE "REPORT OF SUBSURFACE AND GEOTECHNICAL ENGINEERING ANALYSIS" PREPARED BY ECS MID-ATLANTIC, LLC, DATED JULY 28, 2006 FOR SPECIFICATIONS ON THE CONSTRUCTION OF THE BMP FACILITY, INCLUDING THE EMBANKMENT.
2. THE GEOTECHNICAL SUBSURFACE EXPLORATION REPORT AT THE PROPOSED DAM SITE HAS BEEN PERFORMED TO ENSURE SUITABILITY OF THE SUBGRADE. THE GEOTECHNICAL INVESTIGATION HAS DETERMINED THE SUITABILITY OF THE FILL MATERIAL. THESE RECOMMENDATIONS ARE HEREBY MADE A PART OF THE DAM'S CONSTRUCTION SPECIFICATIONS. A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT SHALL BE ON SITE DURING CONSTRUCTION TO ENSURE PROPER MATERIALS AND DAM CONSTRUCTION METHODS ARE UTILIZED. FOLLOWING DAM CONSTRUCTION, THE GEOTECHNICAL CONSULTANT SHALL PROVIDE WRITTEN DOCUMENTATION, SIGNED BY A PROFESSIONAL ENGINEER, THAT THE DAM WAS BUILT IN ACCORDANCE WITH THEIR RECOMMENDATIONS, PLANS, AND SPECIFICATIONS. THE GEOTECHNICAL CONSULTANT SHALL COORDINATE WITH THE DESIGN ENGINEER IN ORDER TO COMPLETE THE JCC ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BMP FACILITIES CONSTRUCTION AND AS-BUILT CERTIFICATION FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE DAM CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL CONSULTANT IN ORDER TO ENSURE ON-SITE MONITORING.
3. SITE PREPARATION:
THE CONTRACTOR SHALL STRIP ALL AREAS OF THE PERMANENT COVER IN CONSTRUCTION AREA TO REMOVE ALL UNSUITABLE MATERIALS. THE UNSUITABLE MATERIALS TO BE REMOVED BY STRIPPING SHALL INCLUDE ALL TOPSOIL, DEBRIS AND VEGETATIVE MATTER, INCLUDING STUMPS AND ROOTS, AND ALL OTHER MATERIALS WHICH MAY BE UNSUITABLE FOR USE IN THE PERMANENT CONSTRUCTION.
4. EMBANKMENT:
THE EXPOSED SUB GRADE SOILS SHALL BE CAREFULLY INSPECTED BY THE GEOTECHNICAL ENGINEER. ANY UNSUITABLE MATERIALS THUS EXPOSED SHALL BE REMOVED AND REPLACED WITH A WELL COMPACTED, SUITABLE MATERIAL. DENSITY TESTING, AT THE DISCRETION OF THE OWNER/GEOTECHNICAL ENGINEER, SHALL BE PERFORMED AT THIS TIME. THE EMBANKMENT SHALL BE KEYED INTO THE UNDISTURBED (EXISTING) SOIL STRATUM. EMBANKMENT SHOULD BE KEYED AT LEAST 4 FEET INTO THE STRATUM OR AS SPECIFIED BY THE GEOTECHNICAL ENGINEER (WIDTH=6 FT. MIN.) THE EMBANKMENT FOUNDATION AND ABUTMENTS SHALL BEAR ON FIRM AND STABLE EXISTING SUB-GRADE WHICH HAS BEEN PREPARED SO AS TO REMOVE ALL ORGANIC, LOOSE, AND GENERALLY UNSUITABLE MATERIAL. ALL MATERIALS TO BE USED FOR BACKFILL OR COMPACTED FILL SHALL BE INSPECTED AND, IF NECESSARY, TESTED BY THE GEOTECHNICAL ENGINEER IN ACCORDANCE WITH ASTM D2487 PRIOR TO PLACEMENT, TO DETERMINE IF THEY ARE SUITABLE FOR THE INTENDED USE. THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREAS. IT SHALL BE CLEAN MINERAL SOIL, FREE OF ROOTS, WOOD VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIALS. MATERIALS TO BE USED FOR THE CONSTRUCTION OF THE SHELL SHALL BE SELECT BACKFILL FREE OF STUMPS, ROOTS, ROCKS, TRASH, ETC. AND SHALL BE MORE PERVIOUS THAN THE IMPERVIOUS CLAY CORE. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED A MINIMUM OF 4 INCHES PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL'S MOISTURE CONTENT SHALL BE +/-3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D2216. FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND IN CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL. FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN ACCORDANCE WITH ASTM SPECIFICATION D-698, STANDARD PROCTOR METHOD. FINISHED GRADES SHALL BE MERGED NATURALLY INTO THE EXISTING GRADES AND NOT EXCEED A SLOPE GREATER THAN 3:1.
5. CUTOFF TRENCH/KEY TRENCH:
THE TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE MINIMUM DEPTH SHALL BE AS SHOWN ON THE PLANS AND SHALL EXTEND UP BOTH ABUTMENTS. THE BOTTOM WIDTH SHALL BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTING EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1.
6. PRINCIPAL SPILLWAY:
THE BOTTOM OF THE SPILLWAY RISER FOUNDATION BASE EXCAVATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE FOUNDATION'S BASE. ALL JOINTS IN THE PRINCIPAL SPILLWAY STRUCTURE SHALL BE WATERTIGHT CONSTRUCTION. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACKFILL AROUND THE BARREL OR ANTI-SEEP COLLARS. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4 INCH LAYERS AND COMPACTED BY HAND TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. VEGETATIVE STABILIZATION:
FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETATIVE COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL:	AT LEAST 4" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.
LIME:	4,000#/ACRE (90#/1,000 S.F.)
SEED:	KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1,000 S.F.)
FERTILIZER:	10/10/10 MIX, 1,000#/ACRE FALL (23#/1,000 S.F.)
MULCH:	STRAW OR HAY (LOCALLY OBTAINED) 4,000#/ACRE (90#/1,000 S.F.)

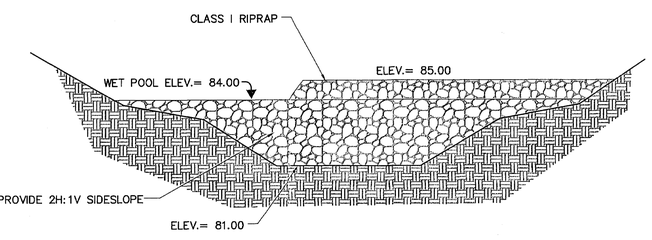
CONSTRUCTION SEQUENCE

1. PRIOR TO OBTAINING LAND DISTURBING PERMIT, THE CONTRACTOR SHALL OBTAIN A VSMP PERMIT (VIRGINIA STORMWATER MANAGEMENT PROGRAM) FROM DCR (VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION).
2. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION PRIOR TO BEGINNING ANY WORK AT THE SITE.
3. CONTACT "MISS UTILITY" FOR PUBLIC SERVICES AND HAVE A PRIVATE UTILITY LOCATOR FOR PRIVATE SERVICES.
4. INSTALL CONSTRUCTION ENTRANCE, SAFETY FENCE, SILT FENCE, AND TREE PROTECTION.
5. INSTALL SEDIMENT BASIN (SEE DAM CONSTRUCTION NOTES) AND DIVERSION DIKE WITH RIPRAP-LINED CHANNEL.
6. INSTALL GRASS LINED CHANNEL TO RIPRAP-LINED CHANNEL IN SEDIMENT BASIN.
7. CLEAR AND GRUB REMAINDER OF SITE, AND DEMOLISH AND REMOVE ALL DEMOLITION ITEMS.
8. INSTALL UTILITIES AND STORM SEWER.
9. GRADE PARKING LOT AND INSTALL FILL DIVERSION PER VESCH SPEC. 3.10 AND RIGHT-OF-WAY DIVERSION PER VESCH SPEC. 3.11. ADJUST DIVERSIONS DURING FILL OPERATION.
10. PREPARE BUILDING PAD AND ADJUST DIVERSIONS AS NECESSARY.
11. CONSTRUCT BUILDING.
12. CONSTRUCT PROPOSED SIDEWALKS, CURB, AND CURB & GUTTER.
13. CONSTRUCT PARKING LOT AND STRIPING.
14. PREPARE FINAL GRADING AND PLANT LANDSCAPING.
15. PLANT PERMANENT SEEDING AND MULCH.
16. PROVIDE FINAL CLEANOUT OF SEDIMENT BASIN AND CONVERT TO BMP AFTER FINAL SITE STABILIZATION.
17. REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES WITHIN THIRTY DAYS OF FINAL SITE STABILIZATION, BUT ONLY AFTER APPROVAL IS OBTAINED FROM THE ASSIGNED JAMES CITY COUNTY ENVIRONMENTAL INSPECTOR.



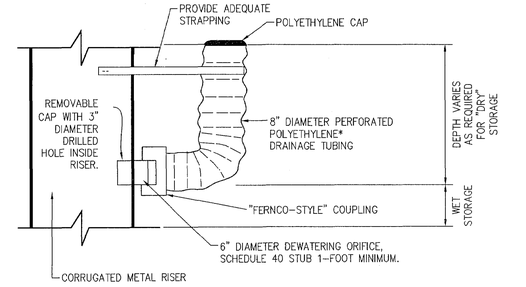
CROSS SECTION
BMP OUTFALL STRUCTURE

NOT TO SCALE



FOREBAY BARRIER
BMP SECTION A-A

NOT TO SCALE



NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

*DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

DEWATERING SYSTEM FOR SEDIMENT BASINS

SOURCE: VA. DSWC N.T.S. PLATE. 3.14-15

No.	DATE	REVISION / COMMENT / NOTE	BY
1	8/25/06	REVISED PER COUNTY COMMENTS	BBS
2	12/8/06	REVISED PER COUNTY COMMENTS	BBS
3	2/12/07	REVISED PER JCSA COMMENTS	LBA

COMMONWEALTH OF VIRGINIA
MARK A. RICHARDSON
No. 035306
PROFESSIONAL ENGINEER
2/12/07

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

CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND • GLOUCESTER

STORMWATER MANAGEMENT/BMP PLAN
MULTI-MINISTRY BUILDING
JAMES RIVER BAPTIST CHURCH
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
NB	LBA
Scale	Date
N.T.S	4/14/06
Project No.	
9552	
Drawing No.	
7	

DRAINAGE CALCULATIONS

FOR

JAMES RIVER BAPTIST CHURCH

Prepared By:

AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188

April 13, 2006
Revised August 23, 2006

AES Project No. 9552

CONSULTING ENGINEERS

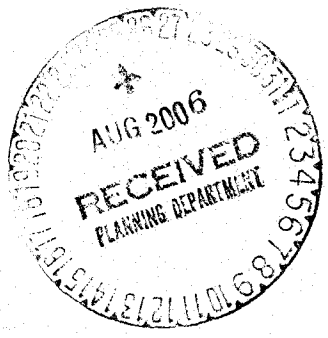


TABLE OF CONTENTS

APPENDICES

CONSULTING ENGINEERS

I INTRODUCTION

The proposed project represents the expansion of the James River Baptist Church. The site is located on the southwest corner of the intersection of Centerville Road and Jolly Pond Road. The site is bounded to the west and southwest by Tax Map Parcel (30-4)(1-7) which is currently wooded, and to the south by Tax Map Parcel (30-4)(1-6) which is the site of an existing office building. The project consists of the construction of a 9,683 SF building and the expansion of the parking lot.

II EXISTING SITE CONDITIONS

The James River Baptist Church site consists of an existing 10,108 SF building, associated parking, and two cemeteries generally located on the east side of the 5.01 acre property. Approximately 3.5 acres of the property is currently undeveloped and is a combination of woods and open area. Slopes on the property range from 1 - 17%. The property drains offsite in all directions because of a high point in the middle of the property.

III PROPOSED SITE CONDITIONS

Stormwater runoff from 2.84 acres of the site will be collected in two separate storm drainage systems - (1) a system of inlets and storm pipe and (2) a grass channel - and conveyed to a proposed extended detention-wet pond located in the southwest corner of the property. The wet storage volume of the BMP is designed to meet the volume created from 1 inch of rainfall over both the existing and proposed impervious coverage (1.26 acres) of the 2.84 acre drainage area. The dry storage volume of the BMP is designed to attenuate the 2 and 10 year storms, in addition to the channel protection requirements as outlined in the *James City County Guidelines for Design and Construction of Stormwater Management BMP's*.

The Modified Rational Method was used since the drainage area to the BMP is only ±3 acres. The Critical Storm Duration was calculated using the method outlined in Chapter 5 of the Virginia Stormwater Management Handbook. The 1 year – 24 hour SCS storm was routed through the BMP to ensure the entire volume passes through the 3" orifice only.

The BMP will initially be used as a temporary sediment basin during construction. The sediment basin will be built to the dimensions of the permanent BMP including outfall structure, bench, emergency spillway, outlet protection, etc. The outfall structure will be equipped with a dewatering device, and later converted to the permanent low flow orifice. The 2-year and 25-year storms were routed through the temporary sediment trap using the Modified Rational Method.

The following is a detailed breakdown of the methodology for the stormwater management calculations:

Pre-Development

A 3.03 acre area of the site drains offsite across the southern boundary line of the property and is divided into two subareas:

- Area "Pre-1" = 0.74 acres (Area that drains southward to an existing channel near the southeast corner of the property)
- Area "Pre-2" = 2.29 acres (Area that primarily drains southward without a well defined channel)

Post-Development

Post-development runoff from most of this 3.03 acre area, as well as a small area that currently drains to the northern part of the site, is directed to the proposed BMP.

- Pond = 2.84 acres (Area draining to the BMP)
- Area "Post A" = 0.08 acres (Portion of Area "Pre-1" that does not flow to BMP)
- Area "Post B" = 0.30 acres (Portion of Area "Pre-2" that does not flow to BMP)
- 0.19 acres (Portion of 2.84 acre area that drained to the north before development)

The Critical Storm Duration

- The 3.03 acre area was used to determine the pre-development peak flow across the southern property line
- The 2.84 acre area was used to create inflow hydrographs to the BMP.
- Runoff from areas "Post A" and "Post B" are added to the discharge of the BMP to determine the total post-development flows across the southern property line to determine the overall effect of this development plan. These values are then compared to the pre-development runoff from the 3.03 acre area.

	Discharge from BMP	Area "Post A" Post-Dev Runoff	Area "Post B" Post-Dev Runoff	Total Post-Dev Flow across Southern Property Line	Pre-Dev Runoff from 3.03 Acre Area
2-year Storm	0.25 CFS	0.14 CFS	0.52 CFS	0.91 CFS	5.37 CFS
10-year Storm	0.29 CFS	0.18 CFS	0.67 CFS	1.14 CFS	6.98 CFS

A Storm Duration Factor of 1.97 was calculated for the Modified Rational Method Inflow Hydrographs of the BMP. This factor was calculated using a time of concentration of 10 minutes and used to develop the post-development inflow hydrographs.

CONSULTING ENGINEERS

The proposed BMP will discharge at the property line where Design Point #1 is located for Area Pre-1. This is the only natural channel that exists at the property line along the southern boundary of the site. The sum of the attenuated flow from the BMP and the runoff from Area "Post A" are less than the pre-development flows from Area Pre-1. The results, using the 2-year 24-hour storm are as follows:

	Discharge from BMP	Area "Post A" Post-Dev Runoff 0.08 Acre Area	Total Post-Dev Flow at Design Point #1	Area "Pre-1" Pre-Dev Runoff 0.74 Acre Area
2-year Storm	0.54 CFS	0.12 CFS	0.66 CFS	0.94 CFS

III SUMMARY

1. The temporary sediment basin, constructed to the same dimensions as the final BMP and using the BMP outlet structure will function properly for the 2-year and 25-year storms.
2. The BMP passes the 1-year 24-hour storm through the 3" orifice without using the principle spillway.
3. The Modified Rational 2-year, 10-year, and 100-year storms flow through the BMP without using the emergency spillway.
4. The post-development peak flow across the southern property line from the 3.03 acre area is less than the pre-development flow.
5. The post-development 2-year 24-hour discharge at Design Point #1 (the sum of the discharge from the BMP and the discharge from a small area that does not flow through the BMP) is less than the pre-development flow.

CONSULTING ENGINEERS

SEDIMENT BASIN

CONSULTING ENGINEERS

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

Project:	James River Baptist Church
Project No.:	9552
Subject:	Sediment Basin Design
Date:	August 23, 2006
Calculated By:	N. Botta

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Total area draining to basin 2.84 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 2.84 acres = 190.28 cu. yds.

2. Available basin volume = 226 cu. yds. at elevation 84. (From storage - elevation curve)

3. Excavate 226 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 2.84 acres = 93.72 cu. yds.

5. Elevation corresponding to cleanout level = 82.75.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.25 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 2.84 acres = 190.28 cu. yds.

8. Total available basin volume at crest of riser* = 588 cu. yds. at elevation 85.9 . (From Storage - Elevation Curve)

*Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 3 in.

10. Diameter of flexible tubing = 6 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 85.9

Top of Dam = 87.9

Design High Water = 86.9

Upstream Toe of Dam = 81

Basin Shape

12. Length of Flow / Effective Width $\frac{L}{We}$ = 1

If > 2, baffles are not required _____

If < 2, baffles are required ✓

Runoff

13. Q_2 = 5.73 cfs (From Chapter 5)

14. Q_{25} = 8.68 cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = 5.73 cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25}$ 8.68 cfs. (riser and barrel)

16. With emergency spillway:

Assumed available head (h) = 1 ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = n/a ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 36 in. Actual head (h) = 1 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 30 ft.

Head (H) on barrel through embankment = 6.23 ft.

(From Plate 3.14-7).

19. Barrel diameter = 15 in.

(From Table 3.14-B [concrete pipe] or Table 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 36 inches.

Height = n/a inches.

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = 2.95 cfs.

22. Bottom width (b) = 8 ft.; the slope of the exit channel (s) = 0.1 ft./foot; and the minimum length of the exit channel (x) = 75 ft.

(From Table 3.14-C)

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 4.9 ft.

Slope of upstream face of embankment (Z) = 3 :1.

Slope of principal spillway barrel (S_b) = 0.5 %

Length of barrel in saturated zone (L_s) = 30 ft.

24. Number of collars required = 2 dimensions = 3.5' x 3.5'

(From Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 87.9

Design High Water = 85.86

Emergency Spillway Crest = 86.9

Principal Spillway Crest = 85.9

Dewatering Orifice Invert = 84.0

Cleanout Elevation = 82.75

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 81

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

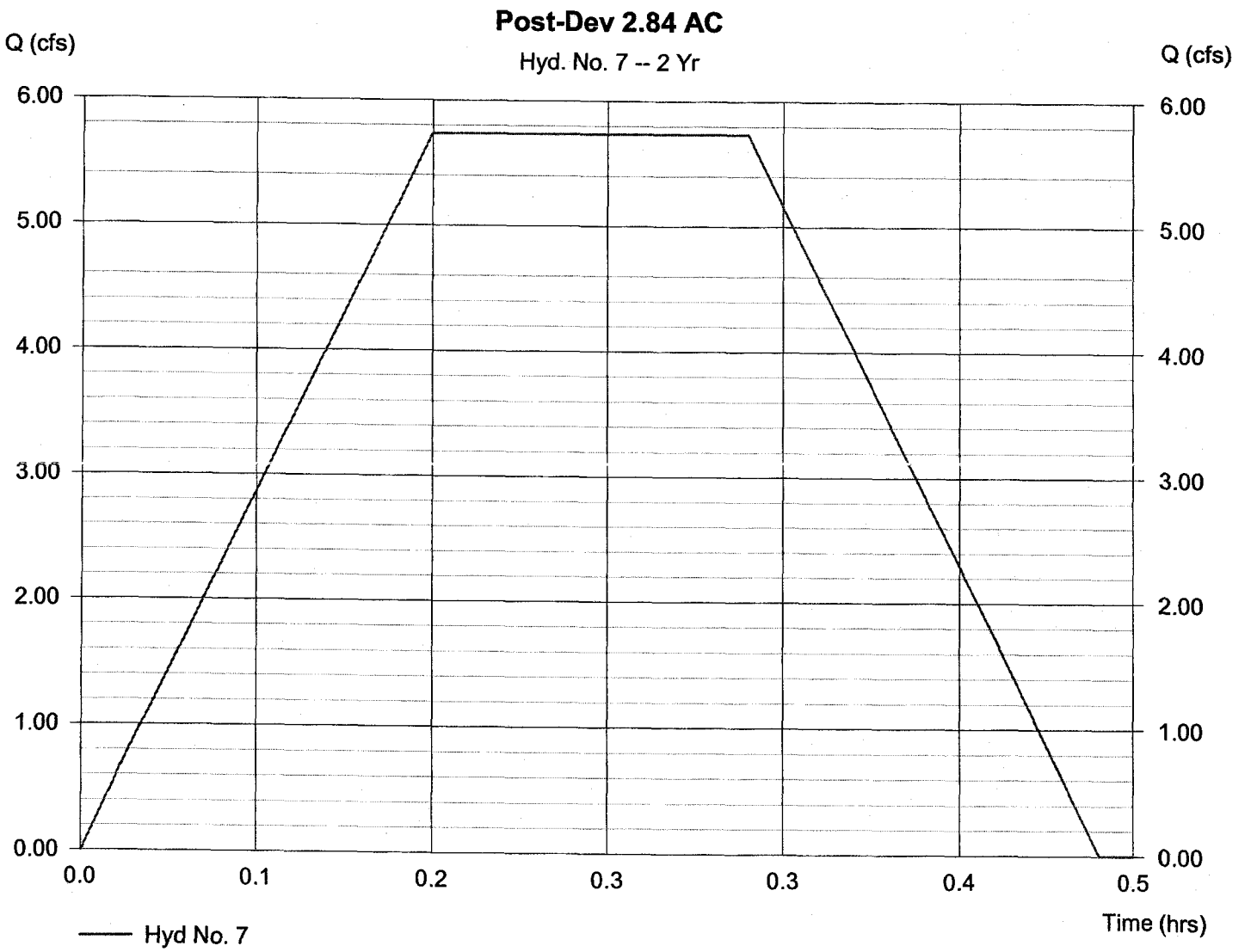
Tuesday, Aug 22 2006, 8:0 PM

Hyd. No. 7

Post-Dev 2.84 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 5.73 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 2.8 ac	Runoff coeff.	= 0.59
Intensity	= 3.422 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1.97 x Tc

Hydrograph Volume = 6,777 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 8:0 PM

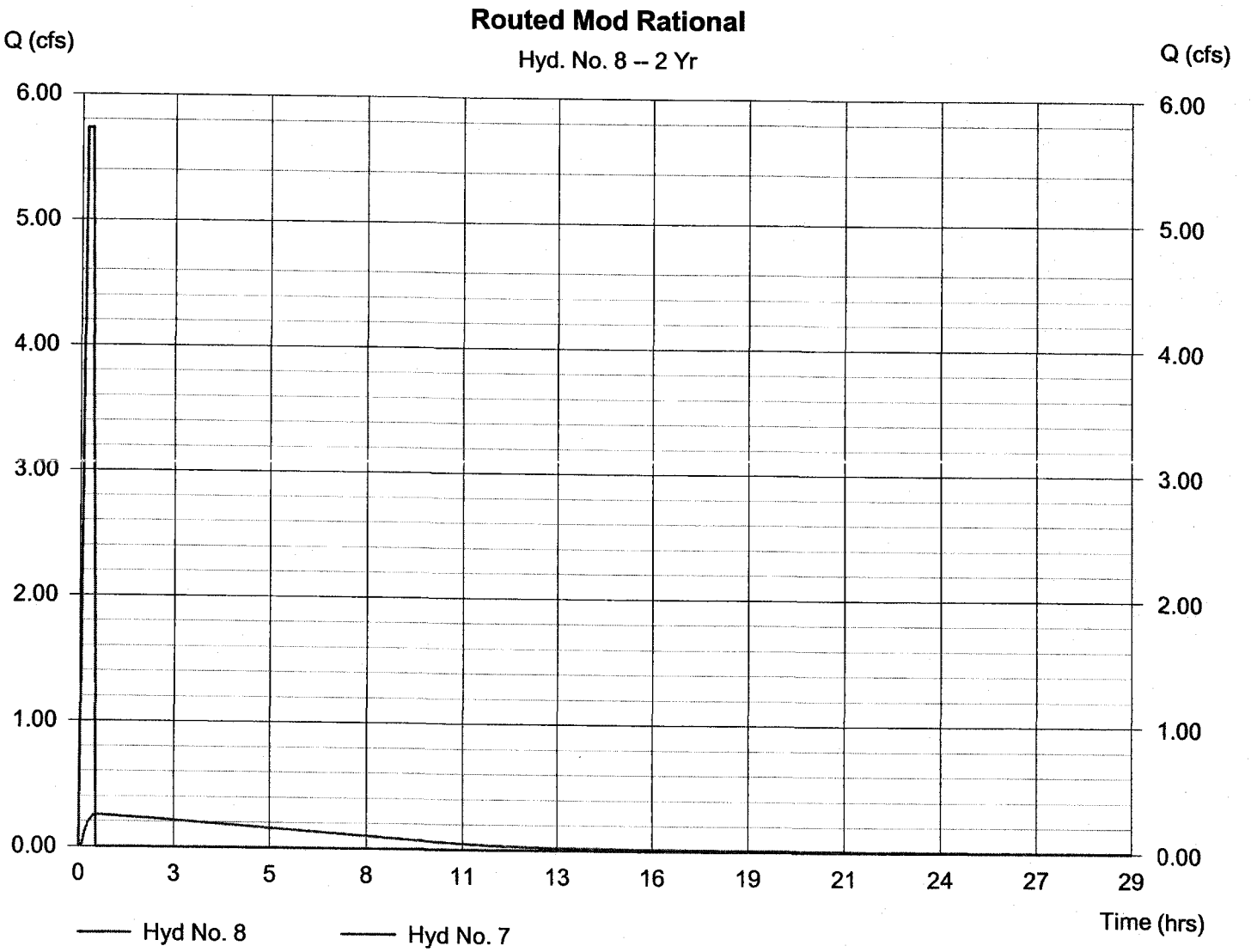
Hyd. No. 8

Routed Mod Rational

Hydrograph type	= Reservoir	Peak discharge	= 0.25 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Max. Elevation	= 85.27 ft
Reservoir name	= JRBC Pond	Max. Storage	= 12,384 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 6,512 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

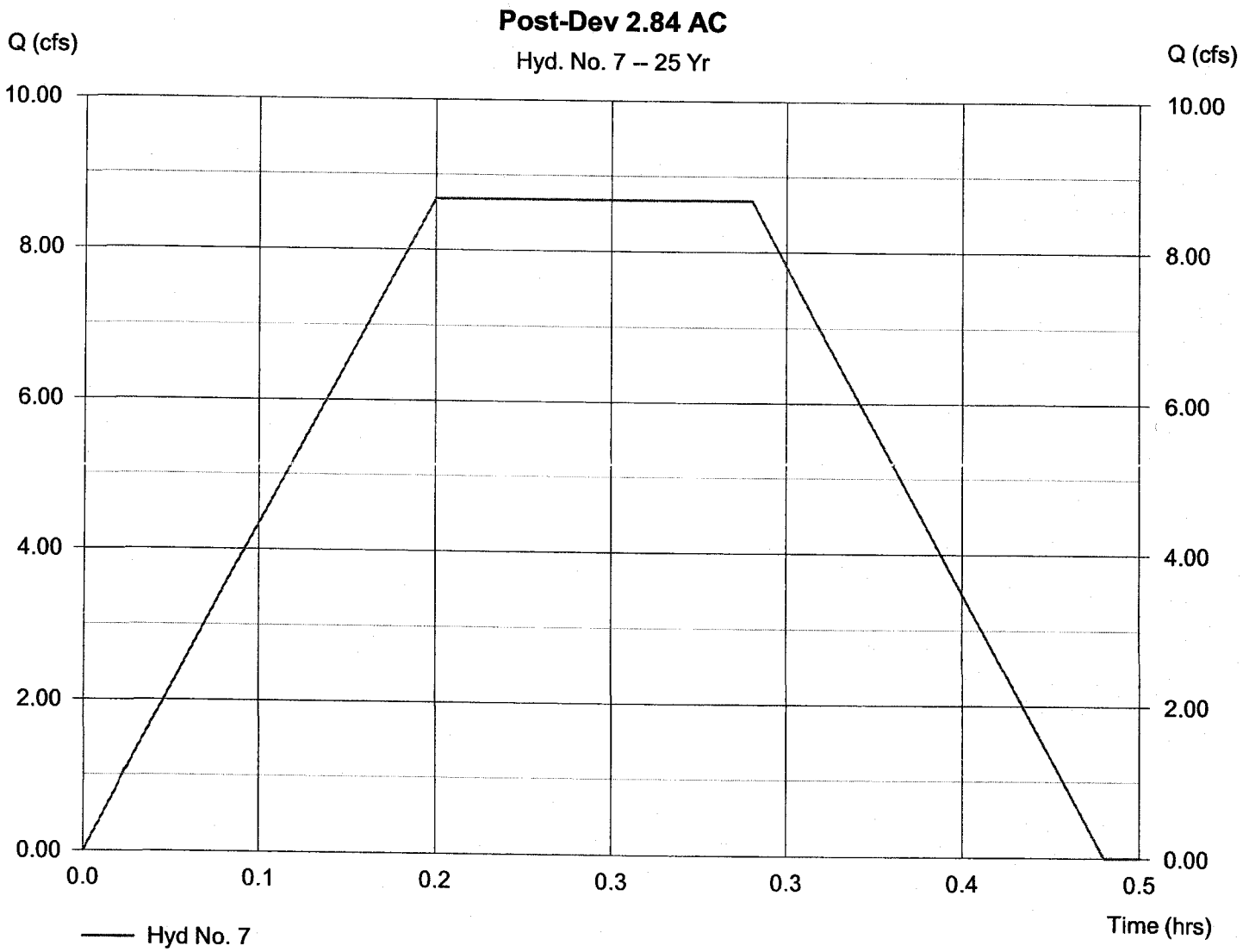
Tuesday, Aug 22 2006, 8:0 PM

Hyd. No. 7

Post-Dev 2.84 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 8.68 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 2.8 ac	Runoff coeff.	= 0.59
Intensity	= 5.181 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1.97 x Tc

Hydrograph Volume = 10,262 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 8:0 PM

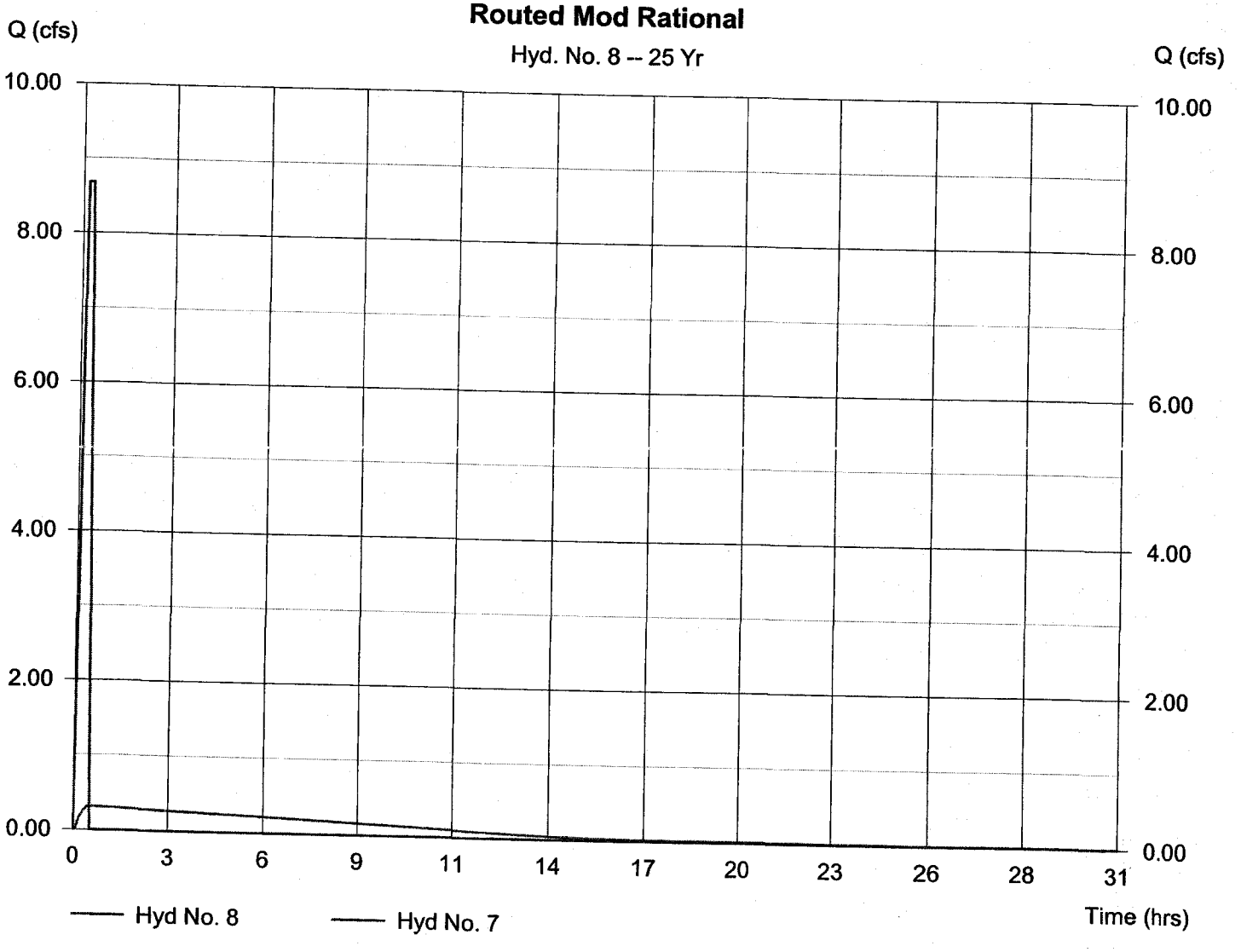
Hyd. No. 8

Routed Mod Rational

Hydrograph type	= Reservoir	Peak discharge	= 0.31 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Max. Elevation	= 85.86 ft
Reservoir name	= JRBC Pond	Max. Storage	= 15,675 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 9,873 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:44 PM

Pond No. 1 - JRBC Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	81.00	1,044	0	0
1.00	82.00	1,464	1,254	1,254
2.00	83.00	1,940	1,702	2,956
3.00	84.00	4,362	3,151	6,107
4.00	85.00	5,181	4,772	10,879
4.90	85.90	5,910	4,991	15,869
5.00	86.00	6,023	597	16,466
5.90	86.90	6,910	5,820	22,286
6.00	87.00	6,996	695	22,981

Culvert / Orifice Structures

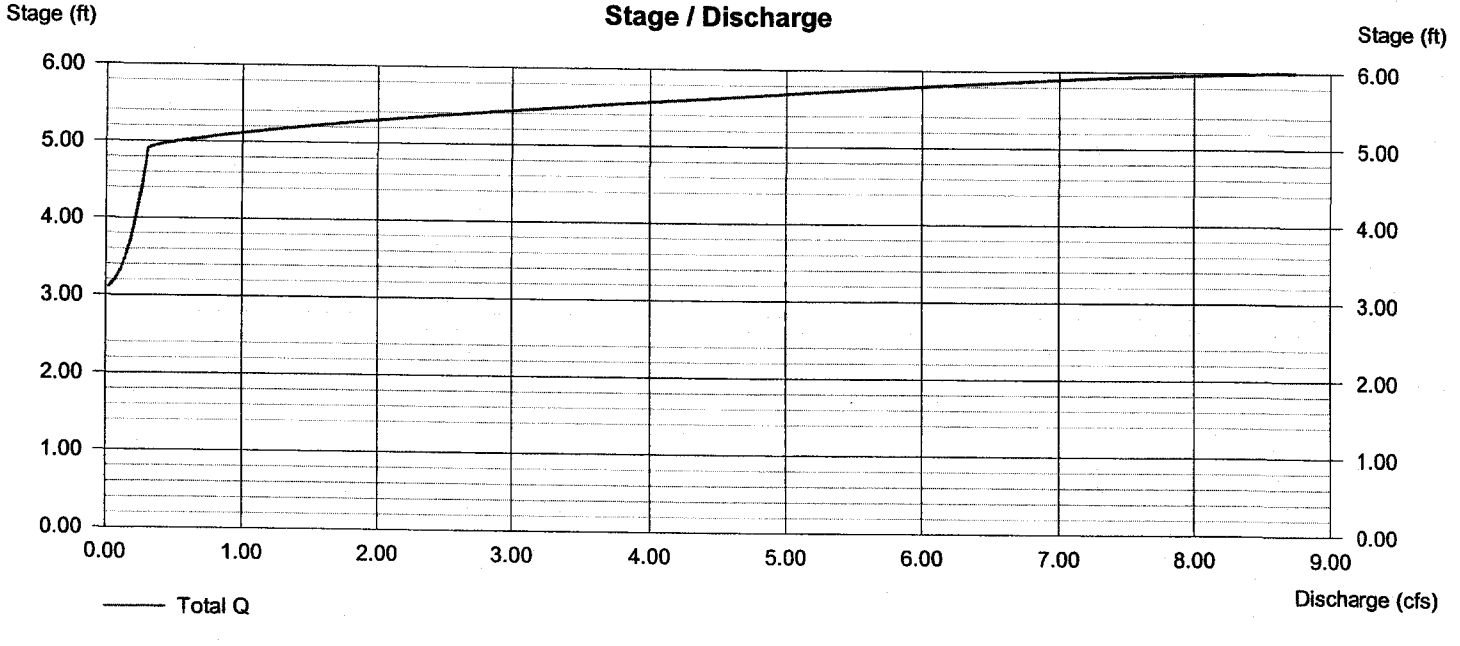
	[A]	[B]	[C]	[D]
Rise (in)	= 15.00	3.00	0.00	0.00
Span (in)	= 15.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 80.20	84.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	8.00	0.00	0.00
Crest El. (ft)	= 85.90	86.90	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	0.00
Weir Type	= Riser	Broad	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



STORM SEWER

CONSULTING ENGINEERS

CONSULTING ENGINEERS

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

Project:	James River Baptist Church
Project No.:	9552
Subject:	Runoff Coefficients & Curve Numbers
Date:	August 23, 2006
Calculated By:	N. Botta

Subject Area: Drainage System #1 - Inlets and Pipes to Pond

Area Description	Area	C	Impervious 0.90	Open 0.30				Area
Inlet #1-3	0.27	0.72	0.19	0.08				0.27
Inlet #1-4	0.77	0.67	0.47	0.30				0.77
Inlet #1-5	0.24	0.83	0.21	0.03				0.24
Inlet #1-6	0.05	0.66	0.03	0.02				0.05
Inlet #1-7	0.11	0.68	0.07	0.04				0.11
TOTAL	1.44	0.70	0.97	0.47	0	0	0	1.44
					1.44			

Subject Area: Grass-lined Channel to Pond

Area Description	Area	C	Impervious 0.90	Open 0.30				Area
Pt. #A	0.64	0.56	0.28	0.36				0.64
Pt. #B	0.80	0.51	0.28	0.52				0.80

Subject Area: Pre-Development Drainage Areas

Area Description	Area	C	Impervious 0.90	Open 0.30				Area
Pre 1	0.74	0.30	0.00	0.74				0.74
Pre 2	2.29	0.41	0.42	1.87				2.29
TOTAL	3.03	0.38	0.42	2.61	0	0	0	3.03
					3.03			

Subject Area: Post-Development Drainage Areas

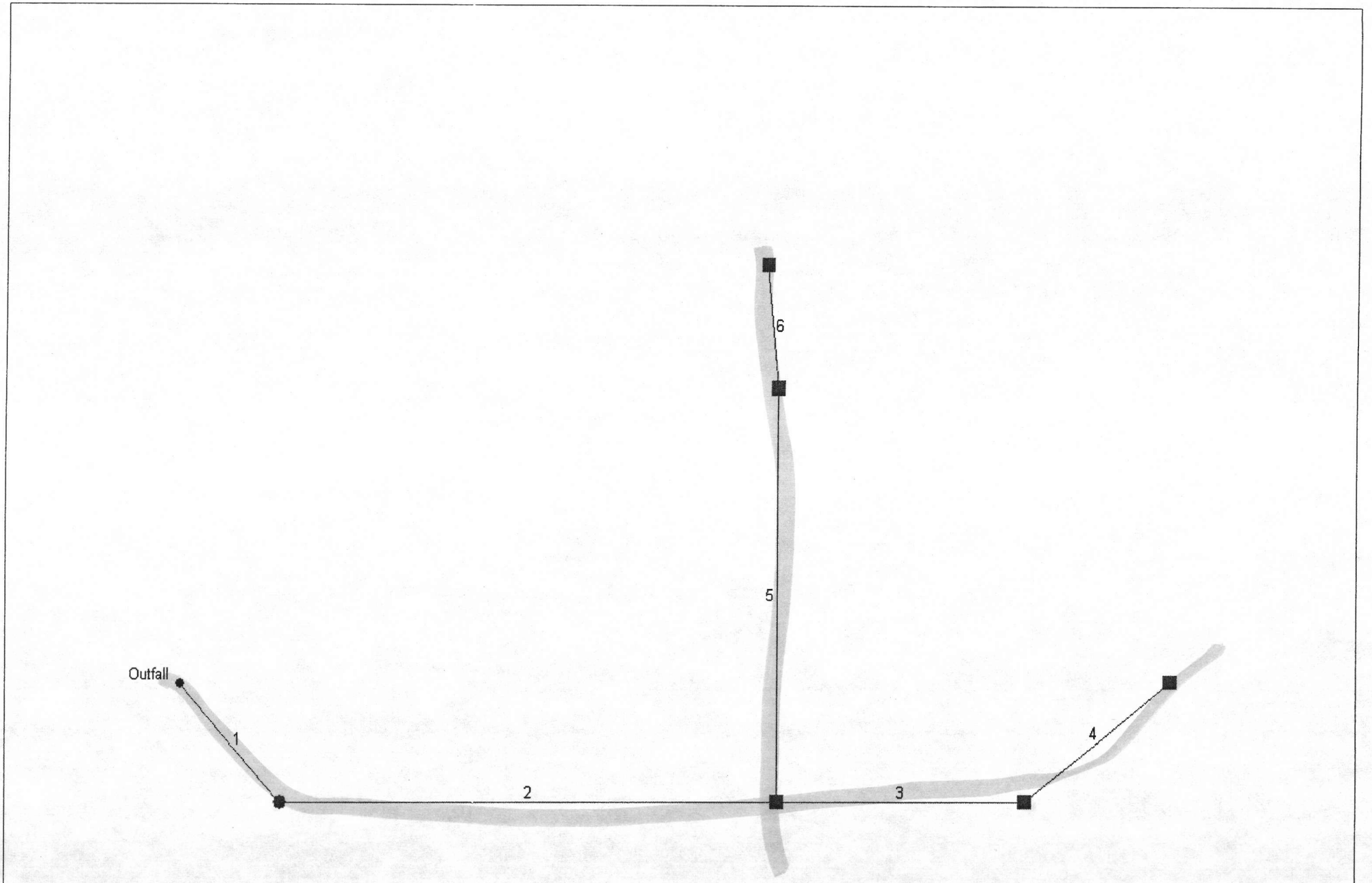
Area Description	Area	C	Impervious 0.90	Open 0.30				Area
To Pond	2.84	0.59	1.36	1.48				2.84
Post A	0.08	0.30		0.08				0.08
Post B	0.30	0.30		0.30				0.30

Subject Area: Post-Development Drainage Area To Pond for SCS Storms

Area Description	Area	CN
To Pond	2.84	83
Pre 1	0.74	70
Post A	0.08	70

Impervious 98	Open 70				Area
1.36	1.48				2.84
	0.74				0.74
	0.08				0.08

Hydraflow Plan View



Project File: 9552 JRBC Storm.stm	No. Lines: 6	08-17-2006

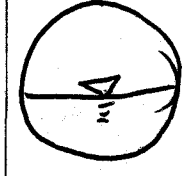
Storm Sewer Inventory Report

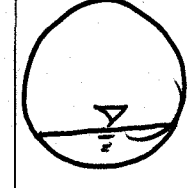
Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	70.0	47.0	MH	0.00	0.00	0.00	0.0	81.00	1.14	81.80	18	Cir	0.013	0.77	87.50	1-2 - 1-1
2	1	238.0	-47.0	Curb	0.00	0.27	0.72	5.0	81.80	1.13	84.50	15	Cir	0.013	1.50	91.30	1-3 - 1-2
3	2	119.0	0.0	Curb	0.00	0.77	0.67	10.0	84.50	0.60	85.21	15	Cir	0.013	0.98	88.40	1-4 - 1-3
4	3	86.0	-37.0	Curb	0.00	0.24	0.83	5.0	85.21	0.60	85.73	15	Cir	0.013	1.00	89.55	1-5 - 1-4
5	2	180.0	-90.0	DrGrt	0.00	0.05	0.66	5.0	84.50	3.89	91.50	12	Cir	0.013	0.50	95.80	1-6 - 1-3
6	5	54.0	-6.0	DrGrt	0.00	0.11	0.68	5.0	91.50	0.93	92.00	12	Cir	0.013	1.00	95.80	1-7 - 1-6

Project File: 9552 JRBC Storm.stm | Number of lines: 6 | Date: 08-17-2006

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	70.0	0.00	1.44	0.00	0.00	1.02	0.0	11.4	5.7	5.81	11.23	3.29	18	1.14	81.80	81.00	84.61	84.40	87.50	81.00	1-2 - 1-1
2	1	238.0	0.27	1.44	0.72	0.19	1.02	5.0	10.6	5.9	5.96	6.88	4.86	15	1.13	84.50	81.80	86.77	84.74	91.30	87.50	1-3 - 1-2
3	2	119.0	0.77	1.01	0.67	0.52	0.72	10.0	10.0	6.0	4.27	4.99	3.48	15	0.60	85.21	84.50	88.02	87.50	88.40	91.30	1-4 - 1-3
4	3	86.0	0.24	0.24	0.83	0.20	0.20	5.0	5.0	7.1	1.42	5.02	1.16	15	0.60	85.73	85.21	88.42	88.38	89.55	88.40	1-5 - 1-4
5	2	180.0	0.05	0.16	0.66	0.03	0.11	5.0	6.3	6.8	0.73	7.02	1.89	12	3.89	91.50	84.50	91.86	87.68	95.80	91.30	1-6 - 1-3
6	5	54.0	0.11	0.11	0.68	0.07	0.07	5.0	5.0	7.1	0.53	3.43	2.00	12	0.93	92.00	91.50	92.31	91.98	95.80	95.80	1-7 - 1-6





Project File: 9552 JRBC Storm.stm

Number of lines: 6

Run Date: 08-17-2006

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	James River Baptist Church
Project No.	9552
Subject	Channel Design
Date	August 23, 2006
Calculated By	N. Botta

Design Point: A

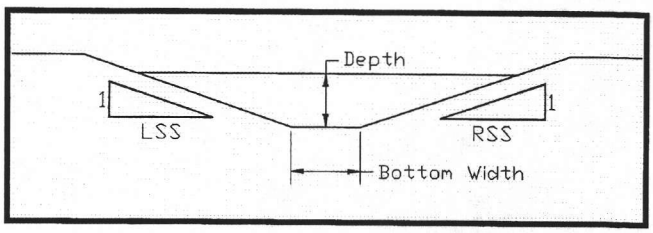
Drainage Area	=	0.64	Acres	(Area draining to Design Point)
C	=	0.56		(Runoff Coefficient)
I	=	7.13	in/hr	(Design Rainfall Intensity) 10 year storm - Tc = 5 min.

Q = C I A (Peak Flow)

= 0.56 x 7.13 x 0.64

= 2.56 CFS

Channel Characteristics



Rt. Sideslope	=	4.00	:1
Lt. Sideslope	=	4.00	:1
Base Width	=	0.00	Ft.
Max. Depth	=	2.50	Ft.
Channel Slope	=	1.00	%
Mannings (n)	=	0.020	(Grass Lined)
Depth of Flow	=	0.48	Ft.
Area	=	0.90	SF
Hydraulic Radius	=	0.23	Ft.
Velocity (V)	=	2.79	Ft./sec.
Flow (Q)	=	2.52	CFS

Wetted Perimeter = 3.92 Ft.

(From Manning's Equation)

(From Continuity Equation Q=AV)

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

Project	James River Baptist Church
Project No.	9552
Subject	Channel Design
Date	August 23, 2006
Calculated By	N. Botta

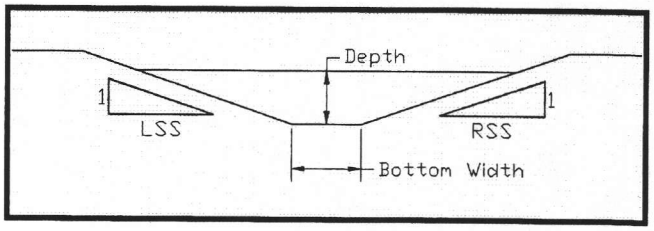
Design Point: B

Drainage Area	=	0.80	Acres	(Area draining to Design Point)
C	=	0.51		(Runoff Coefficient)
I	=	7.13	in/hr	(Design Rainfall Intensity) 10 year storm - Tc = 5 min.

Q = C I A (Peak Flow)

= 0.8 x 7.13 x 0.8

= 2.91 CFS



Channel Characteristics

Rt. Sideslope	=	4.00	:1	
Lt. Sideslope	=	4.00	:1	
Base Width	=	0.00	Ft.	
Max. Depth	=	2.00	Ft.	
Channel Slope	=	4.00	%	
Mannings (n)	=	0.020		(Grass Lined w/ EC-3 Matting)
Depth of Flow	=	0.39	Ft.	
Area	=	0.60	SF	Wetted Perimeter = 3.18 Ft.
Hydraulic Radius	=	0.19	Ft.	
Velocity (V)	=	4.86	Ft./sec.	(From Manning's Equation)
Flow (Q)	=	2.90	CFS	(From Continuity Equation Q=AV)

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

Project	James River Baptist Church
Project No.	9552
Subject	Channel Design
Date	August 23, 2006
Calculated By	N. Botta

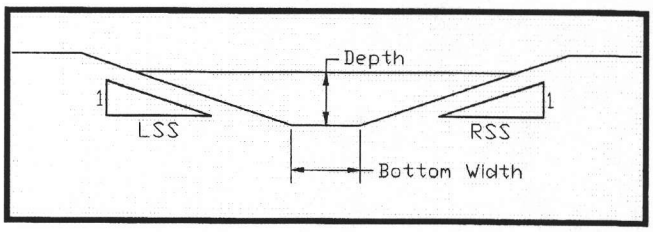
Design Point: C

Drainage Area	=	0.80	Acres	(Area draining to Design Point)
C	=	0.51		(Runoff Coefficient)
I	=	7.13	in/hr	(Design Rainfall Intensity) 10 year storm - Tc = 5 min.

Q = C I A (Peak Flow)

= 0.8 x 7.13 x 0.8

= 2.91 CFS



Channel Characteristics

Rt. Sideslope	=	3.00	:1	
Lt. Sideslope	=	3.00	:1	
Base Width	=	0.00	Ft.	
Max. Depth	=	2.00	Ft.	
Channel Slope	=	33.30	%	
Mannings (n)	=	0.045		(Riprap Lining)
Depth of Flow	=	0.39	Ft.	
Area	=	0.47	SF	Wetted Perimeter = 2.49 Ft.
Hydraulic Radius	=	0.19	Ft.	
Velocity (V)	=	6.23	Ft./sec.	(From Manning's Equation)
Flow (Q)	=	2.90	CFS	(From Continuity Equation Q=AV)

STORMWATER MANAGEMENT

CONSULTING ENGINEERS

CONSULTING ENGINEERS

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

Project	James River Baptist Church
Project No.	9552
Subject	Water Quality Volume
Date	August 23, 2006
Calculated By	N. Botta

BMP Type = Wet Extended Detention Pond

Water Quality Volume = 0.5 in. x 1.26 acres of impervious coverage

= (0.5 / 12) x (43,560 x 1.26)

= **2287 CF**

Total Storage Volume Required = 4 x Water Quality Volume

= 4 x 2287

= 9147.6 CF

Min. Wet Storage Volume Required = 2 x Water Quality Volume

= 2 x 2287

= 4574 CF

Wet Storage Volume Provided = 6107 CF Elevation = 84.00 (Permanent Pool Elevation)

Min. Dry Storage Volume Required = 2 x Water Quality Volume

= 2 x 2287

= 4574 CF

Dry Storage Volume Provided = 9762 CF Elevation = 85.90 (Top of Riser)

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

Project	James River Baptist Church
Project No.	9552
Subject	Sediment Forebay Design
Date	August 23, 2006
Calculated By	N. Botta

Required Forebay Volume = 0.1 in. x 1.26 acres of impervious coverage

= (0.1 / 12) x (43,560 x 1.26) = 457 CF

Forebay Volume Provided = 1263 CF Elevation = 84.00

Stage (FT)	Elevation (FT)	Area (SF)	Incremental Volume (CF)	Total Volume (CF)
0	81	62		0
1	82	194	128	128
2	83	381	288	416
3	84	1314	848	1263

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

Project:	James River Baptist Church
Project No.:	9552
Subject:	Critical Storm Duration Modified Rational Method
Date:	August 23, 2006
Calculated By:	N. Botta

Equation 5-5 - Virginia Stormwater Management Handbook

$$T_d = \sqrt{\frac{2\,C\,A\,a\,(b - t_c/4)}{q_o}} - b$$

C =	0.59	Post-Development Runoff Coefficient
A =	2.84	Drainage Area (Acres)
t_c =	10	Post Development Time of Concentration (Minutes)
a =	185.06	From Table 5-5 for James City County (10 year storm)
b =	20.81	

Equation 5-2 - Virginia Stormwater Management Handbook

$$I_{post} = \frac{a}{b + T_d}$$ Rainfall Intensity where $T_d = t_c$

I_{post} = 6.01 in/hr

$q_o = (C_{pre\text{-}dev})\,(I)\,(A)$ Allowable Peak Outflow (10 year storm)

C =	0.38	Pre-Development Runoff Coefficient
A_{pre} =	3.03	Pre-Development Drainage Area (Acres)
t_c =	10	Pre-Development Time of Concentration (Minutes)
I_{pre} =	6.01	in/hr

q_o = 6.92 CFS Pre-Development Peak Flow (10 year storm)

Using Equation 5-5

T_d =	19.71	Minutes

Storm Duration Factor = T_d/t_c = 1.97 x t_c

TR55 Tc Worksheet

Hyd. No. 2

Pre-Dev 0.74 Ac

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.150		0.400		0.011		
Flow length (ft)	= 40.0		20.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		3.50		0.00		
Land slope (%)	= 2.00		3.00		0.00		
Travel Time (min)	**= 4.50**	**+**	**4.82**	**+**	**0.00**	**=**	**9.32**
Shallow Concentrated Flow							
Flow length (ft)	= 220.00		0.00		0.00		
Watercourse slope (%)	= 8.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 4.56		0.00		0.00		
Travel Time (min)	**= 0.80**	**+**	**0.00**	**+**	**0.00**	**=**	**0.80**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	= 0.00		0.00		0.00		
Flow length (ft)	= 0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 10.00 min

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

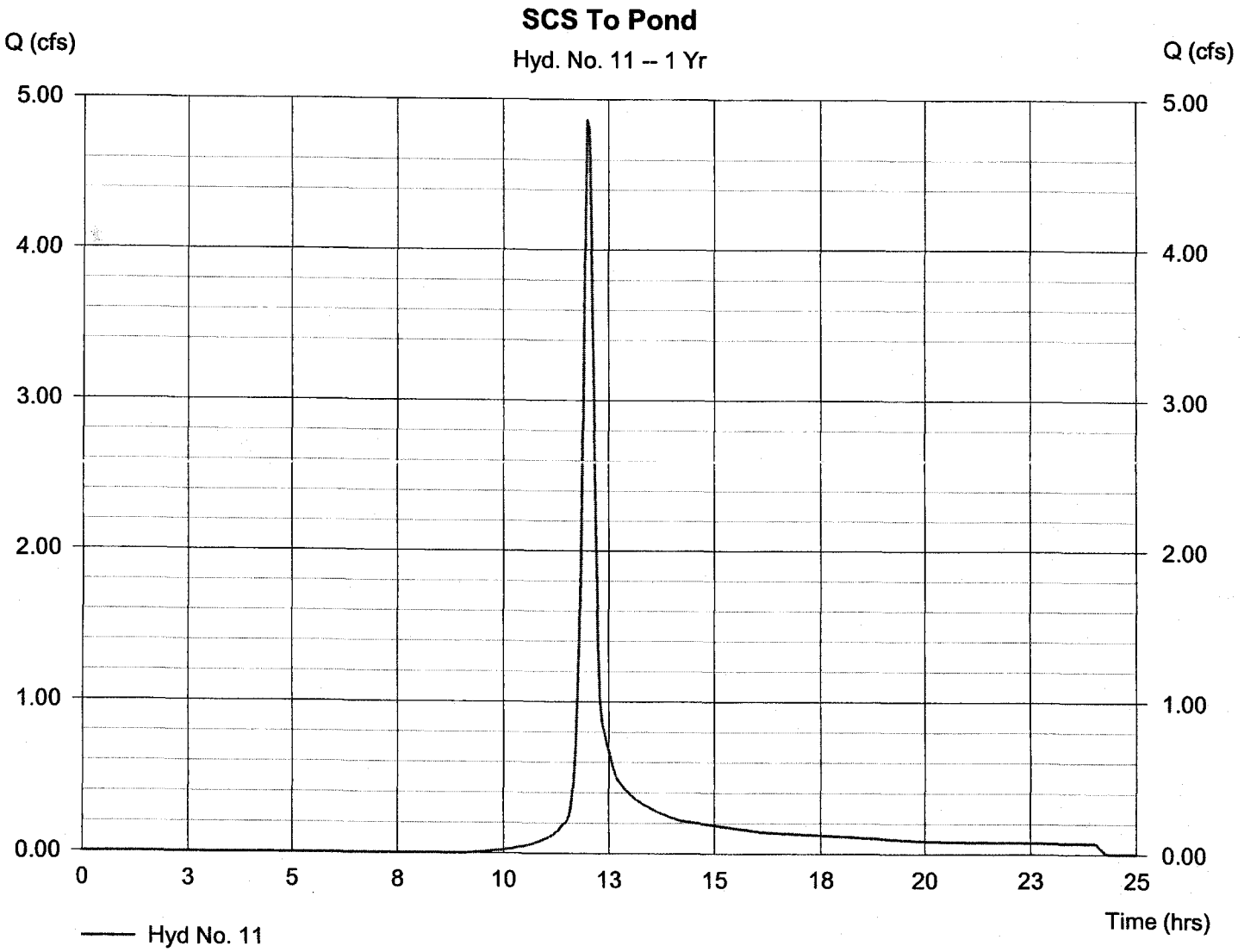
Tuesday, Aug 22 2006, 7:44 PM

Hyd. No. 11

SCS To Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 4.86 cfs
Storm frequency	= 1 yrs	Time interval	= 3 min
Drainage area	= 2.84 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 13,271 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:44 PM

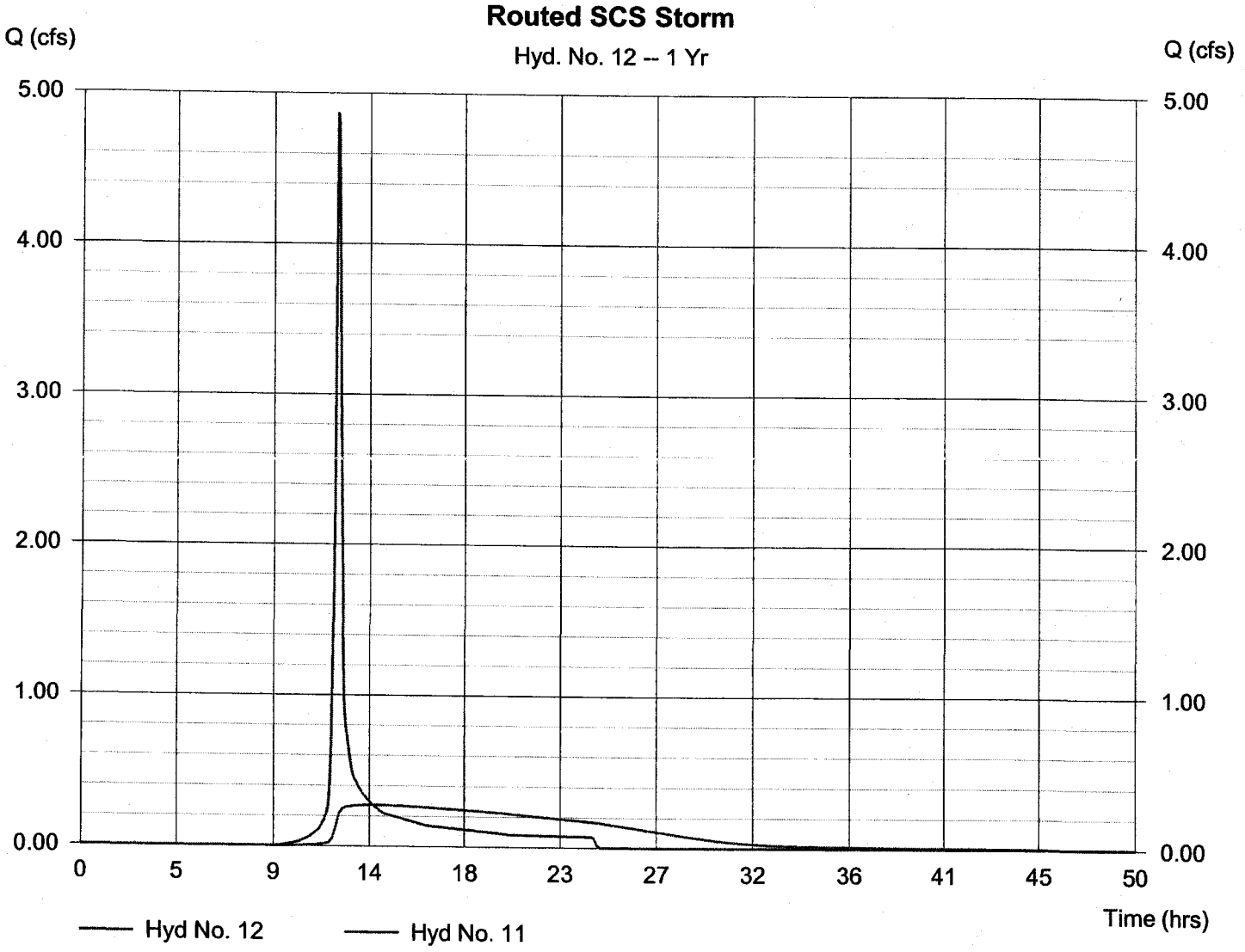
Hyd. No. 12

Routed SCS Storm

Hydrograph type	= Reservoir	Peak discharge	= 0.27 cfs
Storm frequency	= 1 yrs	Time interval	= 3 min
Inflow hyd. No.	= 11	Max. Elevation	= 85.43 ft
Reservoir name	= JRBC Pond	Max. Storage	= 13,281 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 13,248 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

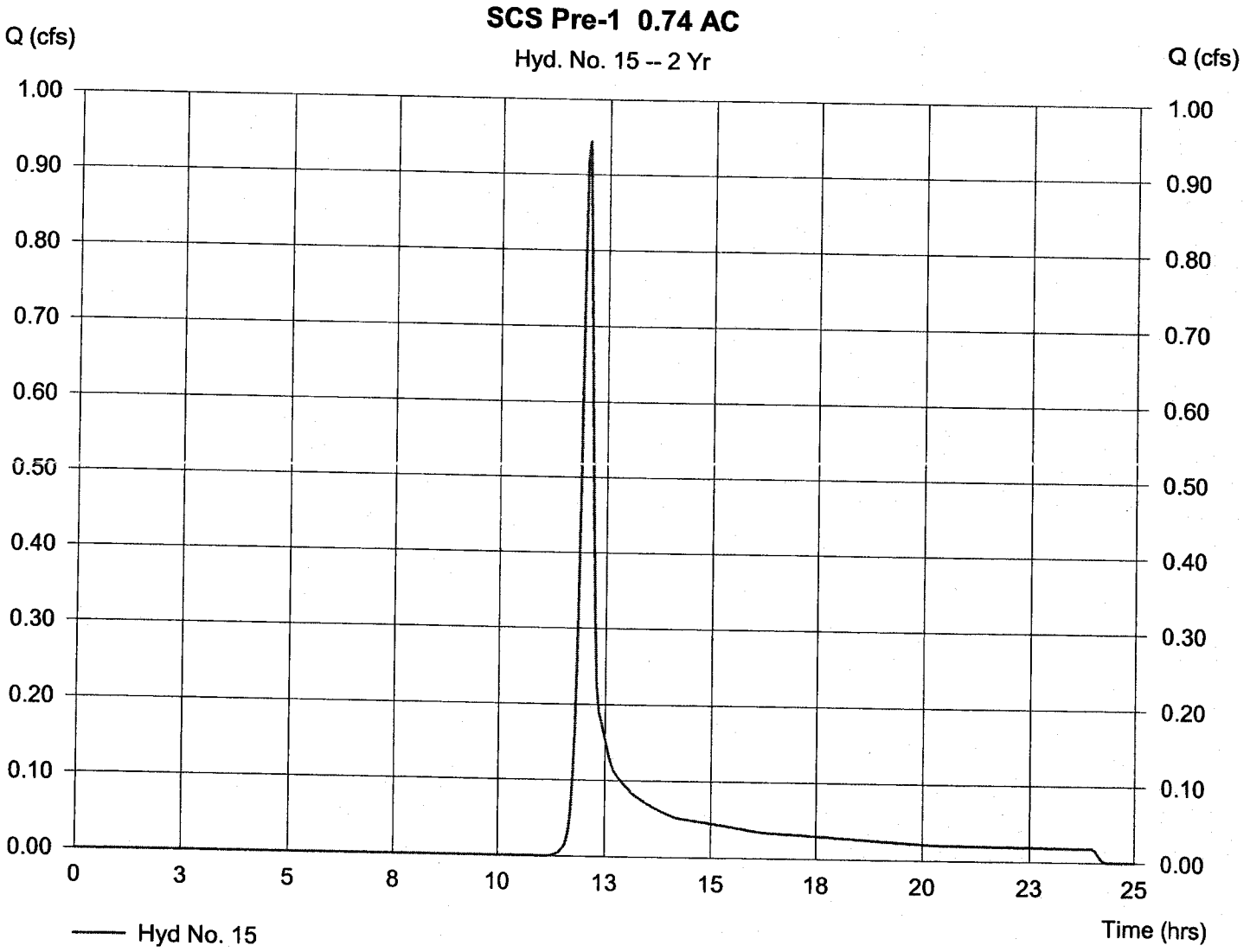
Tuesday, Aug 22 2006, 7:44 PM

Hyd. No. 15

SCS Pre-1 0.74 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.94 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Drainage area	= 0.74 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 2,708 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

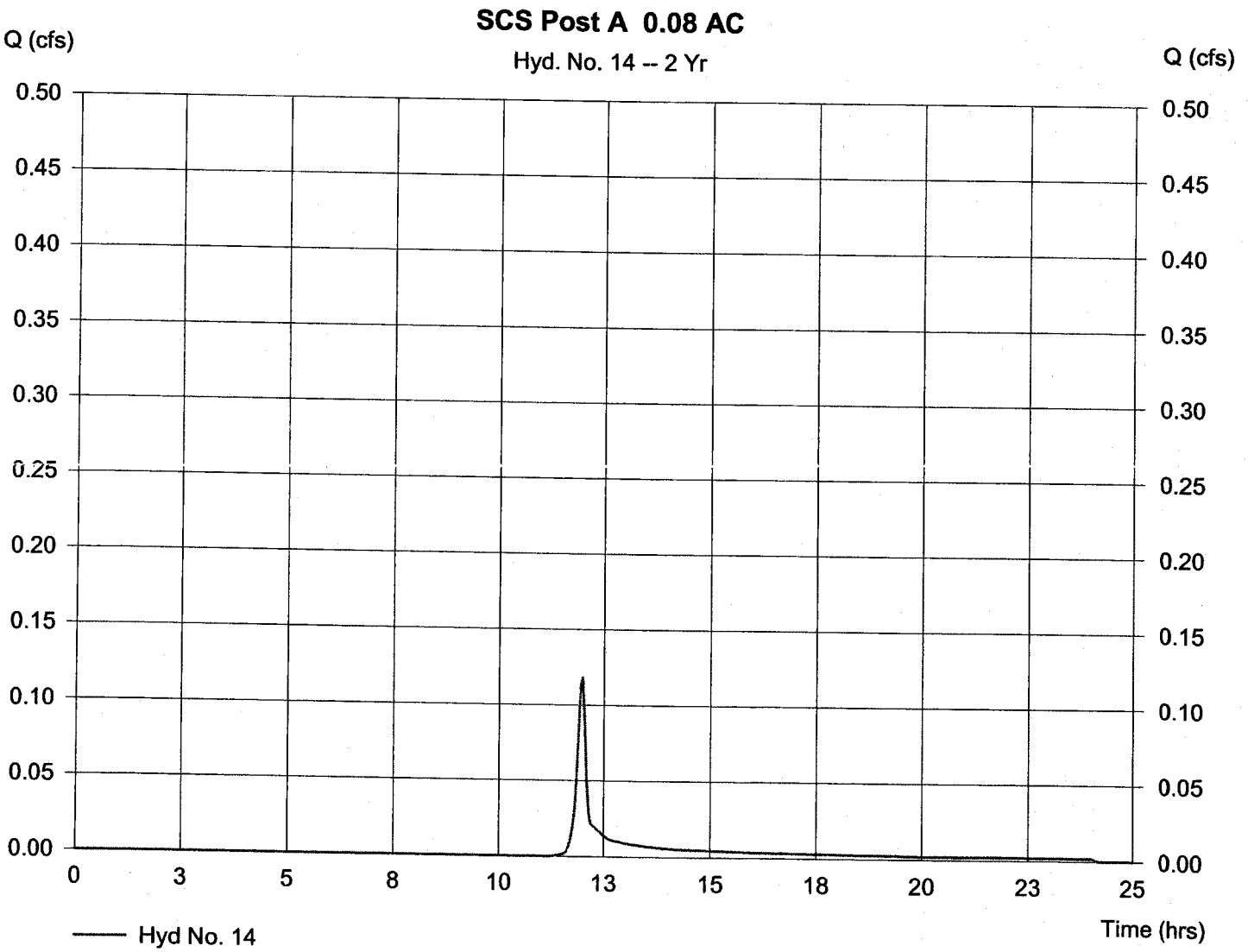
Tuesday, Aug 22 2006, 7:44 PM

Hyd. No. 14

SCS Post A 0.08 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.12 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Drainage area	= 0.08 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 274 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

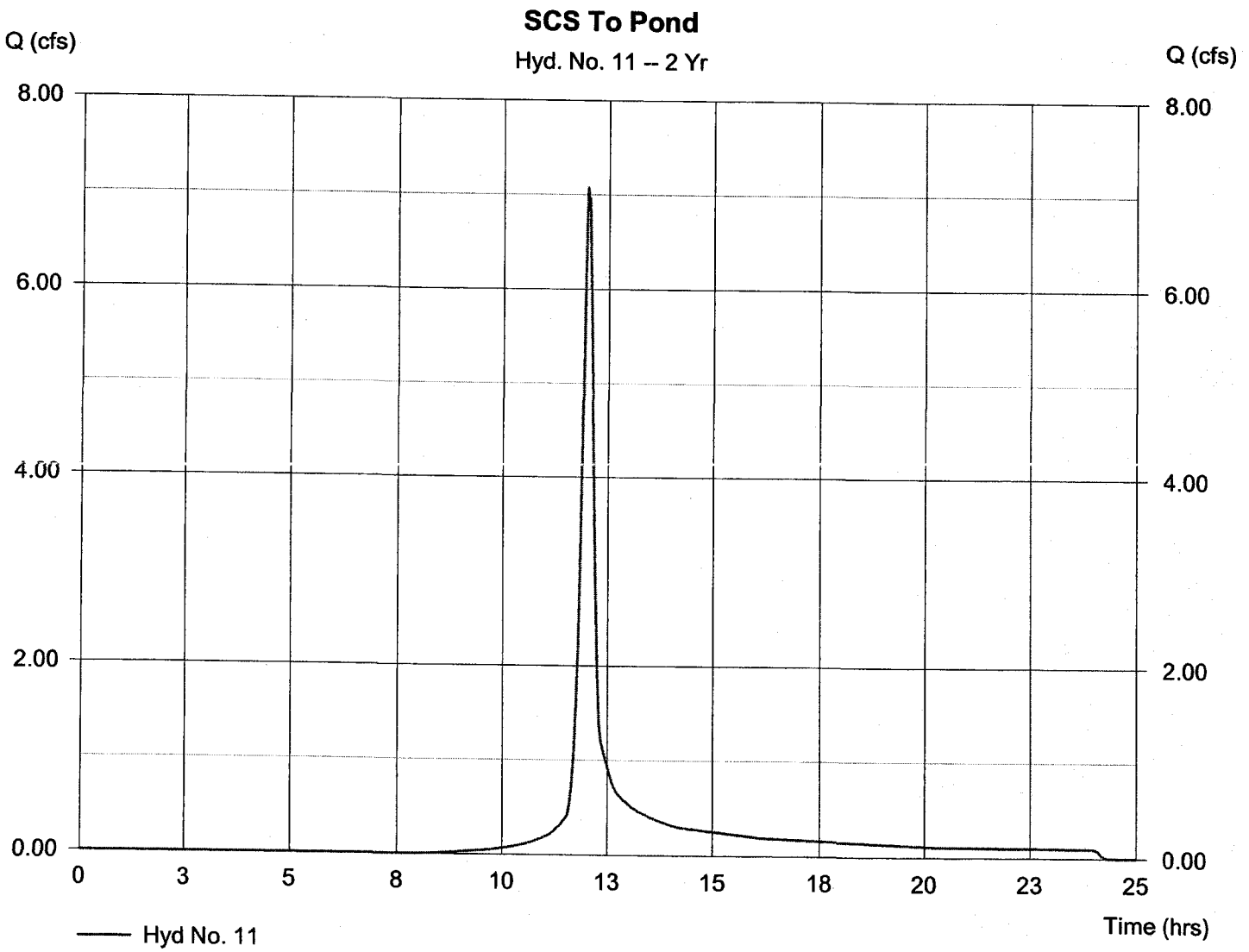
Tuesday, Aug 22 2006, 7:44 PM

Hyd. No. 11

SCS To Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 7.07 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Drainage area	= 2.84 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 19,160 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:44 PM

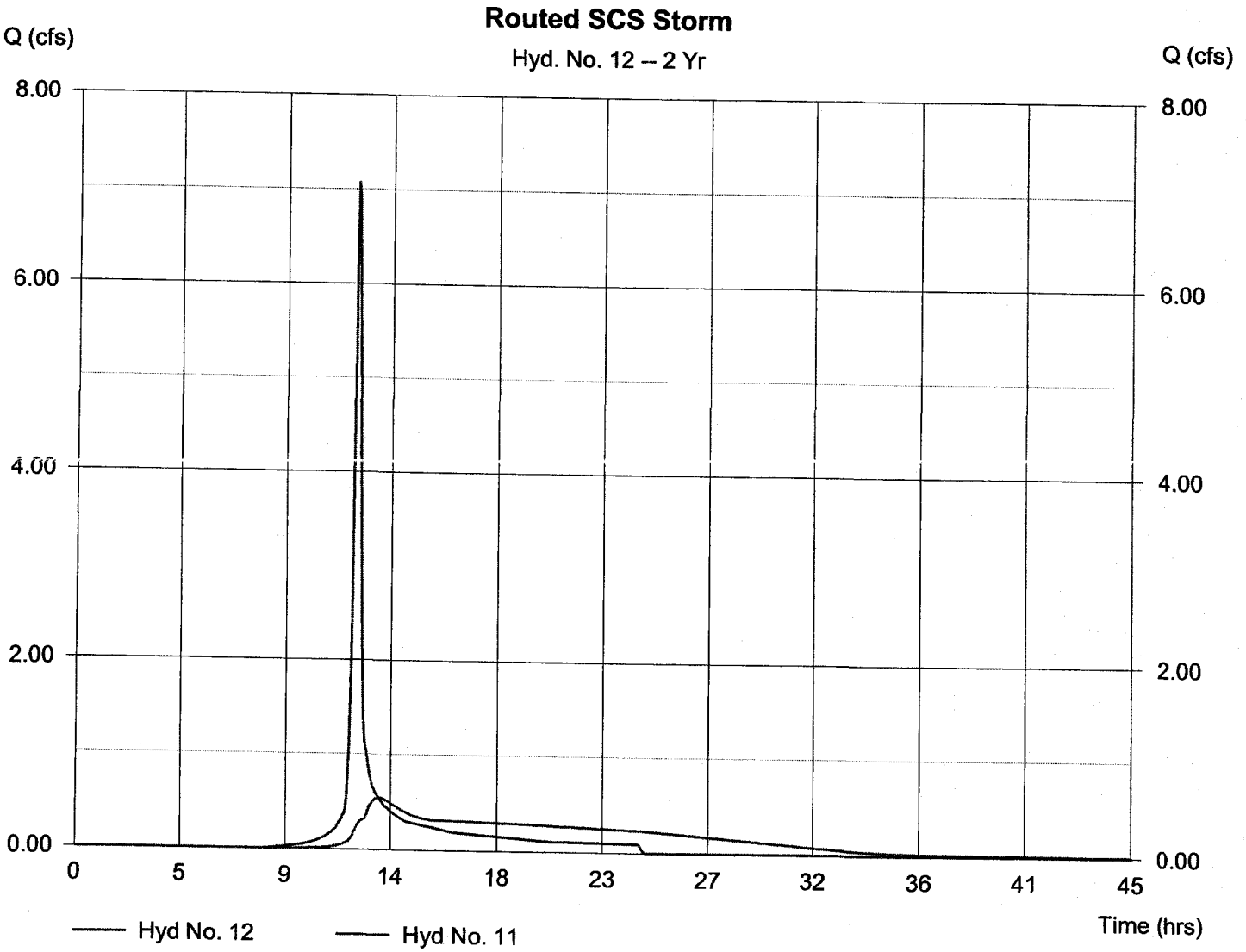
Hyd. No. 12

Routed SCS Storm

Hydrograph type	= Reservoir	Peak discharge	= 0.54 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Inflow hyd. No.	= 11	Max. Elevation	= 86.00 ft
Reservoir name	= JRBC Pond	Max. Storage	= 16,483 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 19,137 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:44 PM

Pond No. 1 - JRBC Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	81.00	1,044	0	0
1.00	82.00	1,464	1,254	1,254
2.00	83.00	1,940	1,702	2,956
3.00	84.00	4,362	3,151	6,107
4.00	85.00	5,181	4,772	10,879
4.90	85.90	5,910	4,991	15,869
5.00	86.00	6,023	597	16,466
5.90	86.90	6,910	5,820	22,286
6.00	87.00	6,996	695	22,981

Culvert / Orifice Structures

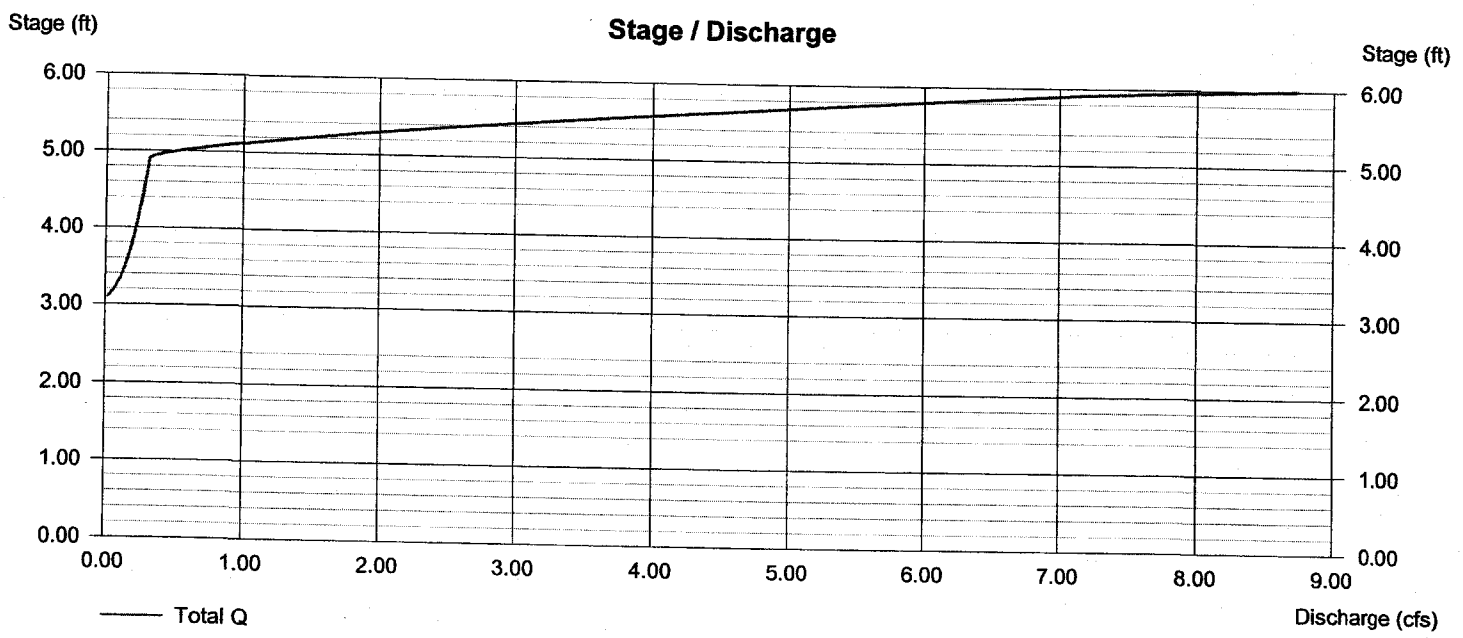
	[A]	[B]	[C]	[D]
Rise (in)	= 15.00	3.00	0.00	0.00
Span (in)	= 15.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 80.20	84.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	8.00	0.00	0.00
Crest El. (ft)	= 85.90	86.90	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	0.00
Weir Type	= Riser	Broad	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

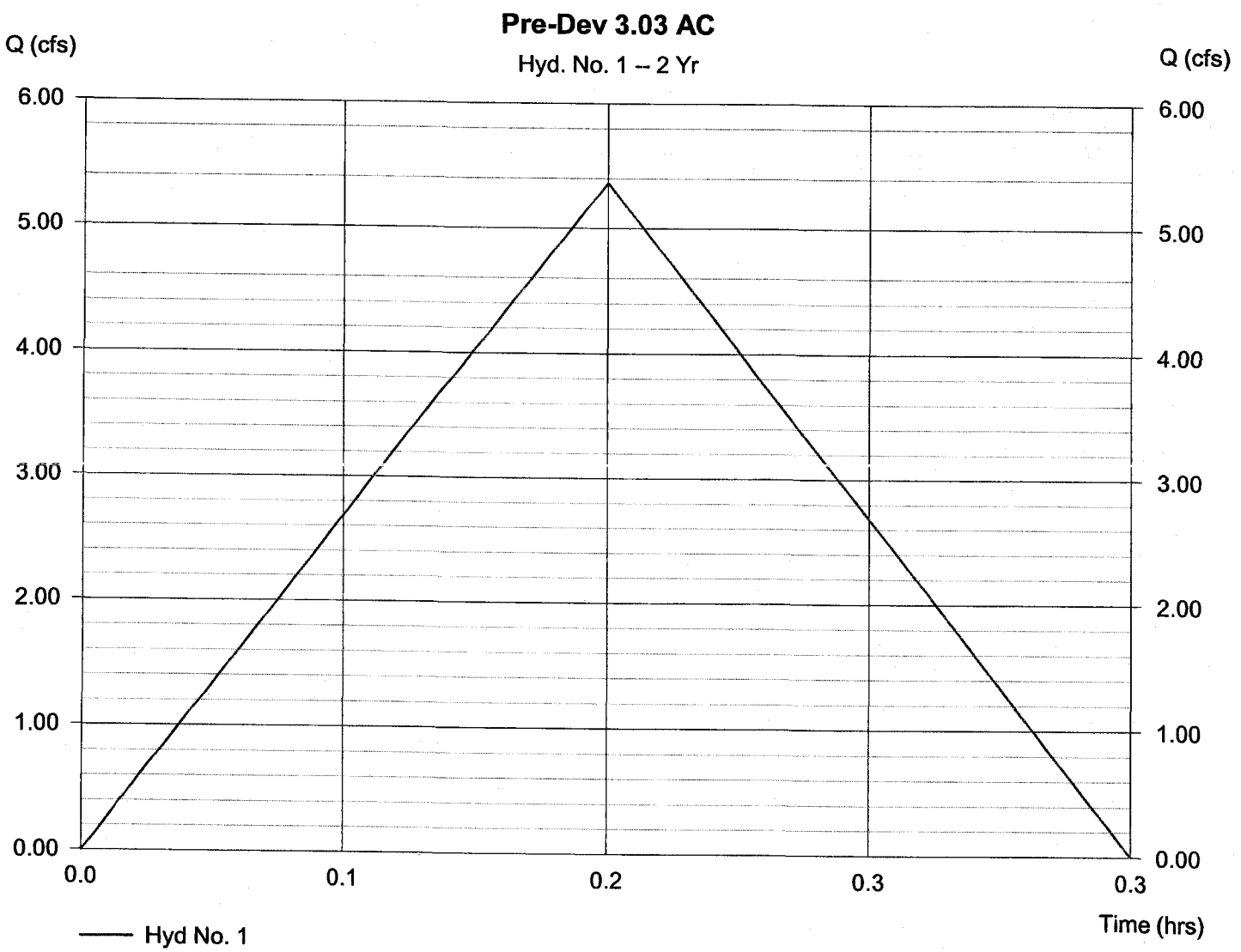
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 1

Pre-Dev 3.03 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 5.37 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 3.0 ac	Runoff coeff.	= 0.38
Intensity	= 4.660 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1 x Tc

Hydrograph Volume = 3,220 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

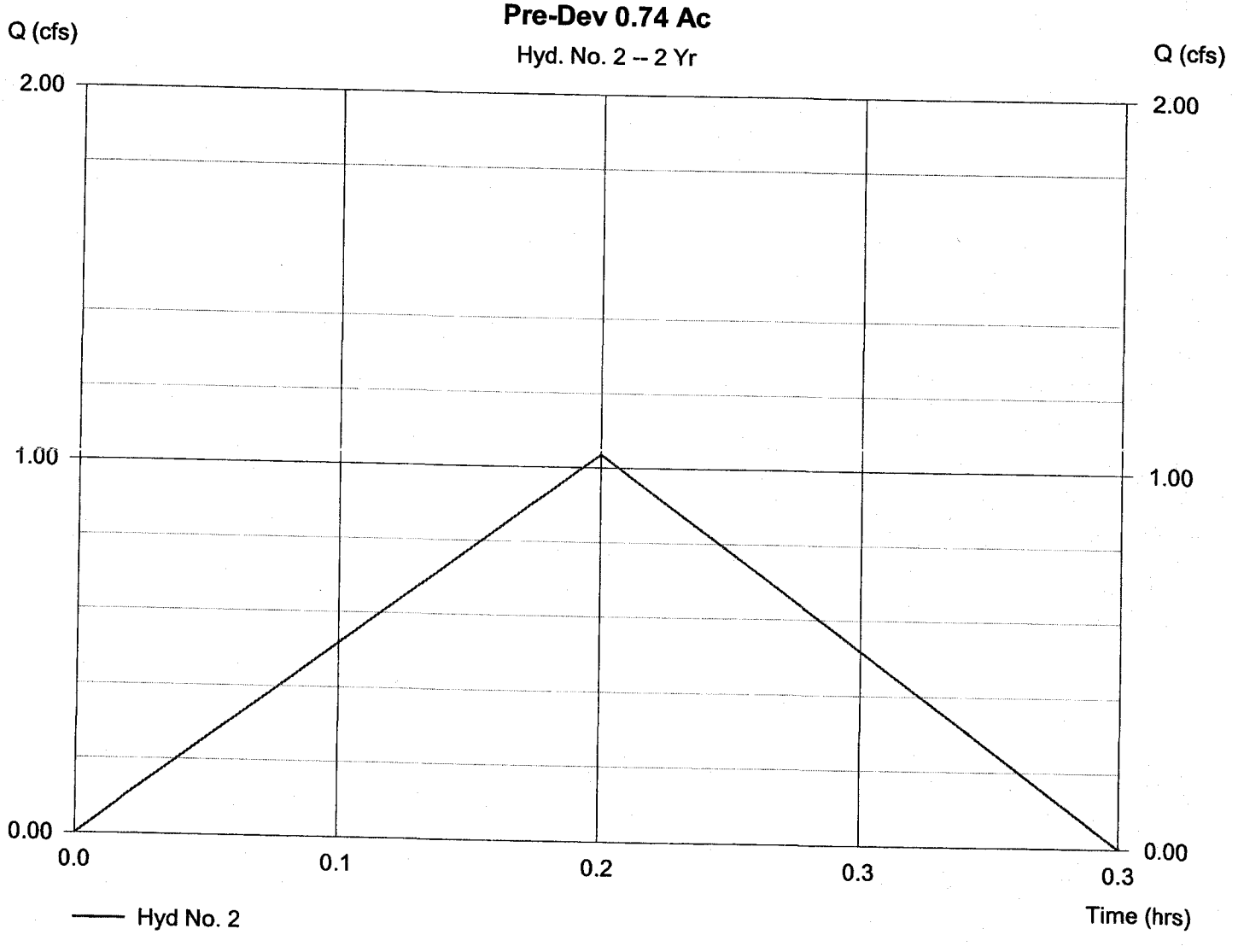
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 2

Pre-Dev 0.74 Ac

Hydrograph type	= Rational	Peak discharge	= 1.03 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 0.7 ac	Runoff coeff.	= 0.3
Intensity	= 4.660 in/hr	Tc by TR55	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 621 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

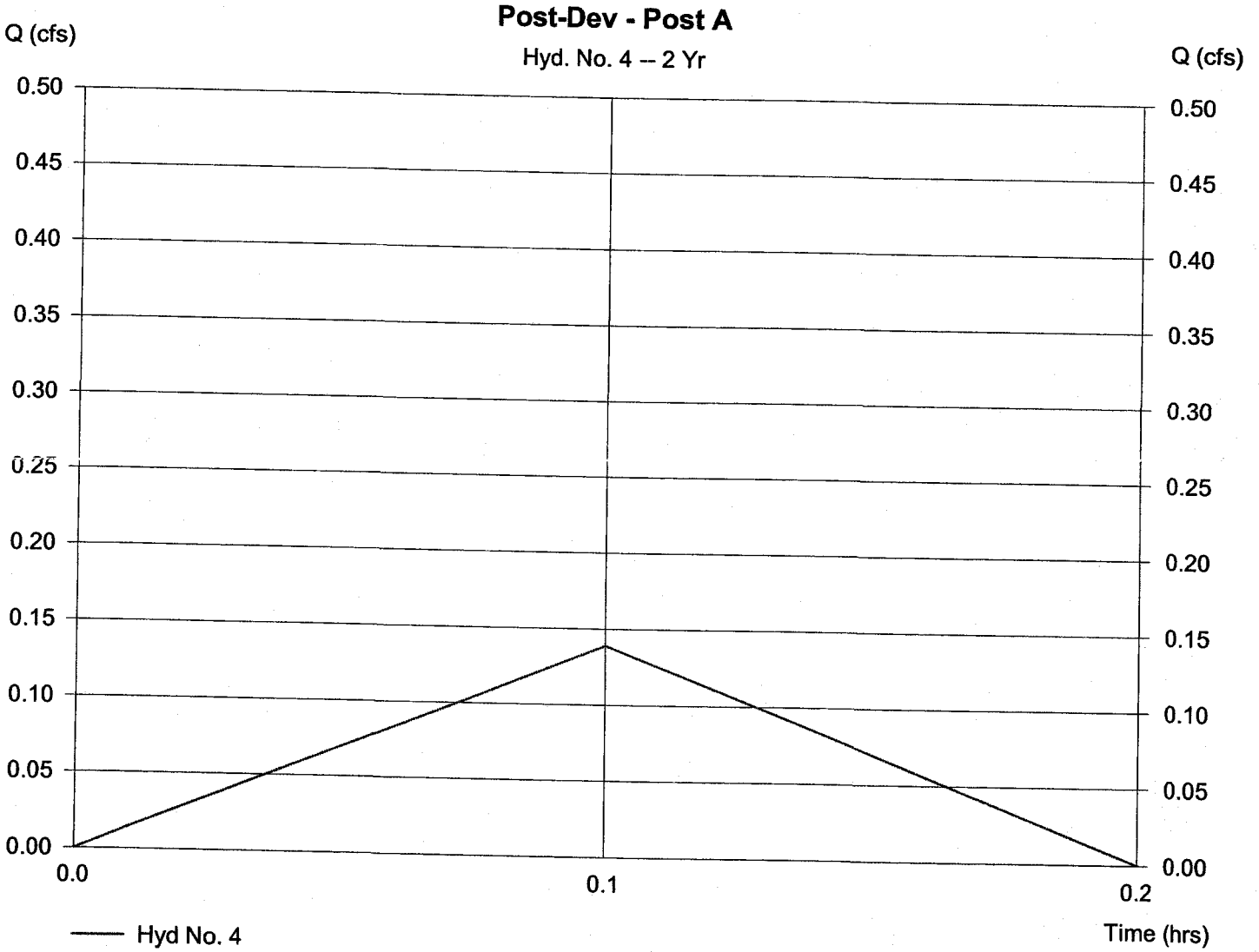
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 4

Post-Dev - Post A

Hydrograph type	= Rational	Peak discharge	= 0.14 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.3
Intensity	= 5.783 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 42 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

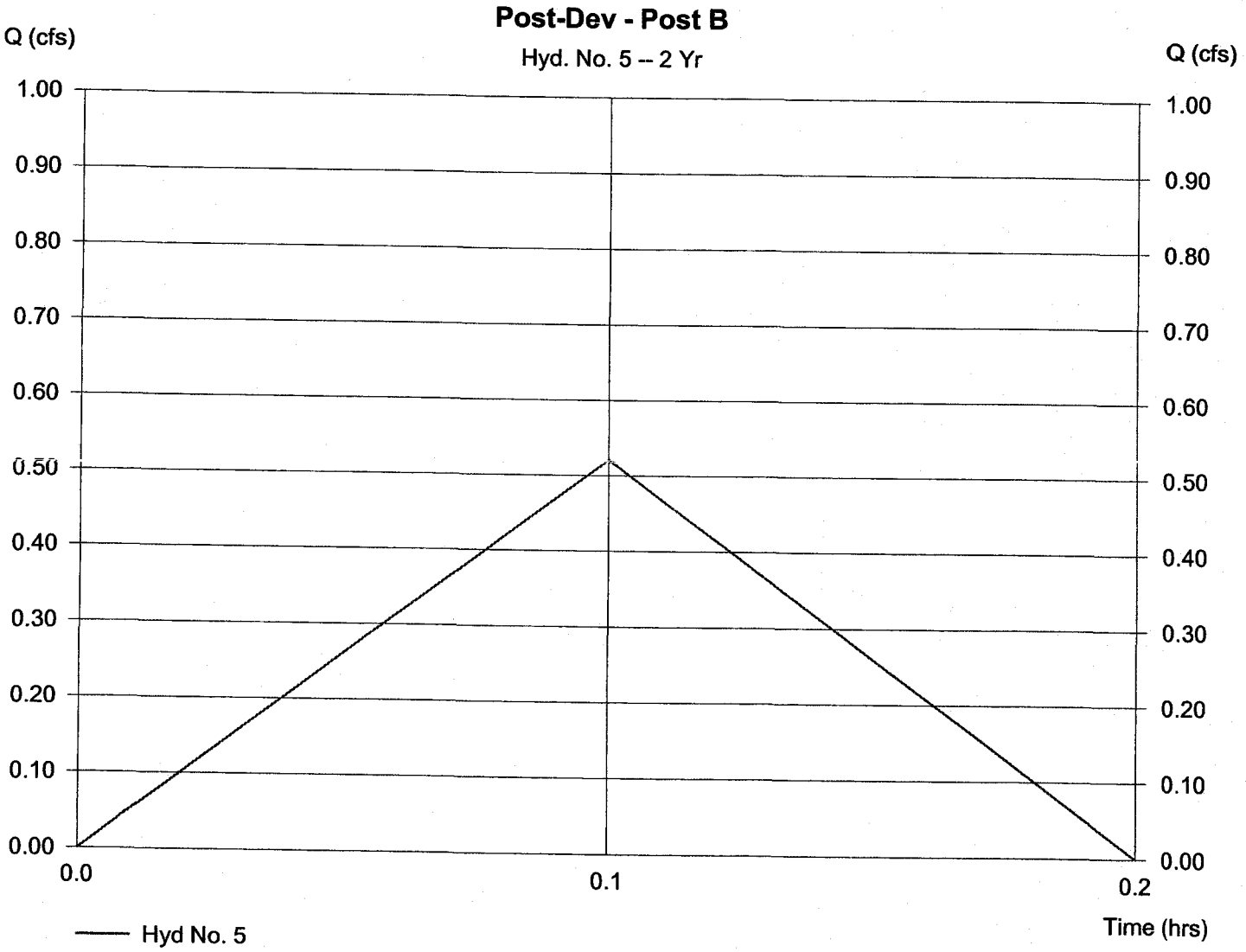
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 5

Post-Dev - Post B

Hydrograph type	= Rational	Peak discharge	= 0.52 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 0.3 ac	Runoff coeff.	= 0.3
Intensity	= 5.783 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 156 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

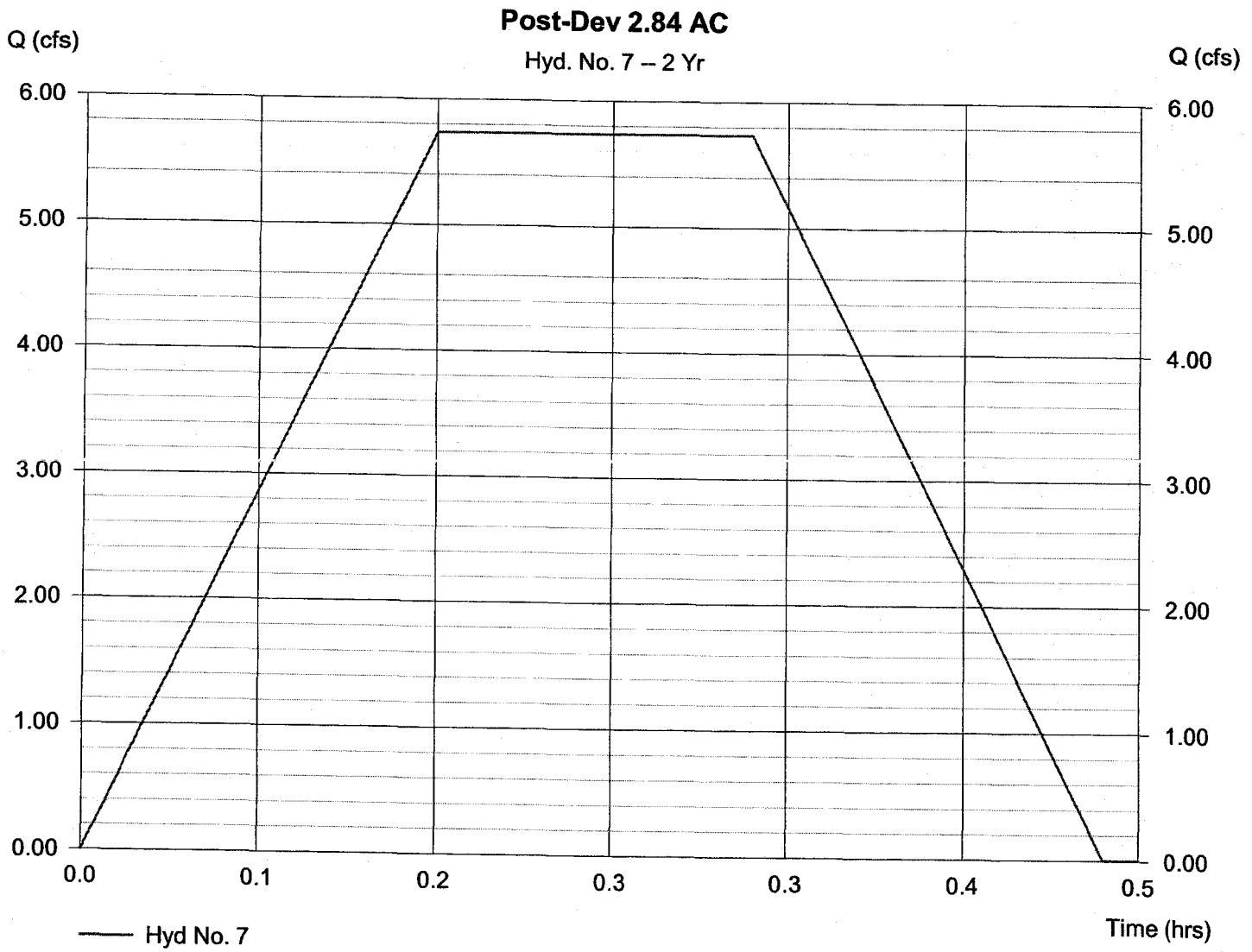
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 7

Post-Dev 2.84 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 5.73 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 2.8 ac	Runoff coeff.	= 0.59
Intensity	= 3.422 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1.97 x Tc

Hydrograph Volume = 6,777 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:43 PM

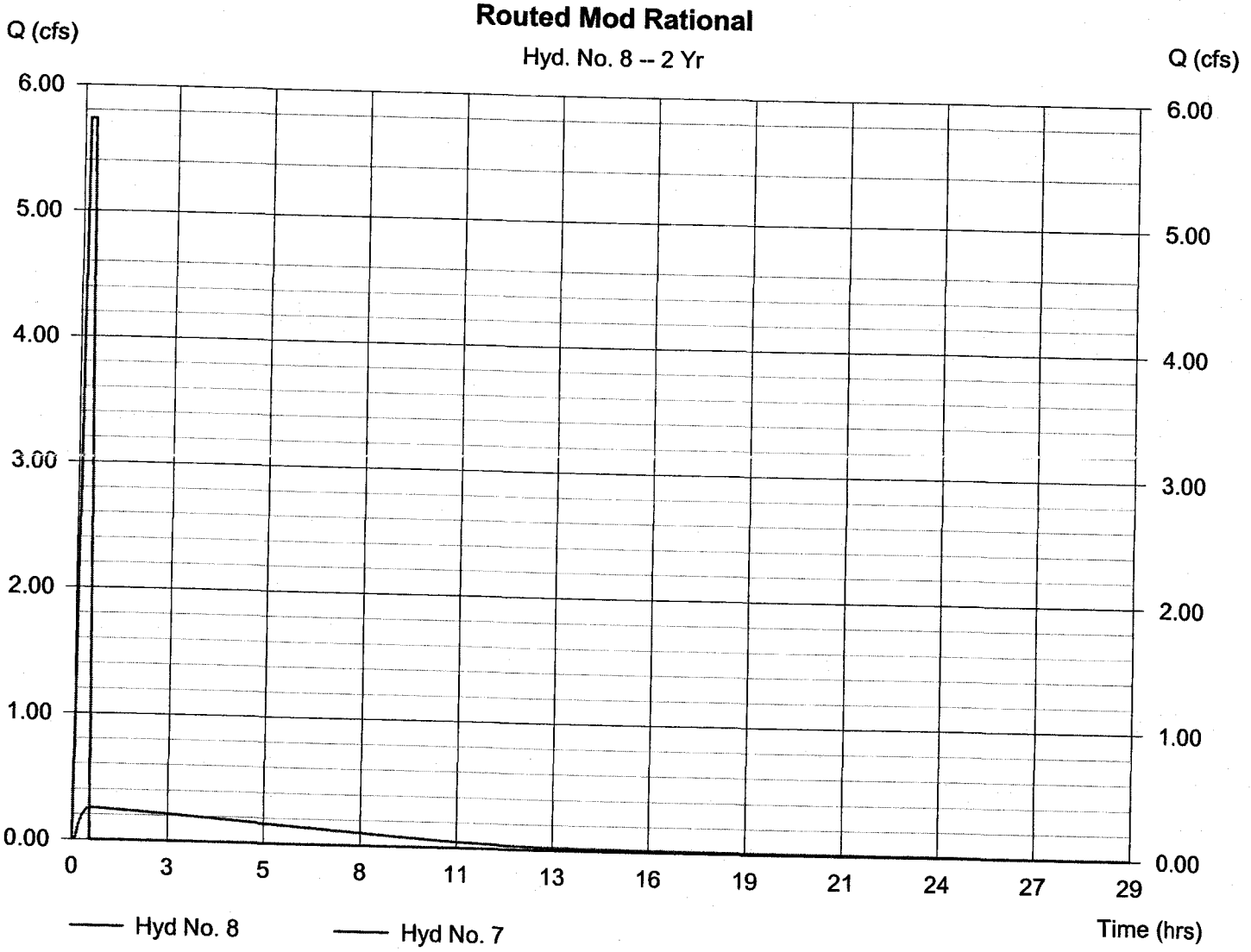
Hyd. No. 8

Routed Mod Rational

Hydrograph type	= Reservoir	Peak discharge	= 0.25 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Max. Elevation	= 85.27 ft
Reservoir name	= JRBC Pond	Max. Storage	= 12,384 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 6,512 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

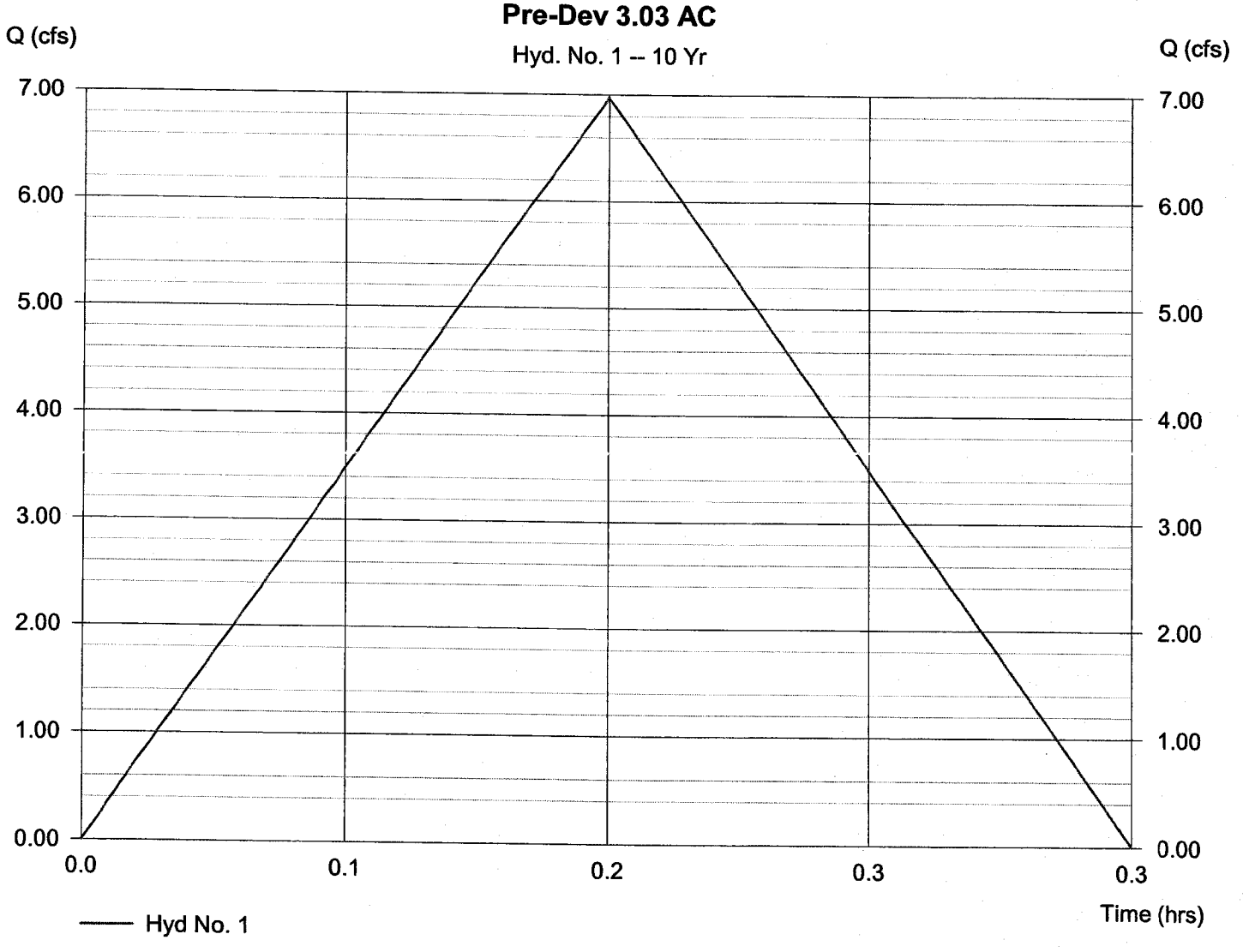
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 1

Pre-Dev 3.03 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 6.98 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 3.0 ac	Runoff coeff.	= 0.38
Intensity	= 6.059 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1 x Tc

Hydrograph Volume = 4,186 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

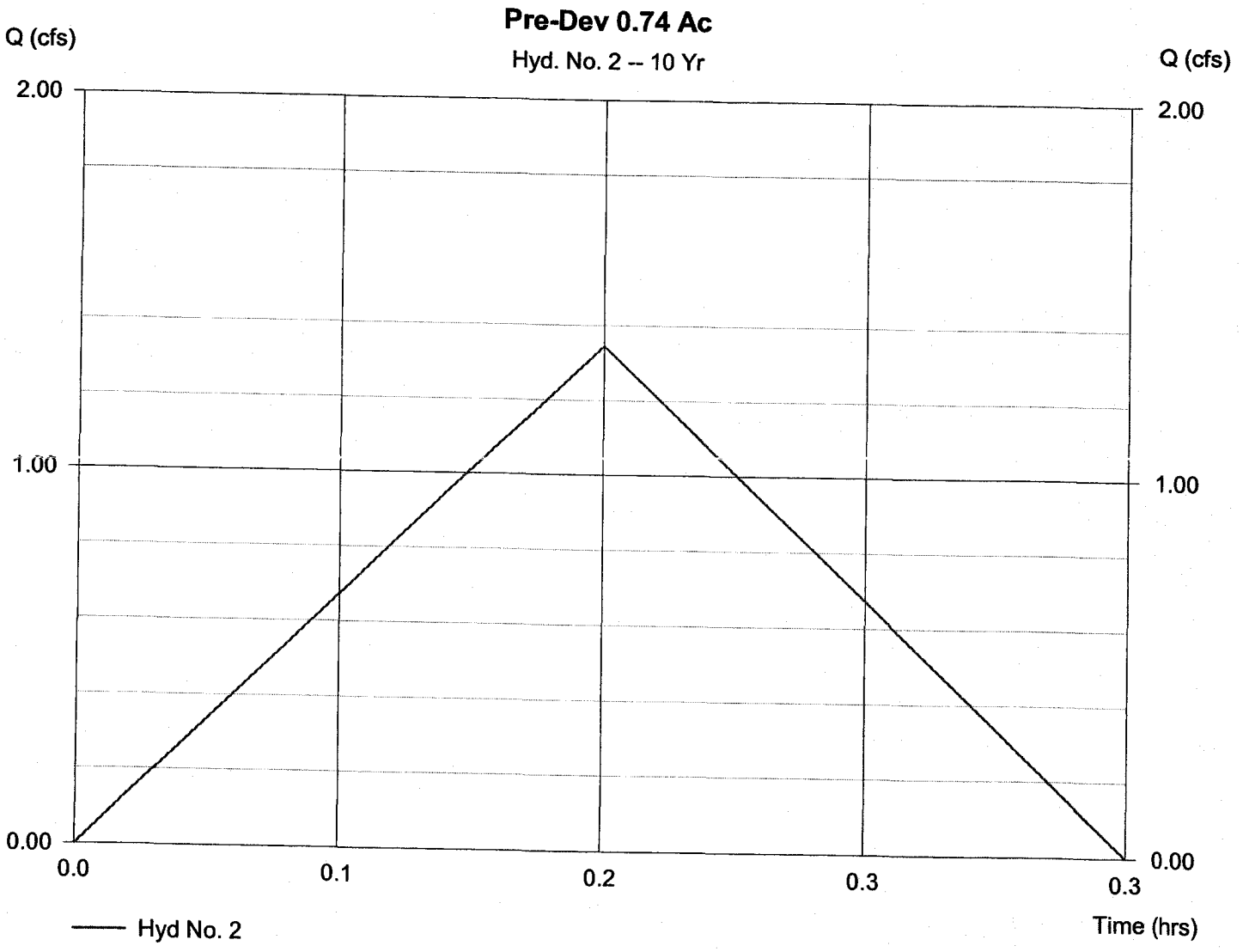
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 2

Pre-Dev 0.74 Ac

Hydrograph type	= Rational	Peak discharge	= 1.35 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 0.7 ac	Runoff coeff.	= 0.3
Intensity	= 6.059 in/hr	Tc by TR55	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 807 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

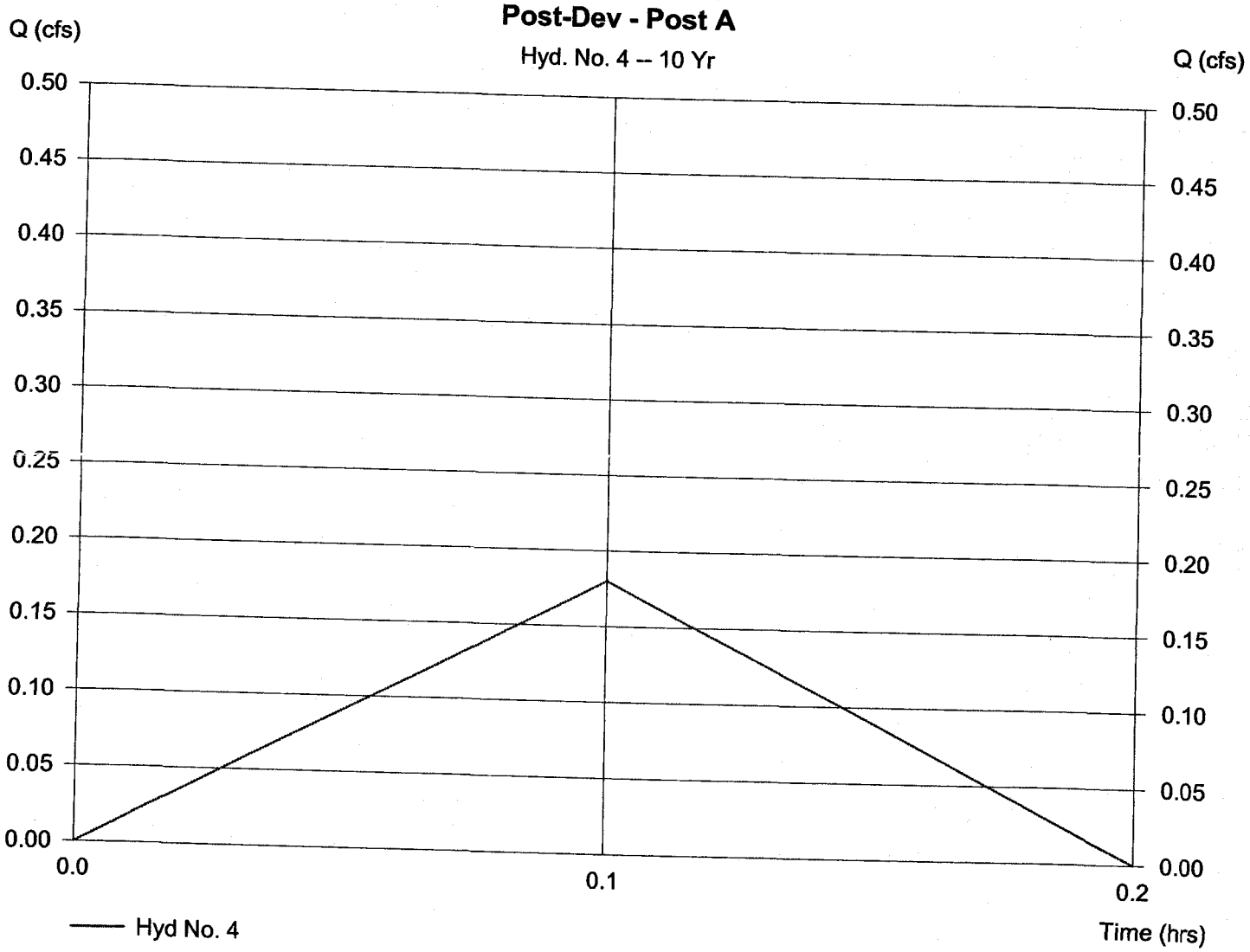
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 4

Post-Dev - Post A

Hydrograph type	= Rational	Peak discharge	= 0.18 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.3
Intensity	= 7.496 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 54 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

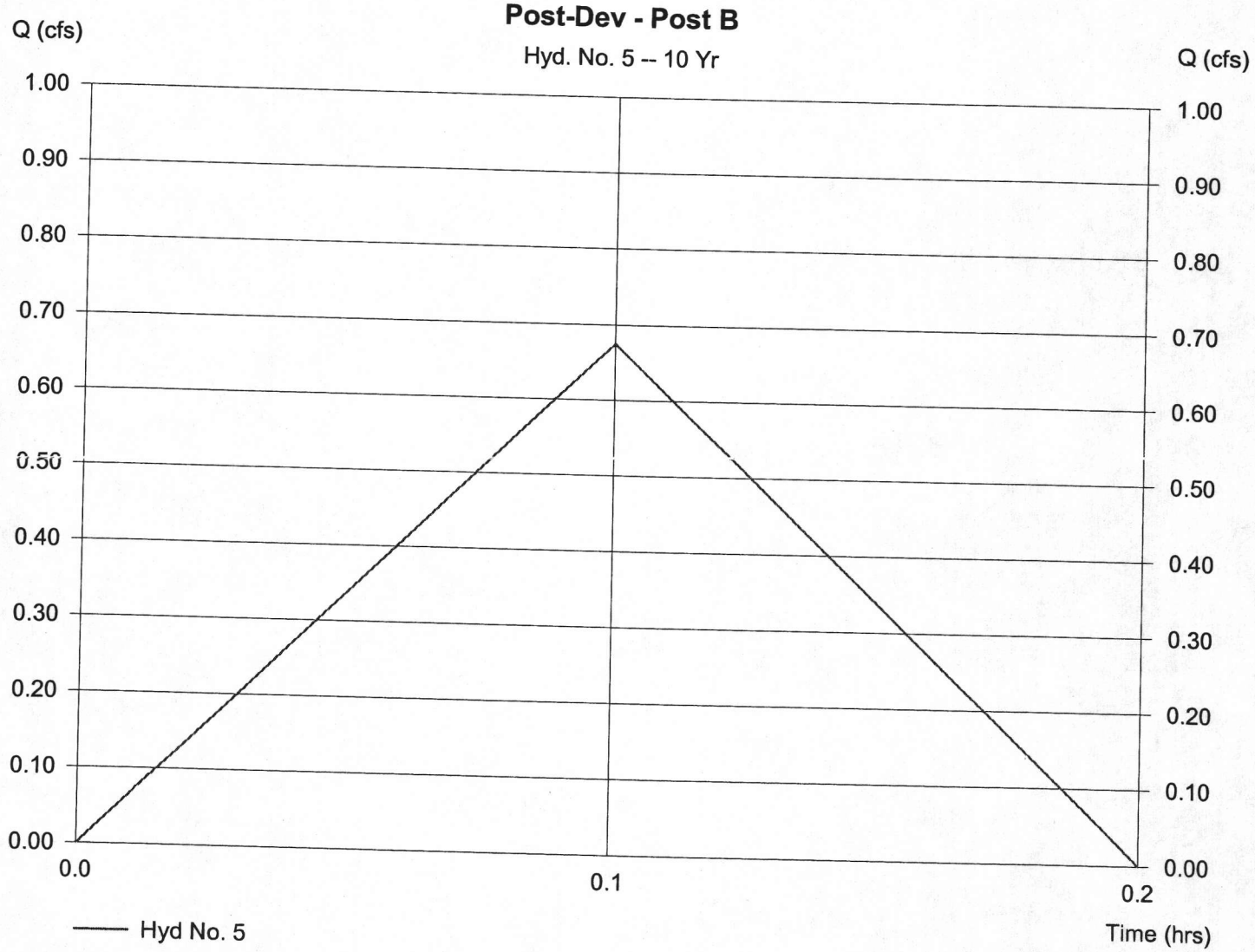
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 5

Post-Dev - Post B

Hydrograph type	= Rational	Peak discharge	= 0.67 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 0.3 ac	Runoff coeff.	= 0.3
Intensity	= 7.496 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 202 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

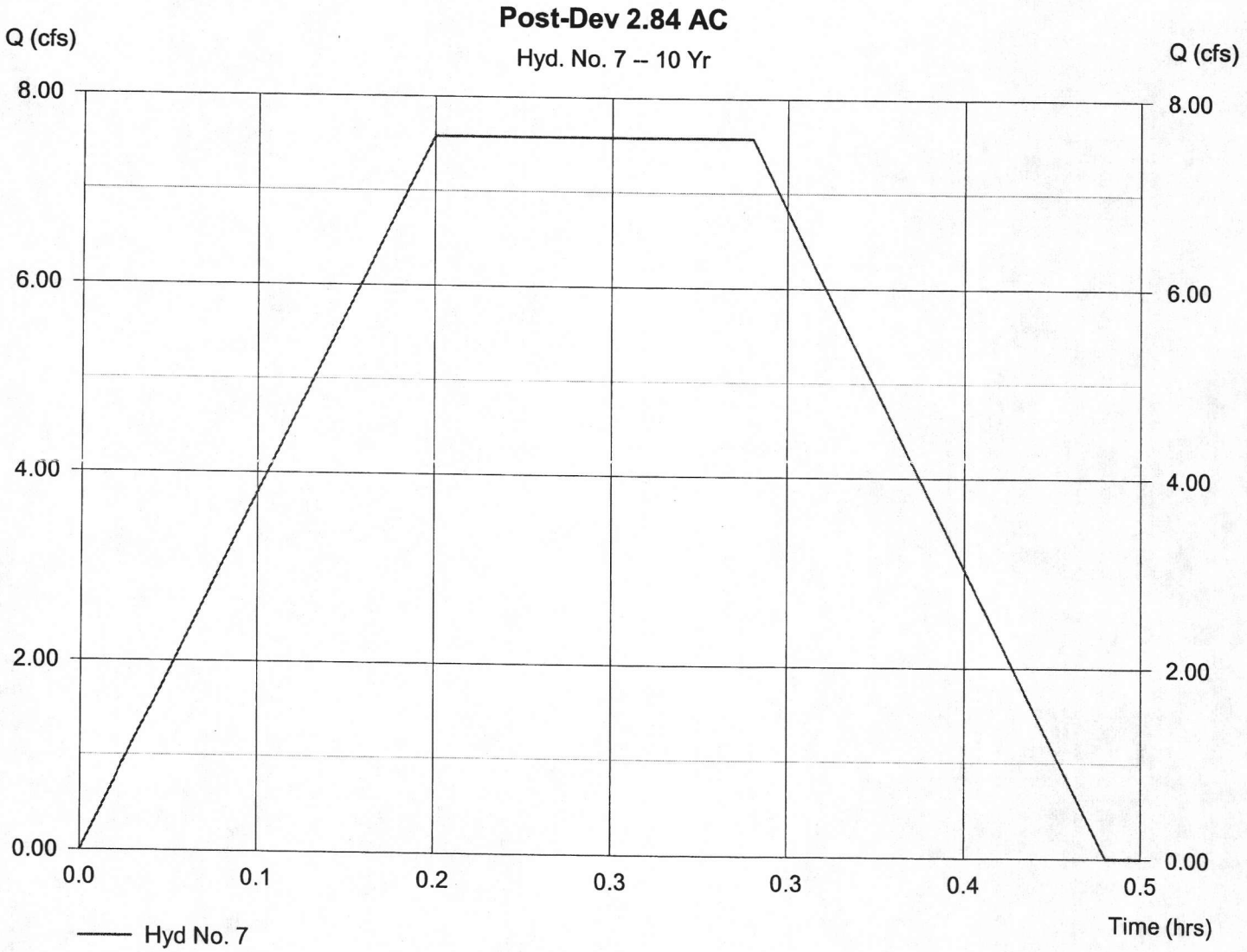
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 7

Post-Dev 2.84 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 7.58 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 2.8 ac	Runoff coeff.	= 0.59
Intensity	= 4.522 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1.97 x Tc

Hydrograph Volume = 8,956 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:43 PM

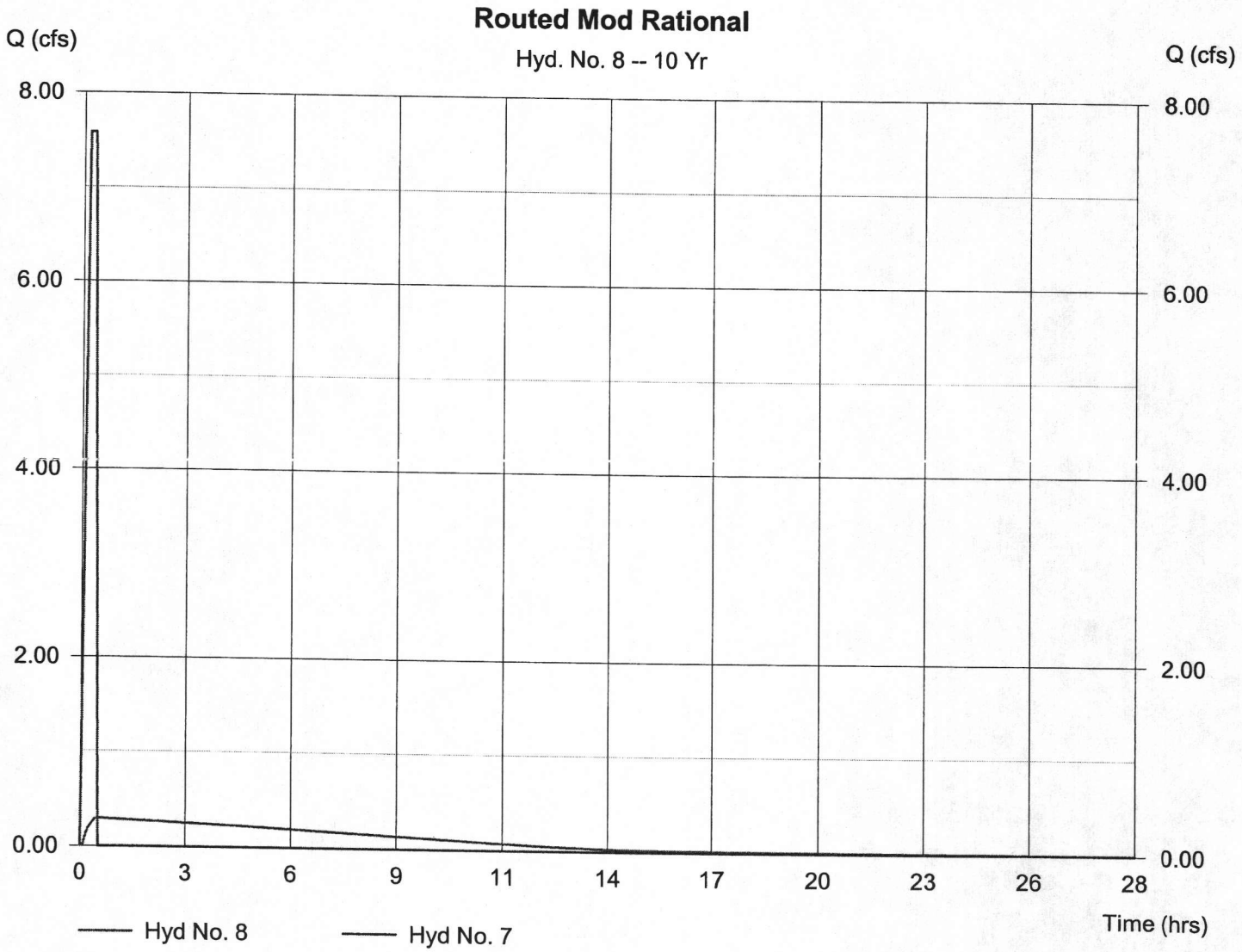
Hyd. No. 8

Routed Mod Rational

Hydrograph type	= Reservoir	Peak discharge	= 0.29 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Max. Elevation	= 85.64 ft
Reservoir name	= JRBC Pond	Max. Storage	= 14,440 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 8,614 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

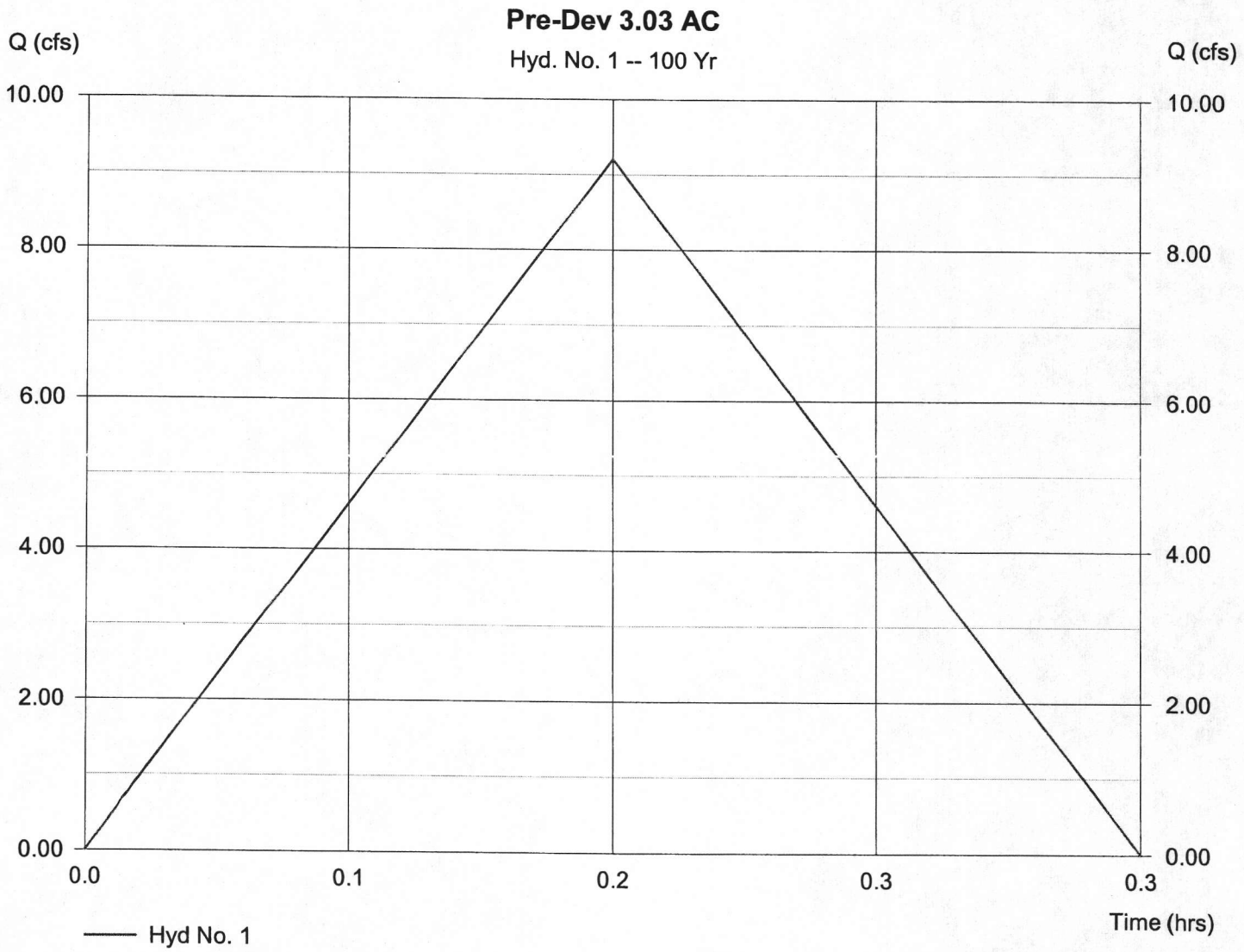
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 1

Pre-Dev 3.03 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 9.21 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 3.0 ac	Runoff coeff.	= 0.38
Intensity	= 7.996 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1 x Tc

Hydrograph Volume = 5,524 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

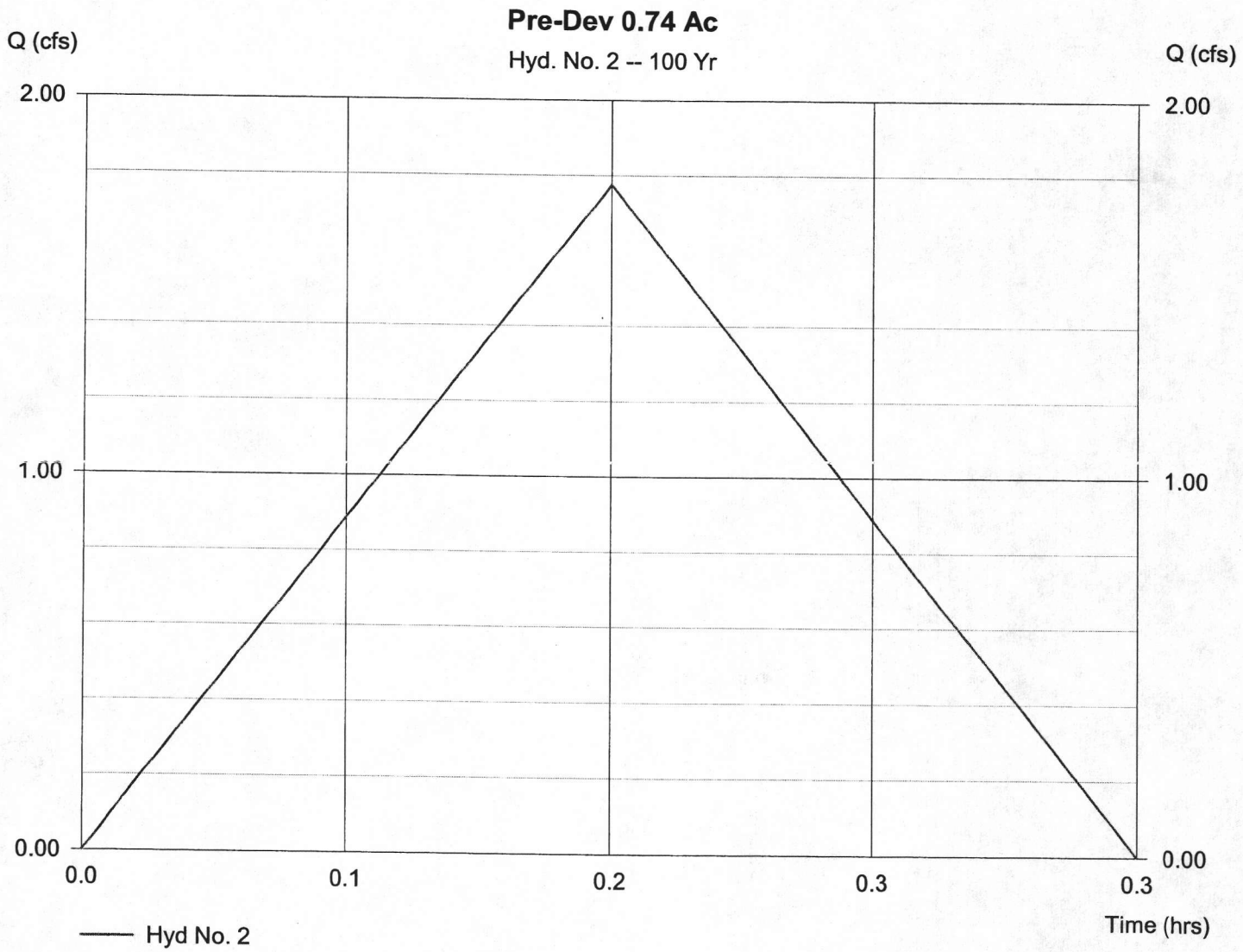
Tuesday, Aug 22 2006, 7:42 PM

Hyd. No. 2

Pre-Dev 0.74 Ac

Hydrograph type	= Rational	Peak discharge	= 1.78 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.7 ac	Runoff coeff.	= 0.3
Intensity	= 7.996 in/hr	Tc by TR55	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 1,065 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

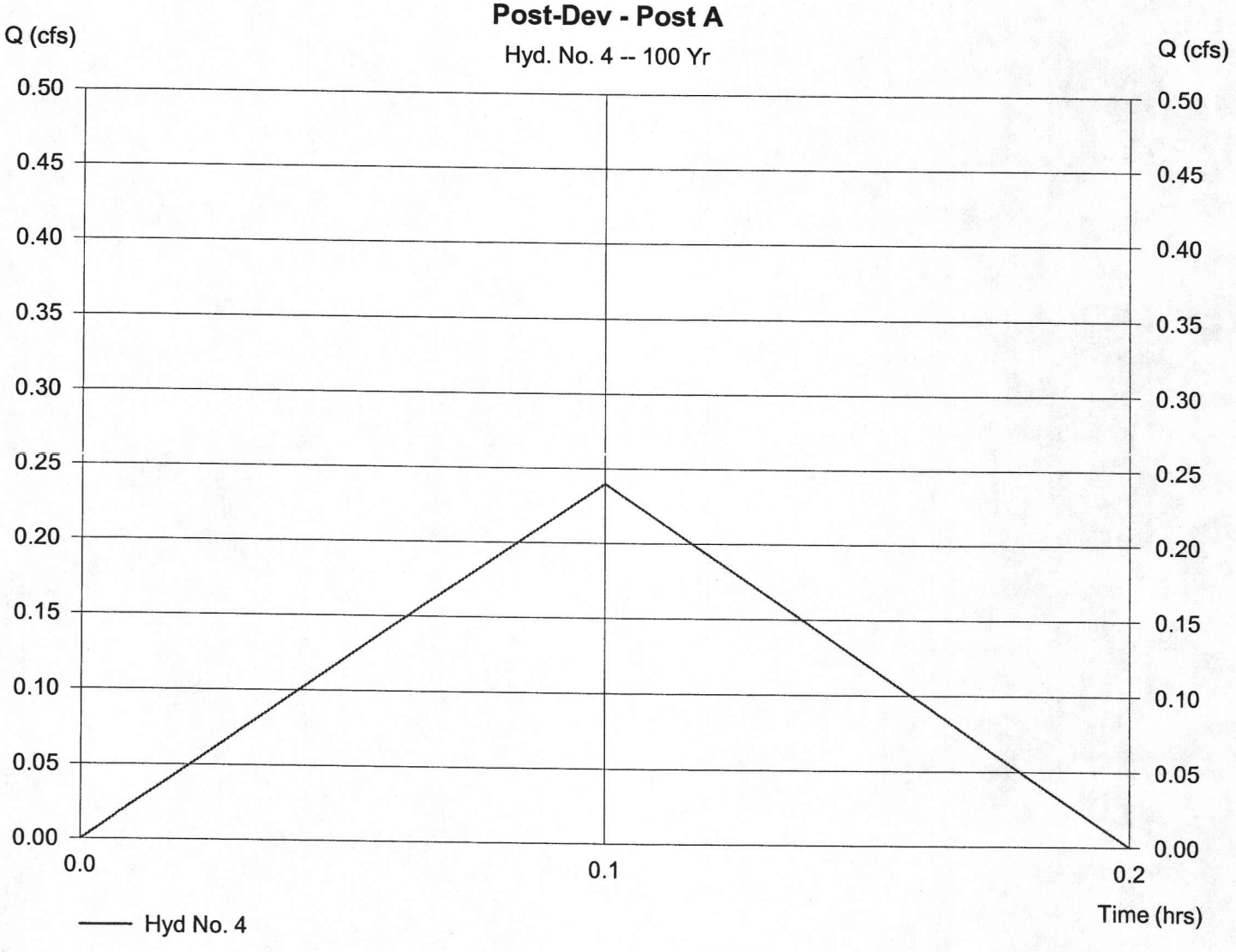
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 4

Post-Dev - Post A

Hydrograph type	= Rational	Peak discharge	= 0.24 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.3
Intensity	= 9.988 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 72 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

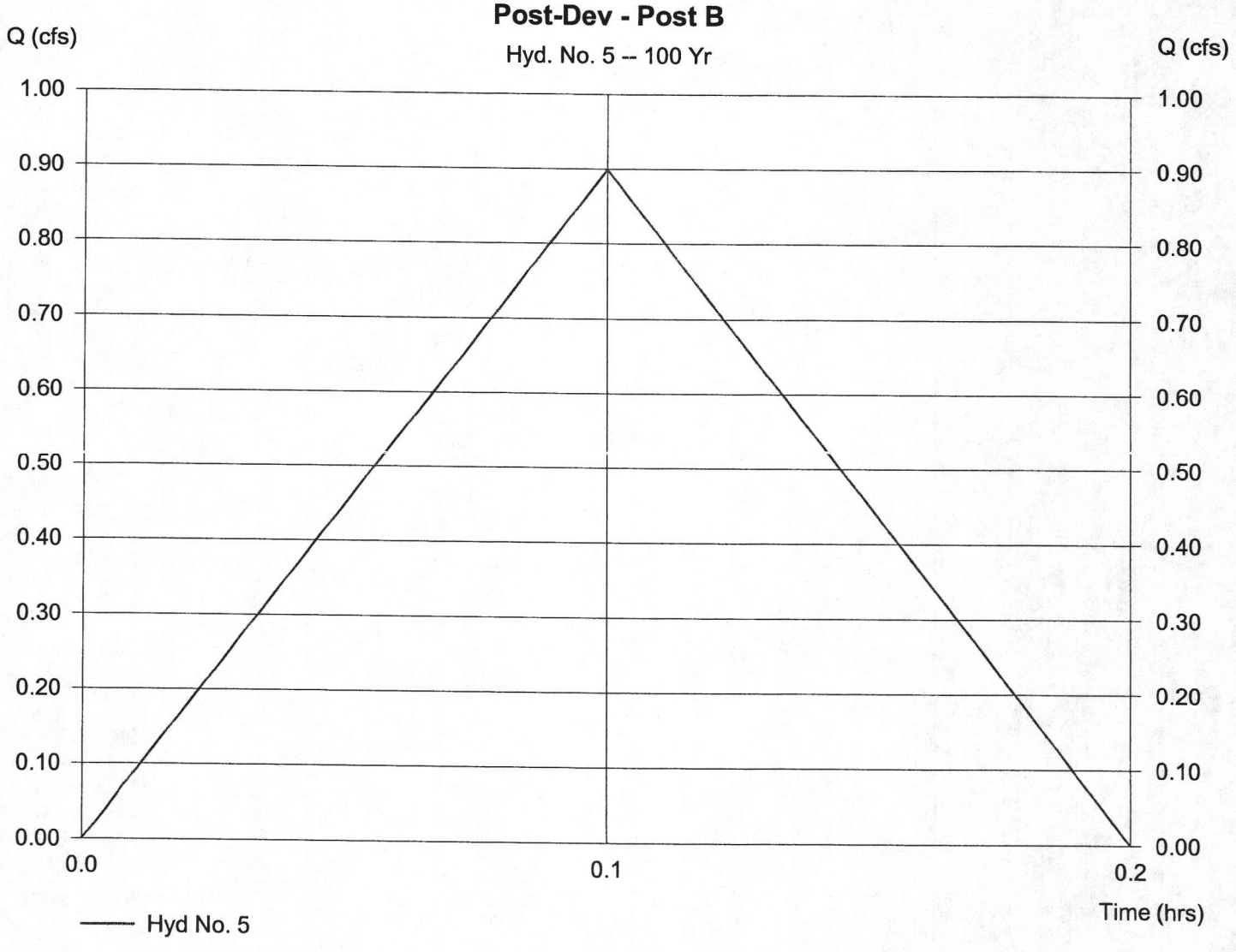
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 5

Post-Dev - Post B

Hydrograph type	= Rational	Peak discharge	= 0.90 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.3 ac	Runoff coeff.	= 0.3
Intensity	= 9.988 in/hr	Tc by User	= 5 min
IDF Curve	= JamesCity-NW-14.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 270 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

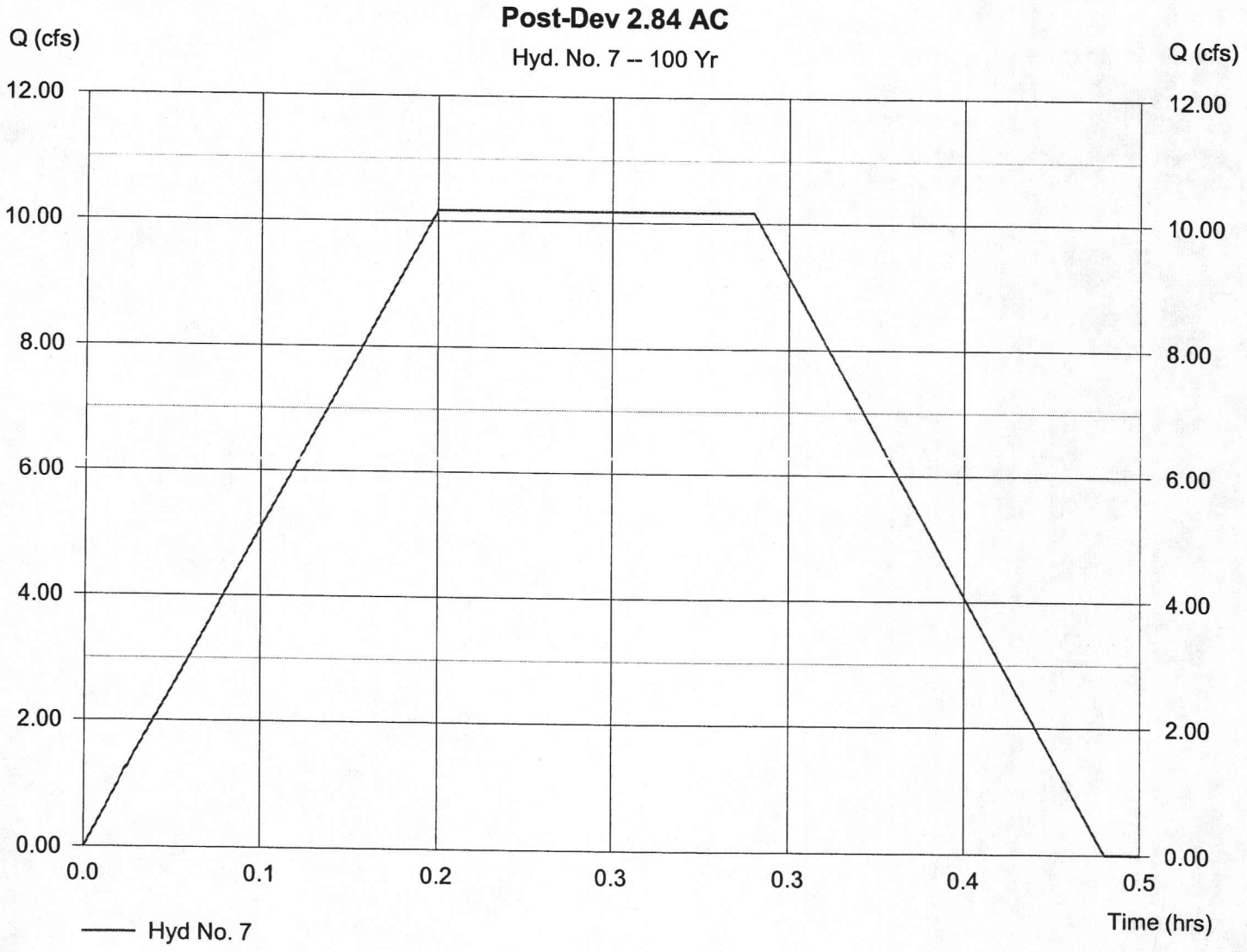
Tuesday, Aug 22 2006, 7:43 PM

Hyd. No. 7

Post-Dev 2.84 AC

Hydrograph type	= Mod. Rational	Peak discharge	= 10.17 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 2.8 ac	Runoff coeff.	= 0.59
Intensity	= 6.069 in/hr	Tc by User	= 10 min
IDF Curve	= JamesCity-NW-14.IDF	Storm duration	= 1.97 x Tc

Hydrograph Volume = 12,020 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:43 PM

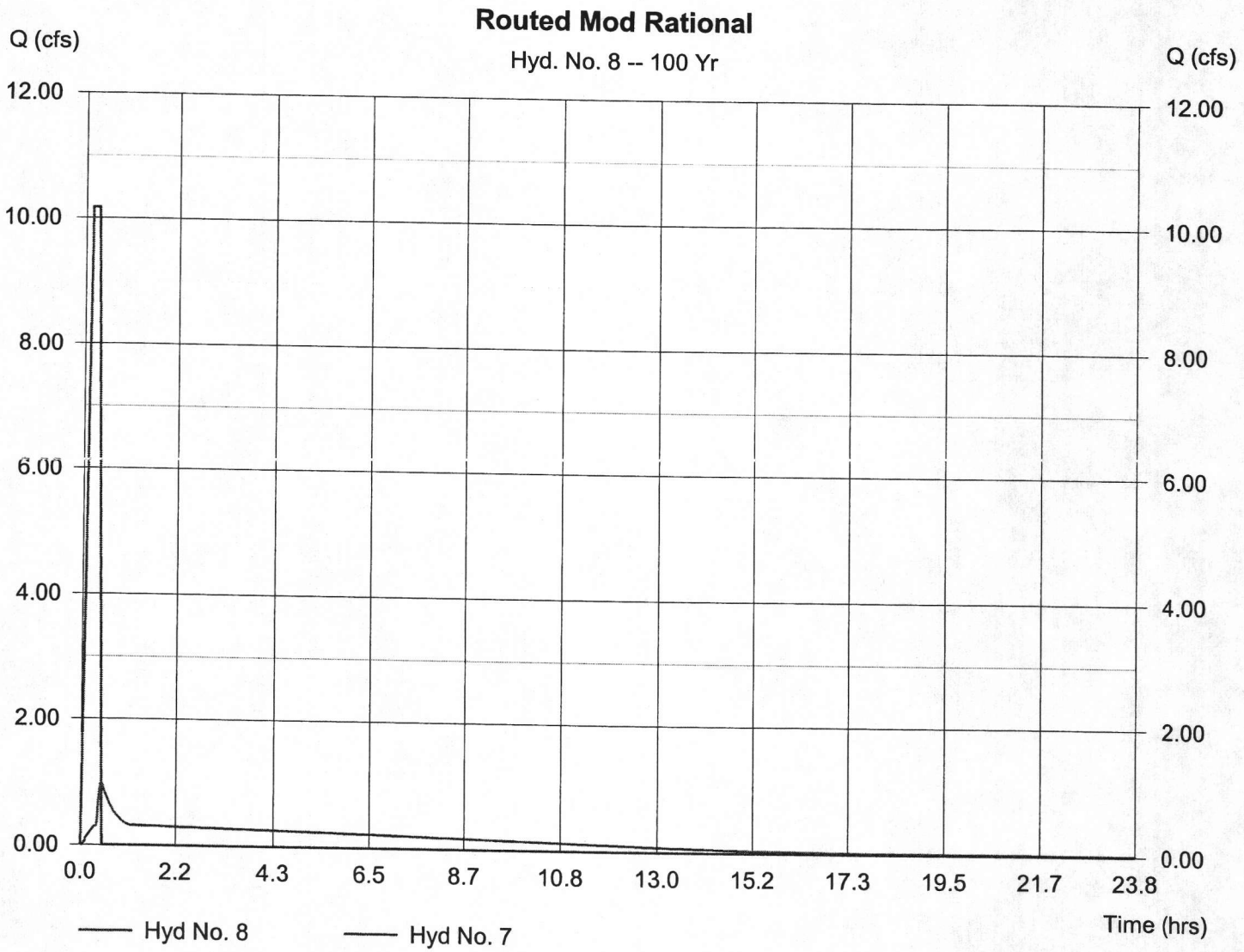
Hyd. No. 8

Routed Mod Rational

Hydrograph type	= Reservoir	Peak discharge	= 0.99 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Max. Elevation	= 86.11 ft
Reservoir name	= JRBC Pond	Max. Storage	= 17,184 cuft

Storage Indication method used. Wet pond routing start elevation = 84.00 ft.

Hydrograph Volume = 11,570 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, Aug 22 2006, 7:43 PM

Pond No. 1 - JRBC Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	81.00	1,044	0	0
1.00	82.00	1,464	1,254	1,254
2.00	83.00	1,940	1,702	2,956
3.00	84.00	4,362	3,151	6,107
4.00	85.00	5,181	4,772	10,879
4.90	85.90	5,910	4,991	15,869
5.00	86.00	6,023	597	16,466
5.90	86.90	6,910	5,820	22,286
6.00	87.00	6,996	695	22,981

Culvert / Orifice Structures

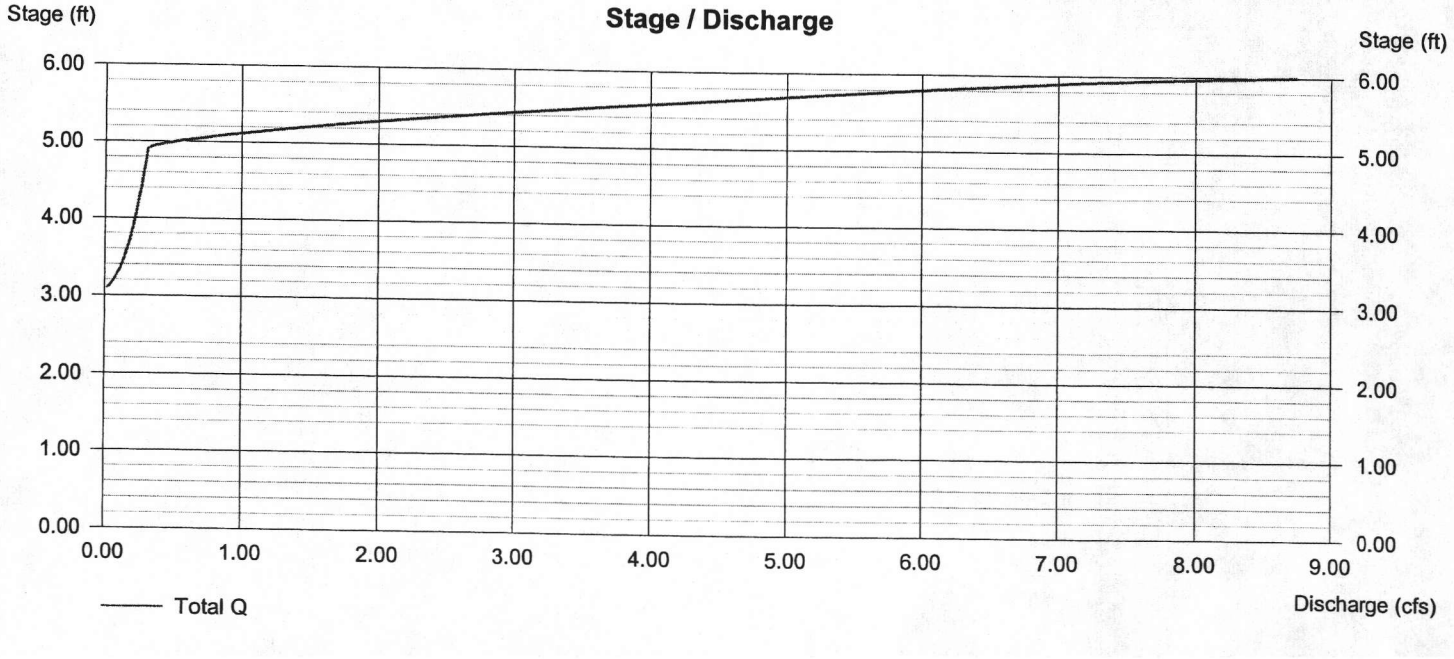
	[A]	[B]	[C]	[D]
Rise (in)	= 15.00	3.00	0.00	0.00
Span (in)	= 15.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 80.20	84.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	8.00	0.00	0.00
Crest El. (ft)	= 85.90	86.90	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	0.00
Weir Type	= Riser	Broad	---	---
Multi-Stage	= Yes	Yes	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



CONSULTING ENGINEERS

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

Project:	James River Baptist Church
Project No.:	9552
Subject:	Outlet Protection
Date:	August 23, 2006
Calculated By:	N. Botta

Outlet Location: BMP Outfall (15" RCP)

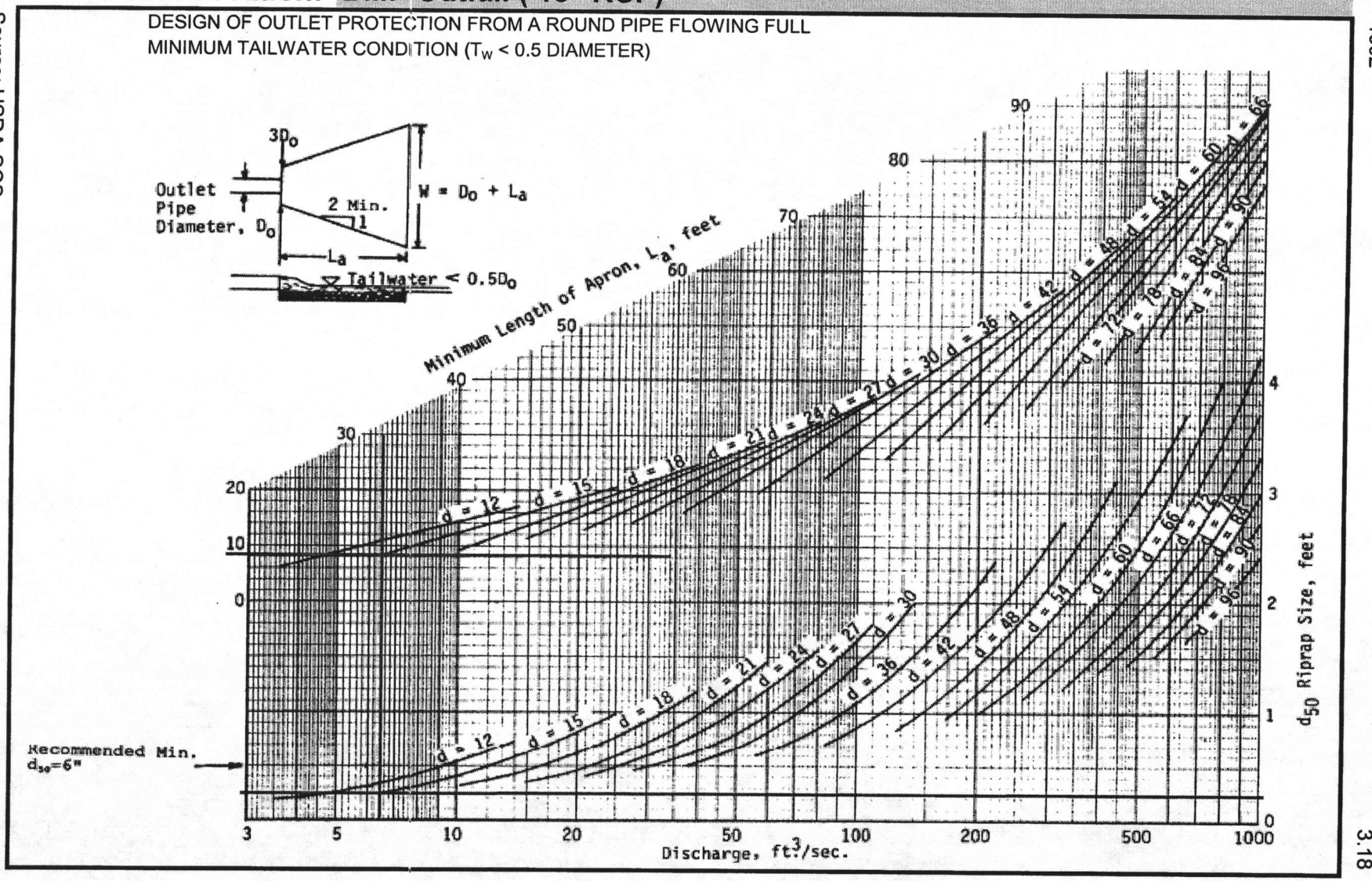
Source: USDA-SCS

1992

III - 164

Plate 3.18-3

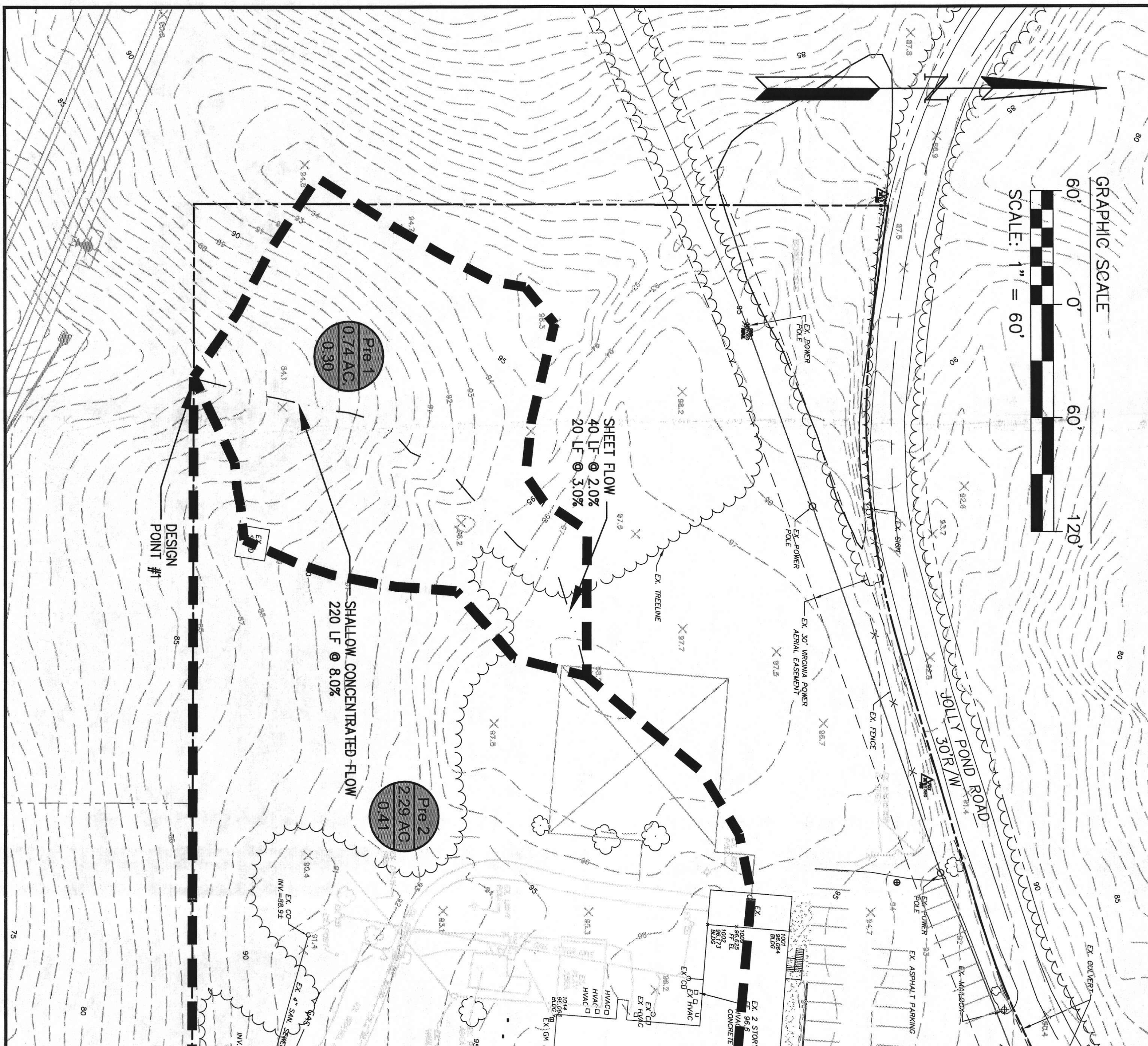
3.18



Q =	6.5	cfs	$3D_o$ =	45	in	W =	10	ft	Depth = 2.5 ft
D_o =	15	in	L_a =	9	ft	d_{50} =	1.1	ft	

DRAINAGE AREA MAPS

CONSULTING ENGINEERS


GRAPHIC SCALE
60' 0' 60' 120'
SCALE: 1" = 60'
Pre 1
0.74 AC.
0.30
Pre 2
2.29 AC.
0.41
SHEET FLOW
40 LF @ 2.0%
20 LF @ 3.0%
SHALLOW CONCENTRATED FLOW
220 LF @ 8.0%
DESIGN POINT #1
JOLLY POND ROAD
30'R/W
CENTERVILLE ROAD
VARIABLE WIDTH R/W
EX.BIKE LANE
GREENWAY #24
EX. TREELINE
EX. POWER POLE
EX. 30' VIRGINIA POWER AERIAL EASEMENT
EX. FENCE
EX. SIGN
EX. CULVERT
EX. MAILBOX
EX. ASPHALT PARKING
EX. 2 STORY BLDG
EX. 1 STORY BLDG
EX. RAMP
EX. CEMETERY
EX. SHRUB BRUSH LINE
EX. WELL FOR EXTERIOR WATERING ONLY
EX. STORM SEWER OUTFALL
EX. 20' VIRGINIA POWER AERIAL EASEMENT
EX. CURB
EX. LIGHT
EX. CONC
EX. BLDG
EX. 4" SAN. SEWER LINE
EX. CO INV.=88.9±
EX. CO INV.=87.6±
EX. CO INV.=86.0±
EX. END SECTION
EX. 6' WOODEN FENCE
EX. SAN MH RIM=85.70 INV.=74.48
U.G. VAULT GAS (T.B.D.) TOP=85.55
STORM D.I. TOP=80.38 INV=76.06
EX. 20' DRAINAGE & UTILITY EASEMENT PB 42, PG 9
LOT 228
LOT 227
LOT 226
LOT 225
LOT 224

Designed	Drawn
NB	LBA
Scale	Date
1"=60'	8/23/06
Project No.	
9552-00	
Drawing No.	
1	

PRE-DEVELOPMENT

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

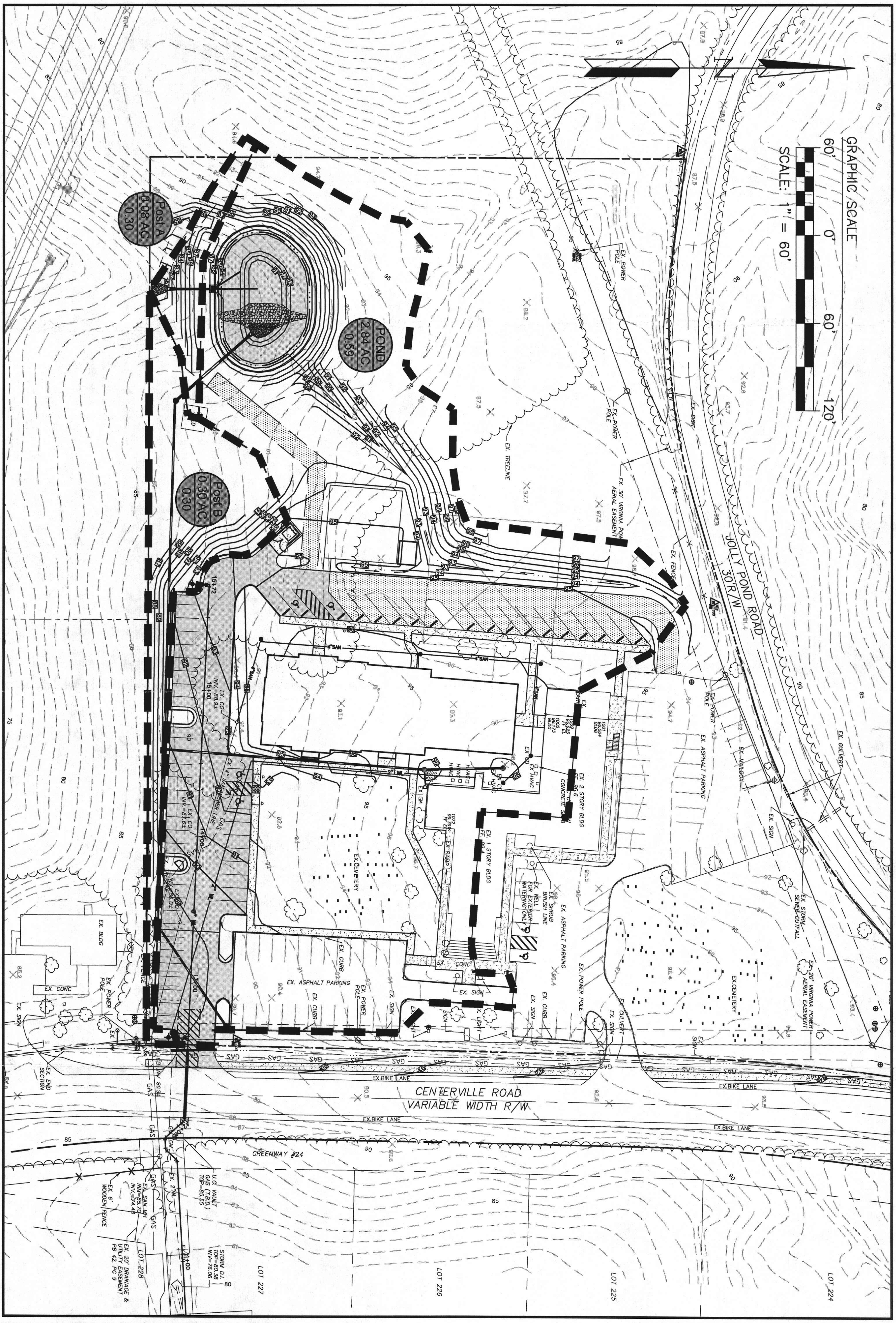
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

AES CONSULTING ENGINEERS

WILLIAMSBURG • RICHMOND • GLOUCESTER

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

No.	DATE	REVISION / COMMENT / NOTE	REVISED BY	REVIEWED BY



GRAPHIC SCALE
60' 0' 60' 120'
SCALE: 1" = 60'
N
Post A
0.08 AC.
0.30
POND
2.84 AC.
0.59
Post B
0.30 AC.
0.30
JOLLY POND ROAD
30'R/W
CENTERVILLE ROAD
VARIABLE WIDTH R/W
EX.BIKE LANE
GREENWAY #24
EX. POWER POLE
EX. 30' VIRGINIA POWER AERIAL EASEMENT
EX. TREELINE
EX. SIGN
EX. FENCE
EX. CULVERT
EX. MAILBOX
EX. ASPHALT PARKING
EX. 2 STORY BLDG
CONCRETE SLAB
EX. 1 STORY BLDG
EX. RAMP
EX.CEMETERY
EX. STORM SEWER OUTFALL
EX. 20' VIRGINIA POWER AERIAL EASEMENT
EX. WELL FOR EXTERIOR WATERING ONLY
EX. SHRUB BRUSH LINE
EX. HVAC
EX. CURB
EX. CONC
EX. LIGHT
EX. BLDG
EX. END SECTION
EX. 6' WOODEN FENCE
EX. SAN. MH RIM=85.70 INV.=74.48
U.G. VAULT GAS (T.B.D.) TOP=85.55
STORM D.I. TOP=80.38 INV=76.06
EX. 20' DRAINAGE & UTILITY EASEMENT PB 42, PG 9
EX. CO INV.=88.9±
EX. CO INV.=87.6±
EX. 4" SANITARY SEWER LINE
LOT 228
LOT 227
LOT 226
LOT 225
LOT 224

Designed	Drawn
NB	LBA
Scale	Date
1"=60'	8/22/06
Project No.	
9552-00	
Drawing No.	
2	

POST-DEVELOPMENT

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

AES CONSULTING ENGINEERS

WILLIAMSBURG • RICHMOND • GLOUCESTER

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

No.	DATE	REVISION / COMMENT / NOTE	REVISED BY	REVIEWED BY


GRAPHIC SCALE
60' 0' 60' 120'
SCALE: 1" = 60'
N
JOLLY POND ROAD
30'R/W
CENTERVILLE ROAD
VARIABLE WIDTH R/W
EX.BIKE LANE
GREENWAY #24
DP-B/C
0.80 AC.
0.51
DP-A
0.64 AC.
0.55
1-3
0.27 AC.
0.70
1-6
0.05 AC.
0.65
1-7
0.11 AC.
0.75
1-4
0.77 AC.
0.65
1-5
0.24 AC.
0.80
EX. SHED
EX. TREELINE
EX. POWER POLE
EX. 30' VIRGINIA POWER AERIAL EASEMENT
EX. SIGN
EX. FENCE
EX. 2 STORY BLDG
EX. 1 STORY BLDG
FF 99.4
EX. ASPHALT PARKING
EX. MAILBOX
EX. CULVERT
EX. STORM SEWER OUTFALL
EX. 20' VIRGINIA POWER AERIAL EASEMENT
EX.CEMETERY
EX. SHRUB BRUSH LINE
EX. WELL FOR EXTERIOR WATERING ONLY
EX. RAMP
EX. CONC
EX. CURB
EX. LIGHT
EX. BLDG
EX. 4" SANITARY SEWER LINE
EX. CO INV.=87.6±
GAS
EX. END SECTION
U.G. VAULT GAS (T.B.D.) TOP=85.55
EX. SAN MH RIM=85.70 INV.=74.48
EX. 6' WOODEN FENCE
EX. 2"WM
EX. 20' DRAINAGE & UTILITY EASEMENT PB 42, PG 9
STORM D.I. TOP=80.38 INV=76.06
EX.CO
LOT 228
LOT 227
LOT 226
LOT 225
LOT 224

Designed NB	Drawn LBA
Scale 1"=60'	Date 8/23/06
Project No. 9552-00	
Drawing No. 3	

INLET DRAINAGE ARES

MULTI-MINISTRY BUILDING

JAMES RIVER BAPTIST CHURCH

POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

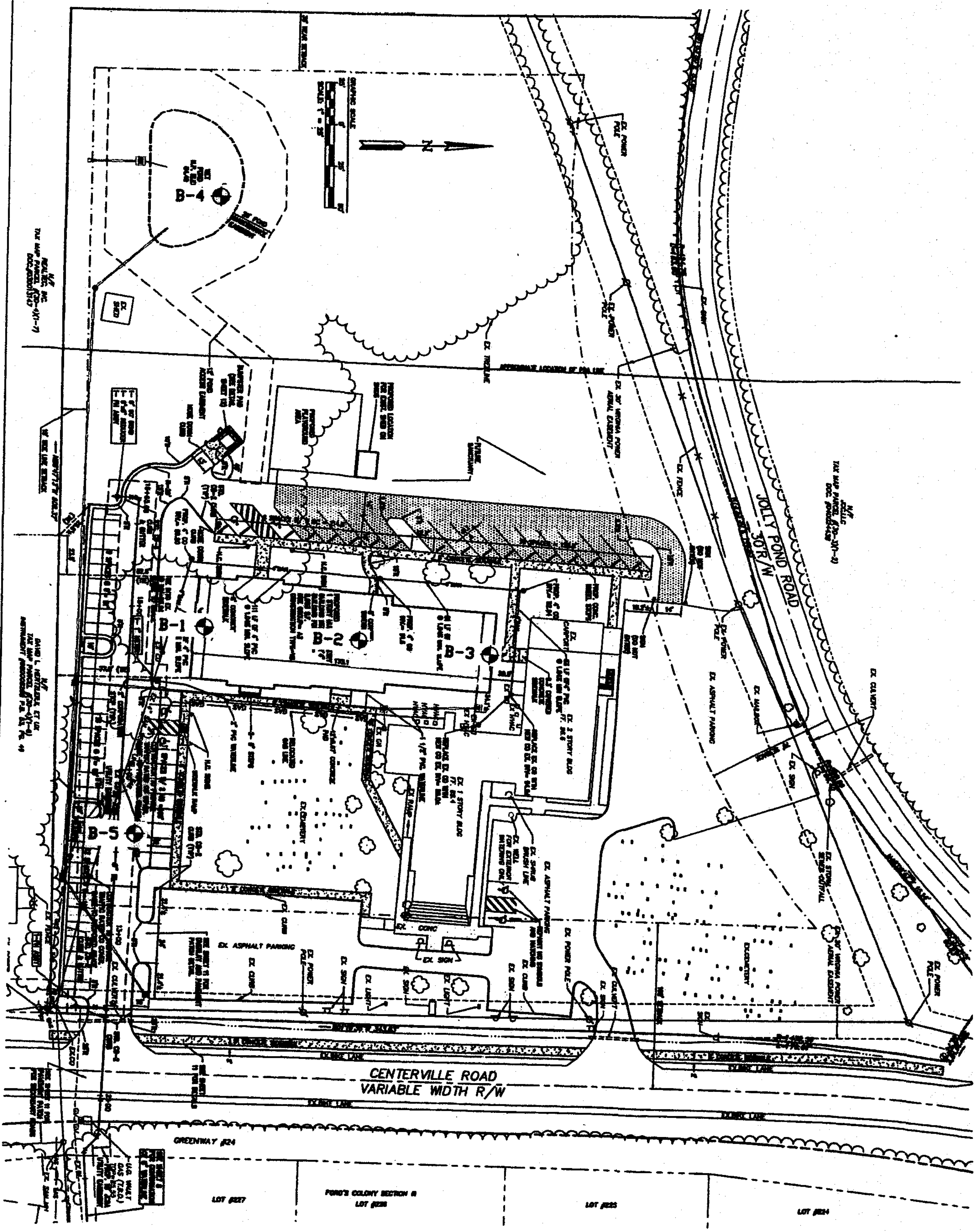
AES
CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND • GLOUCESTER

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

No.	DATE	REVISION / COMMENT / NOTE	REVISED BY	REVIEWED BY

APPENDIX I

BORING LOCATION PLAN



LEGEND:

⊕ –APPROX. BORING LOCATION

*Base Plan provided by AES Consulting Engineers, Inc.

ENGINEER	MJG/DJG
DRAFTING	RNL
SCALE	NTS
PROJECT NO.	8494
SHEET	1
DATE	07/25/06

ECS REVISIONS

BORING LOCATION PLAN

ECS LLC MID-ATLANTIC

James River Baptist Additions

James City County, Virginia

APPENDIX II

SOIL TEST BORING LOGS

CLIENT	JOB #	BORING #	SHEET
AES	8494	B-1	1 OF 1
PROJECT NAME	ARCHITECT-ENGINEER		
James River Baptist Additions			

ECS LLC MID-ATLANTIC

SITE LOCATION: James City County, Virginia

CALIBRATED PENETROMETER TONS/FT.² (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%, 40%, 60%, 80%, 100%)

⊗ STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
					ENGLISH UNITS		
					SURFACE ELEVATION		
0	1	SS	24	24	TOPSOIL DEPTH 2"		2 (1-1-1-1)
	2	SS	24	24	Fine to Medium Clayey SAND, Brown to Orange-Brown, Moist, Very Loose to Loose, (SC)		4 (1-2-2-3)
5	3	SS	24	24			10 (3-4-6-8)
	4	SS	24	24	Sandy CLAY, Orange-Brown, Moist, Very Stiff, (CL)		16 (5-7-9-13)
	5	SS	24	24			16 (4-7-9-12)
10							
	6	SS	24	24	Fine to Medium Clayey SAND, Orange-Brown with Light Brown Mottling, Moist, Medium Dense, (SC)		11 (4-5-6-7)
15					END OF BORING @ 15.00'		
20							
25							
30							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL DRY WS OR WD	BORING STARTED 6/21/06	
▽WL(AB) DRY ▽WL(AC) DRY	BORING COMPLETED 6/21/06	CAVE IN DEPTH ● 15.0
▽WL	RIG ATV FOREMAN SDS	DRILLING METHOD AUGER

RNL (07-05-06) RNL (07-05-06) RNL (07-25-06)

CLIENT	JOB #	BORING #	SHEET
AES	8494	B-2	1 OF 1
PROJECT NAME	ARCHITECT-ENGINEER		
James River Baptist Additions			

ECS LLC MID-ATLANTIC

SITE LOCATION: James City County, Virginia

CALIBRATED PENETROMETER TONS/FT.^{2} (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% ——— (20%—40%—60%—80%—100%)

⊗ STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
					ENGLISH UNITS		
					SURFACE ELEVATION		
0	1	SS	24	24	TOPSOIL DEPTH 2"		⊗ 2 (1-1-1-2)
	2	SS	24	24	Fine to Medium Clayey SAND, Brown, Moist, Very Loose, (SC)		⊗ 5 (2-2-3-4)
5	3	SS	24	24	Sandy CLAY, Orange-Brown, Moist, Medium Stiff, (CL)		⊗ 9 (4-4-5-7)
	4	SS	24	24	Fine to Medium Clayey SAND, Orange-Brown with Red-Brown Mottling, Moist, Loose, (SC)		⊗ 16 (3-6-10-13)
	5	SS	24	24	Sandy CLAY, Orange-Brown with Red-Brown Mottling, Moist, Very Stiff, (CL)		⊗ 9 (3-4-5-5)
10					Fine to Medium Clayey SAND, Orange-Brown, Moist, Medium Dense, (SC)		
	6	SS	24	24	Sandy CLAY, Light Brown with Gray Mottling, Moist, Stiff, (CL)		⊗ 11 (3-5-6-5)
15					END OF BORING @ 15.00'		
20							
25							
30							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL DRY WS OR WD	BORING STARTED 6/21/06	
▽WL(AB) DRY ▽WL(AC) DRY	BORING COMPLETED 6/21/06	CAVE IN DEPTH ● 15.0
▽WL	RIG ATV FOREMAN SDS	DRILLING METHOD AUGER

RNL (07-05-06) RNL (07-05-06) RNL (07-05-06) RNL (07-25-06)

CLIENT	JOB #	BORING #	SHEET
AES	8494	B-3	1 OF 1

PROJECT NAME: James River Baptist Additions

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: James City County, Virginia

CALIBRATED PENETROMETER TONS/FT.² (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY: RQD% — — — REC.% — 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
					ENGLISH UNITS		
					SURFACE ELEVATION		
0	1	SS	24	18	TOPSOIL DEPTH 2"		8 (1-4-4-3)
	2	SS	24	20	Fine to Medium Clayey SAND, Trace Fine Gravel, Light Brown, Moist, Loose, (SC)		9 (4-5-4-6)
5	3	SS	24	24	Sandy CLAY, Light Brown to Light Brown with Orange-Brown Mottling, Moist, Medium Stiff to Stiff, (CL)		8 (3-4-4-5)
	4	SS	24	24			11 (3-5-6-7)
	5	SS	24	24	Fine Medium Clayey SAND, Brown with Red-Brown Mottling, Moist, Medium Dense, (SC)		14 (4-6-8-9)
10							
	6	SS	24	24	Sandy CLAY, Orange-Brown with Gray and Red-Brown, Moist, Very Stiff, (CL)		15 (4-6-9-11)
15					END OF BORING @ 15.00'		
20							
25							
30							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL DRY WS OR ▽D	BORING STARTED 6/21/06	
▽WL(AB) DRY ▽WL(AC) DRY	BORING COMPLETED 6/21/06	CAVE IN DEPTH ● 15.0
▽WL	RIG ATV FOREMAN SDS	DRILLING METHOD AUGER

RNL (07-05-06) RNL (07-05-06) RNL (07-05-06) RNL (07-25-06)

CLIENT	JOB #	BORING #	SHEET
AES	8494	B-4	1 OF 1

PROJECT NAME: James River Baptist Additions

ARCHITECT-ENGINEER:

ECS LLC MID-ATLANTIC

SITE LOCATION: James City County, Virginia

CALIBRATED PENETROMETER TONS/FT.² (1, 2, 3, 4, 5+)

PLASTIC LIMIT % X — WATER CONTENT % — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY
ROD% — — — REC.% ——
20% — 40% — 60% — 80% — 100%

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50+)

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
					ENGLISH UNITS		
					SURFACE ELEVATION		
0	1	SS	24	24	TOPSOIL DEPTH 3"		3 (1-1-2-3)
	2	SS	24	24	Fine to Medium Clayey SAND, Light Brown with Dark Brown Mottling to Light Brown, Very Loose to Loose, (SC)		9 (3-4-5-7)
5	3	SS	24	24			9 (3-4-5-4)
	4	SS	24	24	Sandy CLAY, Light Brown with Orange-Brown Mottling to Orange-Brown with Gray and Red-Brown Mottling, Moist, Stiff, (CL)		13 (5-6-7-9)
	5	SS	24	24			13 (3-6-7-10)
10							
	6	SS	24	24			12 (4-5-7-6)
15					END OF BORING @ 15.00'		
20							
25							
30							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL DRY WS OR WD	BORING STARTED 6/21/06	
▽WL(AB) DRY ▽WL(AC) DRY	BORING COMPLETED 6/21/06	CAVE IN DEPTH ● 15.0
▽WL	RIG ATV FOREMAN SDS	DRILLING METHOD AUGER

RNL (07-05-06) RNL (07-05-06) RNL (07-05-06) RNL (07-25-06)

CLIENT	JOB #	BORING #	SHEET
AES	8494	B-5	1 OF 1
PROJECT NAME	ARCHITECT-ENGINEER		
James River Baptist Additions			

ECS LLC MID-ATLANTIC

SITE LOCATION: James City County, Virginia

CALIBRATED PENETROMETER TONS/FT.² (1 2 3 4 5+)

PLASTIC LIMIT % X — WATER CONTENT % ● — LIQUID LIMIT % Δ

ROCK QUALITY DESIGNATION & RECOVERY RQD% — — — REC.% — 20% 40% 60% 80% 100%

⊗ STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50+)

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS ELEVATION (FT)	STANDARD PENETRATION BLOWS/FT.
					ENGLISH UNITS		
					SURFACE ELEVATION		
0	1	SS	24	24	TOPSOIL DEPTH 1"		
	2	SS	24	21	Sandy CLAY, Orange-Brown with Gray and Red-Brown Mottling, Moist, Medium Stiff to Very Stiff, (CL)		⊗ 9 (2-4-5-7)
5	3	SS	24	24			⊗ 19 (5-8-11-13)
							⊗ 24 (7-10-14-19)
					END OF BORING @ 6.00'		
10							
15							
20							
25							
30							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

▽WL DRY WS OR (7D)	BORING STARTED 6/21/06	
▽WL(AB) DRY ▽WL(AC) DRY	BORING COMPLETED 6/21/06	CAVE IN DEPTH ● 15.0
▽WL	RIG ATV FOREMAN SDS	DRILLING METHOD AUGER

RNL (07-05-06) RNL (07-05-06) RNL (07-05-06) RNL (07-25-06)

APPENDIX III

LABORATORY TEST SUMMARY

POOR QUALITY

ORIGINAL(S) FOLLOW

THIS IS THE BEST COPY AVAILABLE

VCE DOCUMENT CONVERSION

Engineering Consulting Services Mid Atlantic LLC

Williamsburg, VA

Laboratory Testing Summary

Project Number: 8494 **Project Name:** James River Baptist **Date:** 07/12/2006

Project Engineer: DJG **Principal Engineer:** MJG **Summary By:** SIW

Boring Number	Sample Number	Depth (Feet)	Moisture Content (%)	USC	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Compaction		CBR Value	Other
									Maximum Density (pcf)	Optimum Moisture (%)		
B-1	S-2	2-4	23.7	SC	34	20	14	36.5	*	*	*	
B-3	S-2	2-4	18	CL	47	18	29	52.1	*	*	*	
B-4	S-3	4-6	18.3	SC	43	21	22	46.3	*	*	*	

Summary Key:

V = Virginia Test Method
S = Standard Proctor
M= Modified Proctor
Hyd = Hydrometer
Con = Consolidation
DS = Direct Shear
GS = Specific Gravity
UCS = Unconfined Compression Soil
UCR = Unconfined Compression Rock
LS = Lime Stabilization
OC = Organic Content
SA = See Attached
NP = Non Plastic

APPENDIX IV

UNIFIED SOIL CLASSIFICATION SYSTEM AND REFERENCE NOTES FOR BORING LOGS

POOR
QUALITY

ORIGINAL(S)
FOLLOW

THIS IS THE BEST
COPY AVAILABLE

VCE DOCUMENT CONVERSION

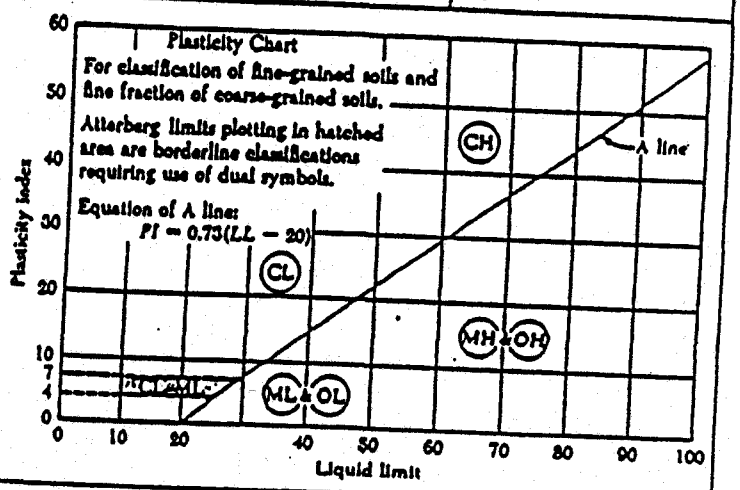
UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

Table Unified System of Classification

Major divisions			Group symbols	Typical names
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve	Silts and Clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

Table ** (Continued)

Classification criteria		
Classification on basis of percentage of fines Less than 5% pass No. 200 sieve: GW, GP, SW, SP More than 12% pass No. 200 sieve: GM, GC, SM, SC 5% to 12% pass No. 200 sieve: Borderline classification requiring use of dual symbols	$C_u = D_{60}/D_{10}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
	Not meeting both criteria for GW	
	Atterberg limits plot below "A" line or plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
	Atterberg limits plot above "A" line and plasticity index greater than 7	
	$C_u = D_{60}/D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
	Not meeting both criteria for SW	
	Atterberg limits plot below "A" line or plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
	Atterberg limits plot above "A" line and plasticity index greater than 7	



Visual-manual identification, see ASTM Designation D2488.

Reprinted from the Annual Book of ASTM Standards

REFERENCE NOTES FOR BORING LOGS

I. Drilling and Sampling Symbols:

SS - Split Spoon Sampler
ST - Shelby Tube Sampler
RC - Rock Core: NX, BX, AX
PM - Pressuremeter
DC - Dutch Cone Penetrometer

RB - Rock Bit Drilling
BS - Bulk Sample of Cuttings
PA - Power Auger (no sample)
HSA - Hollow Stem Auger
WS - Wash Sample

Standard Penetration (Blows/Ft) refers to the blows per foot of a 140 lb. hammer falling 30 inches on a 2 in. O.D. splitspoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N value.

II. Correlation of Penetration Resistances to Soil Properties:

Relative Density-Sands, Silts

SPT-N	Relative Density
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 49	Dense
50 - 80	Very Dense
over 80	Extremely Dense

Consistency of Cohesive Soils

Unconfined Compressive Strength, Qp, tsf	Consistency
Under 0.25	Very Soft
0.25 - 0.49	Soft
0.50 - 0.99	Firm
1.00 - 1.99	Stiff
2.00 - 3.99	Very Stiff
4.00 - 8.00	Hard
over 8.00	Very Hard

III. Unified Soil Classification Symbols:

GP - Poorly Graded Gravel
GW - Well Graded Gravel
GM - Silty Gravel
GC - Clayey Gravels
SP - Poorly Graded Sands
SW - Well Graded Sands
SM - Silty Sands
SC - Clayey Sands

ML - Low Plasticity Silts
MH - High Plasticity Silts
CL - Low Plasticity Clays
CH - High Plasticity Clays
OL - Low Plasticity Organics
OH - High Plasticity Organics
CL-ML - Dual Classification (Typical)

IV. Water Level Measurement Symbols:

WL - Water Level
WS - While Sampling
WD - While Drilling

BCR - Before Casing Removal
ACR - After Casing Removal
WCI - Wet Cave In
DCI - Dry Cave In

The water levels are those water levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in a granular soil. In Clays and Plastic Silts the accurate determination of water levels may require several days for the water level to stabilize. In such cases additional methods of measurement are generally applied.

ECS MID-ATLANTIC, LLC
108 Ingram Road, Unit 1
Williamsburg, Virginia 23188
(757) 229-6677

AES CONSULTING ENGINEERS
Engineering, Surveying, and Planning
5248 Olde Towne Road, Suite 1
Williamsburg, VA 23188

Phone: (757) 253-0040
Fax: (757) 220-8994

LETTER OF TRANSMITTAL

ATTN: **Tina Cooke/Bill Cain**

JCC Environmental Division
Environmental Inspector

CO.:

Address: 101-E Mounts Bay Road
P.O Box. 8784
Williamsburg, Virginia 23187-8784

cc: Joe Salama – S-Works

DATE	JOB NO.
8/26/2008	9552-01

FROM: Matt Good

RE: James River Baptist Church BMP Record Drawings

RECEIVED
AUG 26 2008
ENVIRONMENTAL DIVISION

WE ARE SENDING YOU THE FOLLOWING ITEMS:

☒ Attached
☐ Under separate cover via

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

☐ Copy of letter(s) ☐ Other:

COPIES	DATE	No. of Pages	DESCRIPTION
2	7/31/08	3	James River Baptist Church BMP Record Drawings
1		3	BMP Certification

THESE ARE TRANSMITTED as checked below:

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

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

☐ Other:

REMARKS:

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

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

Tina Cooke

From: s-works construction [joe@s-works-gc.com]
Sent: Tuesday, December 02, 2008 8:41 AM
To: Tina Cooke; 'Chris Cuthbertson'
Cc: 'Abbott, Bruce'; dreed903@aol.com; WJR24@MSN.COM; 'Jeff Clark'
Subject: RE: Bond Status For James River Baptist Church

Tina:
Thank you for your prompt response! In talking with Wayne Reed this AM he is aware of these issues and he is correcting them ALL today and will schedule a re-inspection with you prior to the end of this week. Again thank you for addressing our bond release as you have done here

Joseph D. Salama
President

S-Works Construction Corp.

310 Barlow Rd.
Williamsburg, VA 23188
O (757) 565-7377
C (703) 774-4727
F (757) 565-7378
www.s-works-gc.com

From: Tina Cooke [mailto:TCooke@james-city.va.us]
Sent: Tuesday, December 02, 2008 6:27 AM
To: 'Chris Cuthbertson'
Cc: 's-works construction'; 'Abbott, Bruce'; dreed903@aol.com; 'WJR24@MSN.COM'
Subject: RE: Bond Status For James River Baptist Church

Chris,

Wayne Reed requested the final inspection on 11/20/08 and upon inspection I found the following minor issues that need to be addressed prior to bond release;

- The valve in the drainage structure needs to be closed completely. Otherwise, we may have a issue with seepage.
- Erosion was present at the rip rap channel. Rip rap is placed prior to the filter fabric (approximately 1') and water is cutting beneath the rip rap. I suggested that they place the rip rap on the fabric and stabilize the channel to prevent this erosion issue.
- A small place within the drainage channel to the BMP is holding water for more than 48 hours and needs to be re-graded and stabilized.

I spoke to Wayne about these needs and he indicated that he would call for re-inspection once these issues were addressed. Should you have any additional questions, feel free to contact me for clarification.

Tina Cooke
Environmental Inspector
James City Environmental Division
(757) 253-6743

From: Chris Cuthbertson [mailto:chris@s-works-gc.com]
Sent: Monday, December 01, 2008 5:10 PM
To: Tina Cooke
Cc: 's-works construction'
Subject: Bond Status For James River Baptist Church

Tina,

Joe asked me to send you an email in regard to James River Baptist Church project. He would like to know what the status is on the bond for the erosion control. If you could let us know we would greatly appreciate it. Thanks and I hope you had a nice Thanksgiving holiday.

Chris Cuthbertson
Project Manager

S-Works Construction Corp.

310 Barlow Rd.
Williamsburg, VA 23188
O (757) 565-7377
C (757) 817-9264
F (757) 565-7378
www.s-works-gc.com

Tina Cooke

From: Tina Cooke
Sent: Thursday, March 13, 2008 3:51 PM
To: 's-works construction'
Cc: Joe Buchite
Subject: RE: S-WORKS PROJECT #2706 JRBC PROJECT COMPLETION DATE

Mr. Salama,

I conducted a preliminary inspection today and have listed the site needs below that will be necessary prior to bond release.

- Site stabilization – this includes the area adjacent to the sidewalk (VDOT ROW), utility disturbance areas, and around the building.
- Landscaping completed according to approved plan.
- Construction certifications & record drawings submitted to our office for review – Basin needs to be converted from trap mode – refer to sheet 7 on approved plan for details.
- Removal of E&S control measures after you have achieved site stabilization.

Should you have any questions, please contact my office for clarification.

Tina Cooke
Environmental Inspector
James City Environmental Division
(757) 253-6743

From: s-works construction [mailto:joe@s-works-gc.com]
Sent: Wednesday, March 12, 2008 3:30 PM
To: Tina Cooke; Tom Coghill; Joe Basilone
Subject: FW: S-WORKS PROJECT #2706 JRBC PROJECT COMPLETION DATE

WJCC team FYI please see below

Joseph D. Salama
President

S-Works Construction Corp.

310 Barlow Rd.
Williamsburg, VA 23188
O (757) 565-7377
C (703) 774-4727
F (757) 565-7378
www.s-works-gc.com

From: s-works construction [mailto:joe@s-works-gc.com]
Sent: Tuesday, March 11, 2008 3:31 PM
To: 'Grant Owens'; 'Herbert Rowe'; 'Butch Duell'; 'Steve Haerbig'
Cc: 'Michael Cooke'; 'judith'; 'danyelle@s-works-gc.com'; 'dreed903@aol.com'; 'dreed903@msn.com'; 'Denley Brown'; 'Peters370@aol.com'; 'Bill Ahl'; 'jglazier@urbannabuilders.com'; 'motox8@cavtel.net'; 'motox8@verizon.net'; 'Jeff McManigal'; 'dan@dudleyroofingcorp.com'; 'meunice@cablefirst.com'; 'LaFlam, Shanan'; 'mnissen@pella386.com'; 'Glenn Davis'; 'alex@vanarcorp.hrcoxmail.com'
Subject: S-WORKS PROJECT #2706 JRBC PROJECT COMPLETION DATE

S-Works Subcontractor Project Team:

First of all thank you for a project that is shaping up and looking great (a project we can ALL be proud of!) especially from Centerville Road! **Our project Completion date goal is 04-30-2008** project complete with CofO and bonds released! Please check in with Project Superintendent Mike Cooke to ensure we can meet this date for the church! This completion is critical because the church has a very important ceremony due to the church anniversary of 105 years! This completion is NOT unrealistic any issue must be raised NOW that would prevent us from making this date!

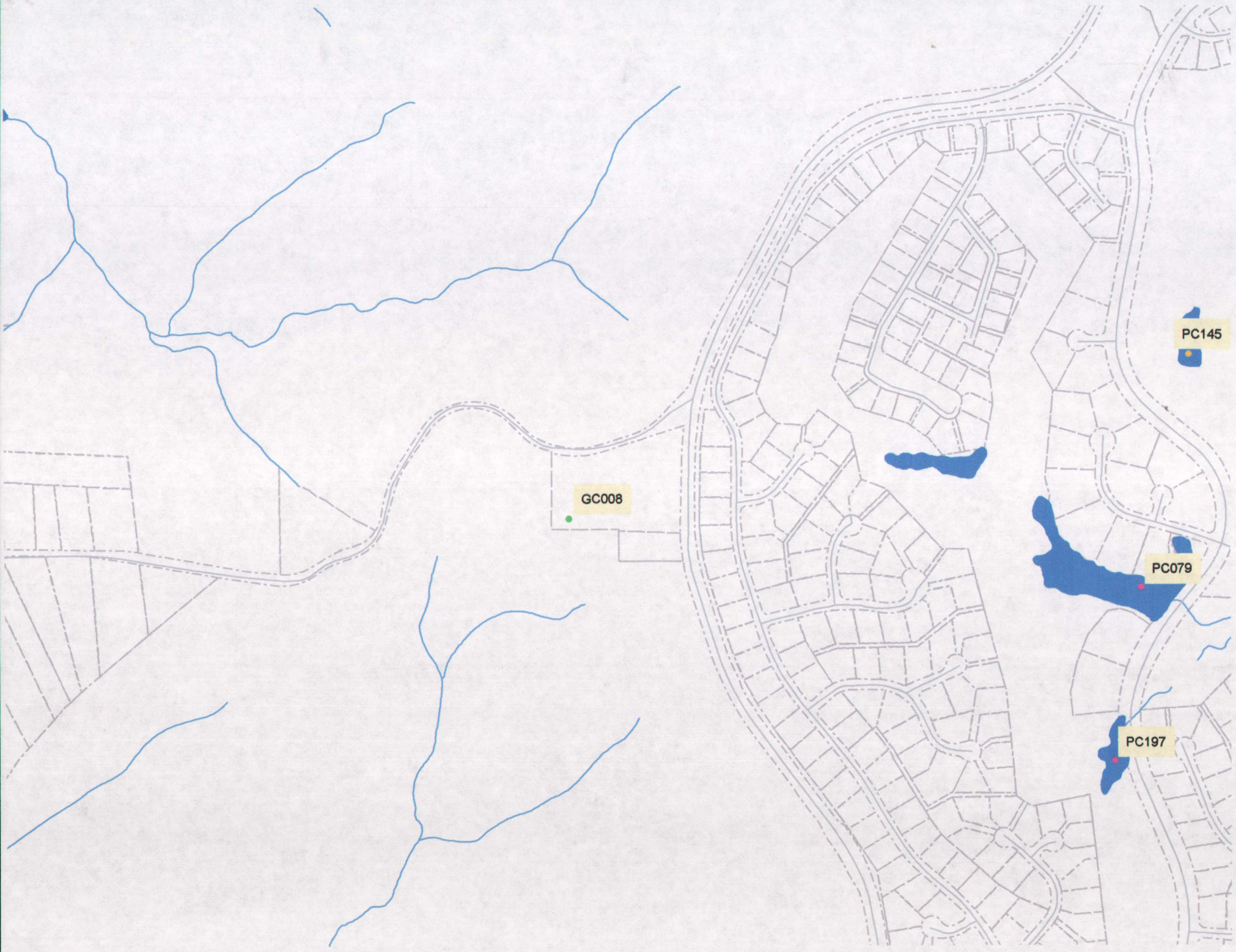
FAX TO FL HAZLEWOOD

Sincerely:

Joseph D. Salama
President

S-Works Construction Corp.

310 Barlow Rd.
Williamsburg, VA 23188
O (757) 565-7377
C (703) 774-4727
F (757) 565-7378
www.s-works-gc.com


PC145
GC008
PC079
PC197

REPORT OF

SUBSURFACE EXPLORATION
AND GEOTECHNICAL ENGINEERING ANALYSIS

JAMES RIVER BAPTIST ADDITIONS
JAMES CITY COUNTY, VIRGINIA

FOR

Mr. Bruce Abbitt

July 28, 2006

ECS Project No. 07:8494

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

July 28, 2006

Mr. Bruce Abbitt
James River Baptist Church
4931 Centerville Road
Williamsburg, VA 23188

ECS Project No. 07:8494

Reference: Subsurface Exploration and Geotechnical Engineering Analysis
James River Baptist Additions
James City County, Virginia

Dear Mr. Price,

ECS Mid-Atlantic, LLC has completed a subsurface exploration and engineering evaluation of the above referenced project. This report presents the results of the subsurface exploration and engineering analyses for the proposed building, BMP and associated parking areas. This portion of the project has been completed in accordance with our proposal No. 07:12445 dated May 16, 2006, and authorized by you.

Introduction

The project site is located at 4931 Centerville Road in Williamsburg, Virginia. We understand the project will consist of the construction of a new 9,683 sf single story Multi Ministry Building at the existing church complex, a new BMP, and parking areas. The area within the proposed building footprint is grass covered, the parking area is grass covered with small trees and shrubs, and the BMP is in a moderately to heavily wooded area. Building loads have not been provided to us at the time of writing of this report, therefore we have assumed that column and wall foundation loadings will not exceed 75 kips and 4 kips per linear foot, respectively.

The purpose of this exploration was to explore the soil and groundwater conditions at the site and to develop soils-related engineering recommendations to guide design and construction of the planned buildings, and associated parking areas. Our investigation included drilling five (5) soil test borings within the at the site to explore the subsurface soil and groundwater conditions, performing a site reconnaissance to observe general topography, and analyzing field data to develop appropriate geotechnical engineering recommendations regarding the planned construction. A Boring Location Plan is included in Appendix I.

Field Exploration Procedures

Three (3) soil test borings were drilled within the proposed building (B-1 through B-3), one (1) soil test boring was drilled within the proposed BMP (B-4), and one (1) soil test boring was drilled within the proposed parking areas. No subsurface bulk samples were taken for CBR testing within the access and parking areas. However, we have provided a pavement design section within this report based on visual classification, regional California Bearing Ratio test results, as well as our general engineering experience, and nearby soil borings performed within the building areas. The soil test borings were performed with an ATV mounted drill rig utilizing continuous flight augering techniques.

Representative soil samples were obtained by means of the split-barrel sampling procedure in accordance with ASTM Specification D-1586. In this procedure, a 2-inch outside diameter split-barrel sampler is driven into the soil a distance of 24 inches by a 140-pound hammer falling 30 inches. After a 6-inch seating interval, the number of blows required to drive the sampler through the next 12-inch interval is termed the Standard Penetration Test (SPT) value and is indicated for each sample on the boring log. This value can be used as a qualitative indication of the in-place relative density and relative consistency of non-cohesive soils and cohesive soils, respectively. This indication is qualitative, since many factors can significantly affect the standard penetration resistance value and prevent a direct correlation between drill crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies.

Field logs of the soils encountered in the borings were maintained by the drill crew. After recovery, each sample was removed from the sampler and visually classified. Representative portions of each sample were sealed in glass jars and delivered to our laboratory in Williamsburg, Virginia, for further visual examination and laboratory testing.

Subsurface Conditions

Experienced personnel from our office classified each soil sample in accordance with the Unified Soil Classification System (USCS). Select samples from the test borings were subjected to classification testing to confirm our visual classifications. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. The geotechnical engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual. A brief explanation of the USCS and a Reference Notes for Boring Log sheet is provided in Appendix IV of this report.

Our subsurface exploration and site reconnaissance determined that the site is covered with 1 to 3 inches of topsoil. Underlying the near surface soils, we encountered interbedded deposits of soft to very stiff consistency Sandy CLAYS (CL), and very loose to medium density Clayey SAND

(SC). This stratum extended to boring termination depths of 6 to 15 feet below ground surface (bgs). The Standard Penetration Test (SPT) N-values recorded for these layers ranged from 2 to 24 blows-per-foot (bpf).

Groundwater was not encountered at the boring locations. Considering the fine-grained soils encountered, a perched ground water condition could be encountered. Please note that groundwater levels are influenced by seasonal conditions and by periods of significant precipitation or prolonged drought. If ground water is encountered, we recommend it be pumped from sumps located below the bottom of foundation elevation.

Subgrade Preparation and Earthwork Operations

The depth of topsoil recorded in the test borings ranged between 1 to 3 inches. However, stripping topsoil typically disturbs soils to a depth greater than the actual topsoil thickness. Therefore, for project planning purposes, we anticipate a 4 inch stripping depth for this site to remove topsoil, and associated organic matter. Isolated areas may require further cuts of an additional 12 to 18 inches or more due to tree stumps and heavy root mat from existing trees or thicker pavement sections. We recommend stripping of any organic or unstable material. The stripping depth should be evaluated at the time of construction by representatives of the Geotechnical Engineer. If additional stripping becomes necessary, suitable methods should be employed to determine additional stripping depths beyond the contract depth (such as elevations determined before and after additional stripping, etc.). If undercuts are recommended and extend into large areas, the undercut volume could be reduced by the use of geotextiles or geogrids. The use of geosynthetic reinforcement should be evaluated by the geotechnical engineer. Cut and fill operations should extend a minimum of 5 feet beyond the project limits.

After stripping or cutting to the desired grade, and prior to fill placement, subgrades should be observed by the Geotechnical Engineer. In an effort to densify any loose surficial subgrade soils, the stripped area should be proofrolled with a smooth drum roller with a minimum of two passes in two perpendicular directions, provided in-situ moisture contents are within $\pm$3% of optimum in order to facilitate compaction.

Any soft or unsuitable materials encountered, which cannot be stabilized by reworking the soil, should be removed and replaced with an approved structural fill. Undercut volumes should be determined by cross-sectioning the area before and after undercut. We have found that calculating undercut volumes by truck counts is less accurate and generally results in additional expense to the owner. In order to minimize undercutting and issues during earthwork activities, we recommend earthwork operations be performed during the drier times of the year.

We recommend the contract documents include an allowance for undercutting and/or reworking soft near surface soils (if encountered) and replacement with engineered fill. Add/deduct unit prices should also be established so adjustment for the actual volume of undercut can be made.

Generally, the on-site soils are considered suitable for reuse as compacted structural fill provided they classify as CL, ML, SM, SM-SP, SP, SC or better. Any soils classifying as CH are not considered suitable as compacted fill in structural areas within the building, floor slab, or parking lots, due to their moisture sensitivity and shrink-swell potential. On-site soils to be re-used as structural fill and all proposed select fill soils should be submitted to the geotechnical engineer for approval prior to their use on the project. We recommend imported engineered fill (select) material consisting of approved inorganic material classified as SM, SM-SP, SP, SC or better containing less than about 40% by weight Silt or Clay and free of debris. This material should be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to within +/- 3% of the optimum moisture content, and compacted to a minimum of 95% of the maximum dry density obtained in accordance with VTM-1, Standard Proctor method. Select fill slopes should be no greater than 3 horizontal to 1 vertical.

Foundations

Based on the results of our exploration and analysis, it is our opinion that the proposed building can be supported by shallow spread footings bearing on suitable natural soils or in properly compacted select fill extending to stable, undisturbed subgrade. For footings placed on suitable natural soils or compacted engineered fill, we recommend that a net allowable soil bearing pressure of 3000 psf be utilized for proportioning the foundations. The base of the footings should be a minimum of 24 inches wide for wall footings and 30 inches square for column footings to minimize potential failure of the bearing soils by local or punching shear action. The near-surface natural soils are variable across the site with respect to shrink-swell issues. The sands are considered low shrink-swells while the clays are considered high. However, considering the estimated building loads are believed to be substantial enough to counter act the soils swell pressure, we recommend foundations be embedded a minimum of 24 inches below site grades for shrink-swell, frost protection, and bearing capacity considerations.

Select controlled fill should be compacted to at least 95% of the material's maximum dry density as determined by the Standard Proctor method (ASTM D-698). Spread footing foundations should be evaluated as an independent system which are not rigidly connected to the floor slab-on-grade. In addition, we recommend that all continuous (strip type) footings be adequately reinforced and be of sufficient thickness so as to better distribute the foundation structural loading and to span soft zones or other inconsistencies in the subgrade bearing soils.

The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. Based on foundations designed and constructed herein utilizing a net allowable bearing pressure of 3000 psf, the total long term settlement for the building is estimated to not exceed one inch, with differential settlements between adjacent columns estimated to not exceed one-half inch.

Seismic Design

We have evaluated the seismic site coefficient in accordance with IBC 2003. We consider the soils to match Site-Class Type E based on the IBC 2003 "Site Class Definitions", Section 1615.1.1.

If this project can benefit from a Site Class "D" seismic site class coefficient, we recommend a site specific seismic evaluation be performed utilizing the seismic cone penetrometer (CPT).

Floor Slab Design

The building pad subgrade and fill placement should be prepared and placed as recommended in the previous subgrade preparation and earthwork section of this report. In conditioned office areas, we recommend the slab-on-grade be directly supported by a minimum of 4 inches of a well graded, clean granular material (porous fill) having a maximum aggregate size of 1.5 inch and no more than 15% passing the #200 Sieve (GM, GW, GP, SM, SW, SP). Both VDOT No. 57 stone and VDOT Grade A Fine Aggregate meet the criteria for porous fill.

These granular layers below the floor slab will facilitate the fine grading of the subgrade, provide more uniform bearing conditions, and help minimize the rise of water to the bottom of the slab via capillary action. The slab should also be directly underlain by a suitable polyethylene vapor retarder to minimize moisture intrusion into the slab. Provided the design and construction recommendations discussed herein are followed, the slab may be designed assuming a Modulus of Subgrade Reaction, K_S, of 200 psi per inch.

Pavements

Once the design pavement subgrade elevation is reached, the subgrade should be proofrolled and carefully observed at the time of construction in order to aid in identifying any localized soft or unsuitable materials. An outcome of the proofrolling may be a recommendation to scarify, aerate, and recompact the soils at near the soil's optimum moisture content. Soils which are still unstable will require undercutting and replacement with structural fill material under the direction of the geotechnical engineer. If site work is performed during the wetter winter months, we anticipate that slightly cohesive and moisture-sensitive subgrade soils subjected to wet conditions and/or ponding water will become unstable and require undercuts and replacement with dryer, suitable material. Ideally, site work should be performed during the dryer late summer and early fall months to minimize potential undercuts due to moisture intrusion and facilitate compaction. Exposed subgrade soils should be graded to drain surface moisture, and covered as soon as possible with full design depths of select materials that are

compacted in accordance with project design criteria. Construction traffic should be confined to specific stabilized construction roads, and not allowed to degrade the pavement subgrade or new pavement section once it is placed.

An important consideration with the design and construction of new pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should minimize the possibility of the subgrade materials becoming saturated over a long period of time. Based upon the results of the soil test borings, the groundwater table should not significantly affect the performance of pavements; however, surface runoff water that is trapped during construction on the exposed subgrade soils could create localized deterioration of the soil's bearing capacity. Standing water that may develop on the surface of the pavement may be minimized by adequate design (surface graded to control runoff to desired locations - catch basins, drain inlets, gutters, etc.), adequate compaction of each lift of pavement material (to minimize localized settlements that result in ponding), and accurate fine grading of each lift of pavement material (to achieve the desired design grades). Standing water that tends to develop within the base course layer may be minimized by installing temporary weep holes in drainage structures, construction of drainage swales and diversion ditches, and proper backfill and grading behind curbs to minimize water intrusion from behind the curbs.

There were no subgrade samples taken in the parking areas. The pavement recommendations presented herein are being based on the one (1) soil test boring performed within the parking area, and our experience in the area on regional soil types. We encountered Sandy CLAY (CL) soils in the parking area. Typically, soaked CBR values for this soil type range between 4 and 8. We therefore recommend a design CBR value of 4 for pavement design. A Resiliency Factor (RF) of 2.0 and the resulting Soil Support Value (SSV) of 8 should also be used in this design.

The following pavement sections are based on VDOT minimum section requirements and our local experience in the project area. We recommend the following pavement sections for the main drive lanes and parking spaces:

Flexible Pavement – Light Duty (Parking Spaces)

Asphalt Surface	- 2.0 inches Asphalt Concrete Surface Mix, Type SM-9.5.
Aggregate Subbase	- 8.0 inches untreated Aggregate Base Material, Type I, Size 21A/B.
Subgrade	- Stable and compacted to a dry density of at least 95% of the soil's Standard Proctor maximum dry density (ASTM D698)


Dam

We recommend that any dumpster pad area's (including the area the collection truck will be on while emptying the dumpster) be a rigid pavement. We recommend that concrete pavements be comprised of a minimum of 6 inches of Portland cement concrete having a minimum 28-day compression strength of 4000 psi. The concrete should be air entrained and should be reinforced with welded wire mesh-type reinforcement or Fibermesh concrete should be used. Construction joints or sawcut joints should be provided at a maximum spacing of 12 feet. Four inches of untreated aggregate base material, Type I - Size 21A/B, are recommended beneath exterior concrete pavements.

Compaction testing may be waived by the Geotechnical Engineer based on the results of the proofrolling operations. It should be noted that pavement sections recommended herein are considered to be minimums with regard to recognized pavement design practices, and any reductions in the pavement sections could result in less than satisfactory pavement performance.

Earthen Embankments and Slope Stability:

Existing elevations across the site were not provided. However, the bottom of pond elevation is approximately 84.40 ft, msl. Generally, we encountered Clayey SAND (SC) that extended from the ground surface to 6 ft below ground surface, and Sandy CLAY (CL) that extended from 6 ft bgs to the depths explored at 20 feet below site grades We did not encounter ground water.

The soils located within the base of the pond area consist of Sandy CLAY (CL) materials. Generally, these soils would be considered suitable for reuse as the dam core material. We recommend the core of the dam be constructed with a lower permeability clay material. Clay core material should classify as CL or CH material. This material should be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to within -1% to +3% of the optimum moisture content, and compacted to a minimum 95% of the maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor method. Slopes should be constructed no greater than 3 horizontal to 1 vertical. Also, the side slopes should be seeded to promote vegetation growth and further add to the stability of the slopes.

Infiltration

The soils encountered at boring location B-4 from the ground surface to the depth of 6 feet bgs, appeared to match Hydrologic Soil Group designations of B to C (Sandy Loam to Sandy Clay Loam), with estimated infiltration rates of approximately 1.02 to 0.17 inches per hour. The soils encountered between 6 to 20 feet at B-4 appeared to match Hydrologic Soil Group designations of D (Silty Clay Loam to Silty Clay), with estimated infiltration rates of approximately 0.06 to 0.04 inches per hour.

Based on the soils encountered at the other B-4, these soils are expected to provide marginal to good water retention characteristics. However, if the conditions do not allow for a fixed permanent pool elevation to be maintained, additional steps to minimize seepage losses may be necessary. Typically, soils with the Hydrologic Soil Group designations of A and B are considered suitable for SWMP's that may utilize on-site filtration in their designs. Some soils designated as C type soils are considered suitable for infiltration practices but these soils would need to be evaluated on a case specific basis. Soils with group designations of D are considered suitable for a wet pond, if required.

Construction Considerations:

The existing slopes generally ranged between 3H:1V to as steep as 1H:1V throughout the planned pond areas. All topsoil and organics should be removed to suitable natural soils within the construction area. The stripping depth should extend up the slopes to at least the 100 year flood elevation. As such, some of the side slopes may need to be reconstructed. The slopes should be reconstructed utilizing engineered fill placed in controlled, compacted lifts that are benched into the existing slopes. On-site sandy or clayey soils are considered suitable for engineered fill to regrade the slopes. This material should be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to within -/-3% of the optimum moisture content, and compacted to a minimum 95% of the maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor method. Slopes should be constructed no greater than 3:1. Also, the side slopes should be seeded to promote vegetation growth and further add to the stability of the slopes.

The subgrade materials are moisture sensitive, and exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time; therefore, foundation concrete (or flowable fill) should be placed the same day that foundations are excavated. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 1- to 3-inch thick "mud mat" of lean concrete be placed on the bearing soils before the placement of reinforcing steel.

In a dry and undisturbed state, the soil at the site will provide good subgrade support for fill placement and construction operations; however, when wet, this soil will degrade quickly with disturbance from contractor operations. Good site drainage should be maintained during earthwork operations which would help maintain the integrity of the soil.

Proper compaction control of fill is an important aspect of this project. Therefore, we recommend that all fill operations be observed full-time by a qualified soil technician to determine if minimum compaction requirements are being met.

We did not encounter groundwater during drilling of the borings. As such, we do not anticipate that ground water will impact foundation construction. If ground water is encountered, we expect that dewatering in shallow trenches could be accomplished by pumping from sumps adjacent to the construction excavations. The specifications should, however, alert the contractor to the potential presence of subsurface water, and it should be incumbent on the contractor to provide the means by which to satisfactorily dewater the site.

General Comments:

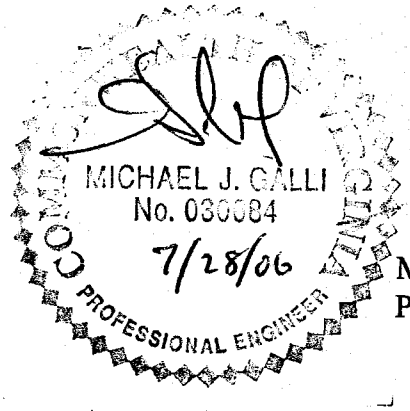
This report has been prepared in order to aid in the evaluation of this site and to assist the Contractor, Architect and Engineer in the design and planning of the project. The report scope is limited to the specific project and location described, and the project description represents our understanding of the significant aspects relevant to soil and foundation characteristics.

We have appreciated being of service to you during the design phase of this project and look forward to its successful construction. If you should have any questions regarding the information and recommendations contained in this report or if we can be of any further assistance, please contact our office.

Respectfully,

ECS MID-ATLANTIC, LLC.

David Gordinier, E.I.T.
Project Engineer



Michael J. Galli, P.E.
Principal Engineer

RNL/DJG/MJG:abf

Appendix:
- I. Boring Location Plan (1)
- II. Soil Test Boring Logs (5)
- III. Laboratory Test Summary (1)
- IV. Unified Soil Classification System/ Reference Notes for Boring Logs (2)

I:\Projects\2006 Projects\Geo\8494 James River Baptist\8494 Geo.doc

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

County BMP ID Code (if known): GC008

Name of Facility: James River Baptist BMP No.: 1 of 1 Date: 6/25/08

Location: 4931 Centerville Rd

Name of Owner: James River Baptist

Name of Inspector: Tina Cooke

Type of Facility: Wet pond

Weather Conditions: 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		✓		Completed 12/3/08
Vegetation Condition		✓		most of grass is either dead or dying.
Tree Growth	✓			
Erosion			✓	rip rap channel - erosion at/under filter fabric
Trash & Debris	✓			
Seepage	✓			Completed on 12/3/08
Fencing or Benches		✓		See below
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation				
Vegetated Conditions		✓		
Trash & Debris	✓			
Floating Material	✓			
Erosion	✓			minor
Sediment	✓			
Dead Plant		✓		aquatic bench plantings (need 122) either dead or missing
Aesthetics	✓			
Other				
Notes:				

May be reduced to $10,000.00 Bond Exp 8/10
in current state.

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 Asbuilts				(SS1-1) 3LF Short / reverse slope pipe 2' short
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type):				
Condition of Structure	✓			
Corrosion	✓			
Trash and Debris	✓			
Sediment	✓			
Vegetation	✓			
Other Asbuilts				see above
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure				
Settlement	✓			
Trash & Debris	✓			
Erosion/Sediment	✓			
Outlet Protection	✓			
Other Asbuilts				1' longer (31')
Emergency Spillway (Overflow):				
Vegetation	✓			
Lining	✓			
Erosion	✓			
Trash & Debris	✓			
Other				
Notes:				

Okay Dec Biel

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other				
Surrounding Perimeter Conditions:				7/8/08
Land Uses A-1	✓			topsoil, seeded, & straw - no veg yet
Vegetation		✓		Sed straw applied/limited topsoil
Trash & Debris	✓			clay & sand conditions not conducive
Aesthetics	✓			to seed germination
Access /Maintenance Roads or Paths		✓		6" stone required on access road. Completed
Other				

Remarks: Need record drawing certification or BMP cert forms not just record drawings. resubmitted by AES

Overall Environmental Division Internal Rating: 3

Signature: Nina Cooke **Date:** 6/25/08

Title: Environmental Inspector

SWMProg\BMP\CoInspProg\InspForms\DetRet.wpd

JAMES CITY COUNTY - ENVIRONMENTAL DIVISION

Office Phone: 757-253-6670 Fax Number: 757-259-4032

DATE SENT: 6/30/08

Name: Joe

Firm or Company: S-Works

Facsimile Number: 565-7378

Number of pages including this transmittal: 2 Cover Sheet - 3 Pages of report

From: Tina Cook

James City County
P O Box 8784
Williamsburg VA 23187-8784

Comments:

If you do not receive all pages, call 757-253-6670 as soon as possible

JAMES CITY COUNTY - ENVIRONMENTAL DIVISION

Office Phone: 757-253-6670 Fax Number: 757-259-4032

DATE SENT: 7/9/08

Name: Bruce Abbott
Firm or Company: AES
Facsimile Number: 220-8914
Number of pages including this transmittal: 6
From: Tina Cooke

James City County
P O Box 8784
Williamsburg VA 23187-8784

Comments:
The last page is the record drawing certification we discussed.

If you do not receive all pages, call 757-253-6670 as soon as possible

JAMES CITY COUNTY - ENVIRONMENTAL DIVISION

Office Phone: 757-253-6670 Fax Number: 757-259-4032

DATE SENT: 6/25/08

Name: Wayne Reed
Firm or Company: Reed Ent.
Facsimile Number: (757) 282-2468
Number of pages including this transmittal: 4
From: Tim Cooke

James City County
P O Box 8784
Williamsburg VA 23187-8784

Comments: Not on BMP Field Insp form:

(1) The silt fence & tree protection must also be removed once the site is stabilized. — 7/8/08 - already removed ??

If you do not receive all pages, call 757-253-6670 as soon as possible