CERTIFICATE OF AUTHENTICITY

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

BMP NUMBER: **PC086**

DATE VERIFIED: **May 31, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: February 24, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

BMP ID or General File ID PC086

PIN: 3140200002

Subdivision, Tract, Business or Owner

Name (if known): Fords Colony

Property Description: Marsh Hawk Course Holes 1-18

Site Address: 4157 Longhill Road

(For internal use only) **Box:** FC001 **Drawer:** 1

Agreements: (in file as of scan date) Y **Book or Doc#:** 040001267 **Page:**

325 394

Comments:

COUNTY OF JAMES CITY, VIRGINIA

COPY

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 30th day of DECEMBER, 2003, between REALTEC, INCORPORATED, and all successors in interest, ("COVENANTOR(S),") owner(s) of the following property: FORD'S COLONY AT WILLIAMSBURG, project name, COUNTRY CLUB REDEVELOPMENT AND ROADWAY IMPROVEMENT PLANS Document No._____, Deed Book 325, Page No. 394; 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, 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.

Instrument # 040001267

Revised 01/02

Recorded on Jan. 12, 2004

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

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

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

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

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

COVENANTOR(S)

Print Name/Title Brian F. Ford V.P.

ATTEST:

COVENANTOR(S)

Print Name/Title

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I hereby certify that on this 30th day of December, 2003, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of James City, aforesaid personally appeared Brian F. Ford and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 30th day of December, 2003.

Gail M. Turnage
Notary Public

My Commission expires: August 31, 2007

Approved as to form:

County Attorney

This Declaration of Covenants prepared by:

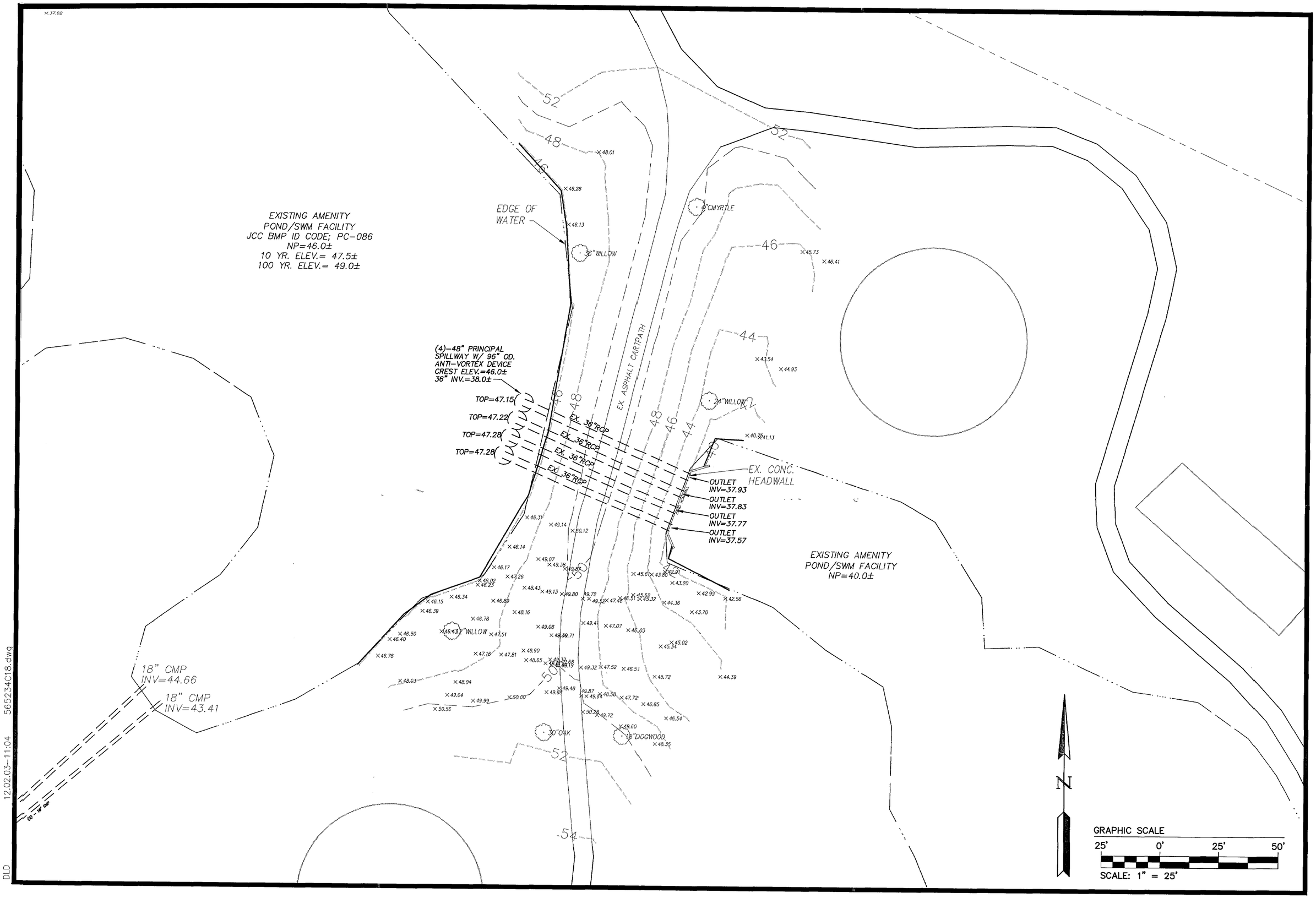
CHARLES RECORDS - AES CONSULTING ENGINEERS
(Print Name)

PROJECT MANAGER
(Title)

5248 OLDE TOWNE ROAD, SUITE 1
(Address)

WILLIAMSBURG VIRGINIA 23188
(City) (State) (Zip)

drainage.pre



12.02.03-11:04 5652234C18.dwg

DLD

CONSULTING ENGINEERS

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

AS-BUILT SURVEY OF DAM#3

FORD'S COLONY AT WILLIAMSBURG

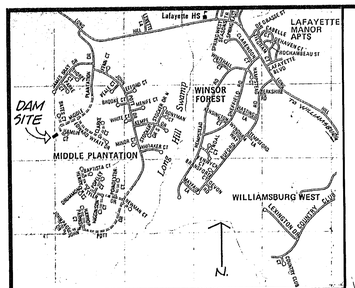
OWNER / DEVELOPER : FORD'S COLONY COUNTRY CLUB

POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

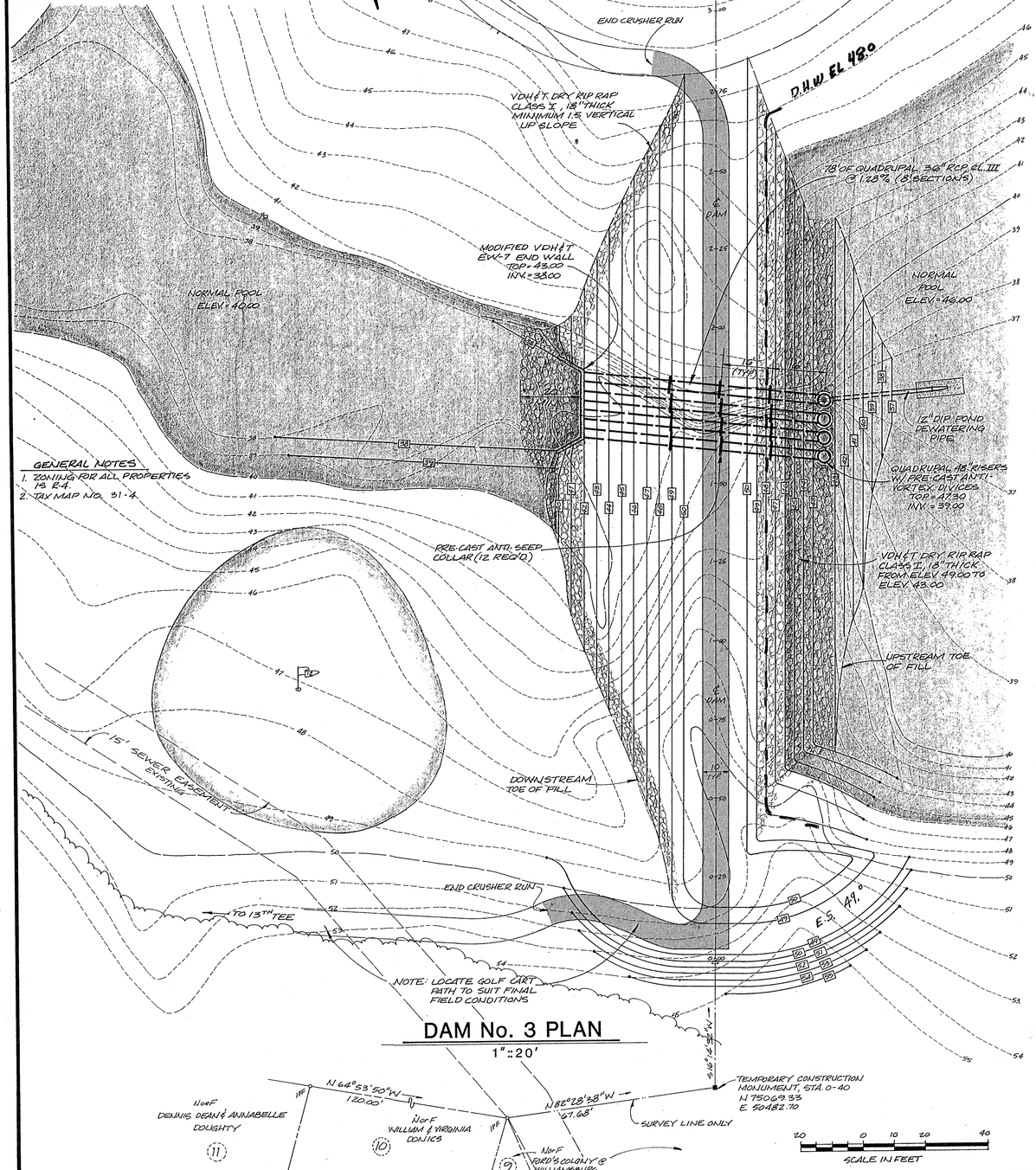
No.	DATE	REVISION / COMMENT / NOTE	BY

Designed CBR	Drawn LBA
Scale 1"=25'	Date 12/9/03
Project No. 5652-34	
Drawing No. 1 OF 1	

PC086_FORDS_COLONY_SEC_1_FAIRWAYS_HOLES_10_11_12_17 - 006

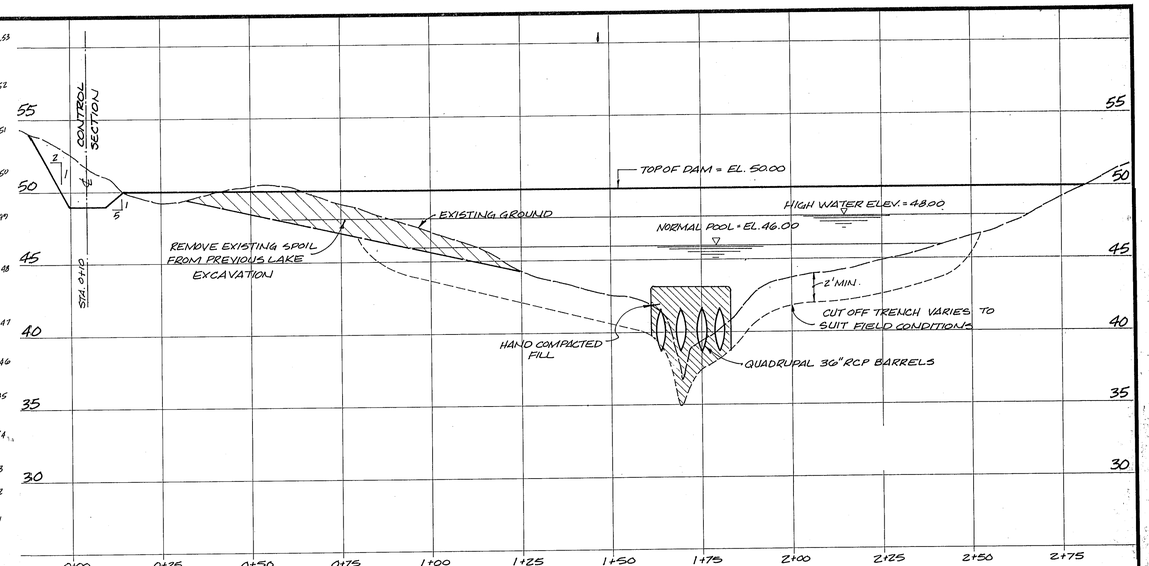


LOCATION MAP 1"=2000'

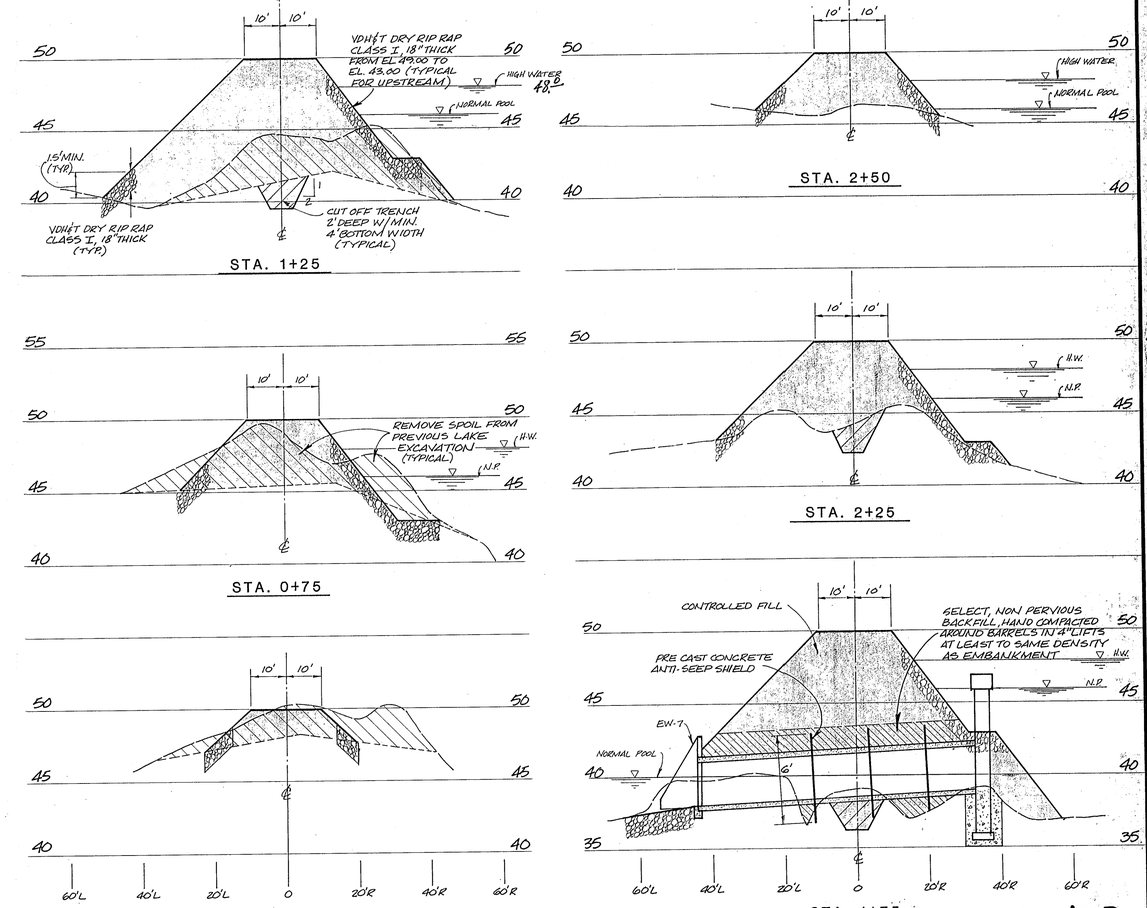


GENERAL NOTES
1. ZONING FOR ALL PROPERTIES IS R-4.
2. TAX MAP NO. 31-4

DAM No. 3 PLAN
1"=20'



PROFILE
ALONG ℄ OF DAM LOOKING DOWNSTREAM
1"=5' VERT., 1"=20' HORIZ.



CROSS SECTIONS
1"=5' VERT., 1"=20' HORIZ.

DAM NO. 3
PC086

AES, a professional corporation
1761 Jamestown Road, Williamsburg, Va. 23185
804-253-0040
Architecture, Engineering, Surveying, Planning

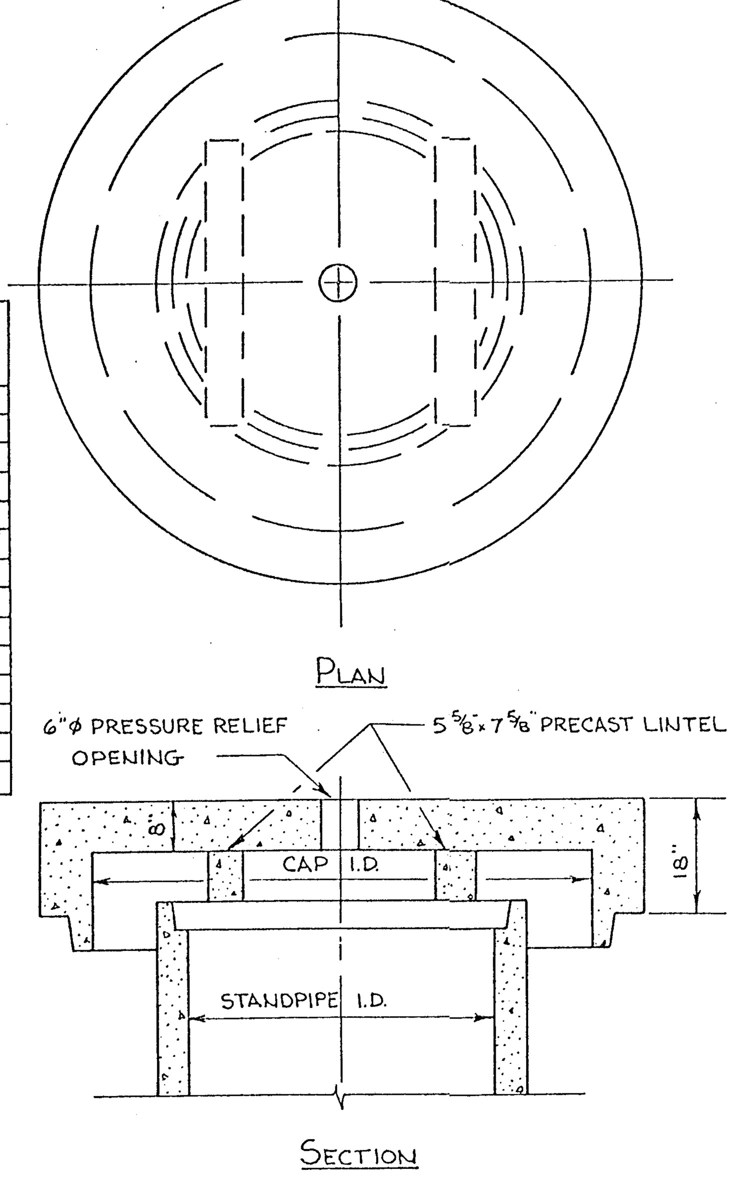
FORD'S COLONY
DAM SITE NO. 3
PLAN VIEW, PROFILE & CROSS SECTIONS
JAMES CITY COUNTY VIRGINIA

COMMONWEALTH OF VIRGINIA
PAUL C. SMALL
CERTIFICATE NO.
CERTIFIED PROFESSIONAL ENGINEER

No.	DATE	REVISION / COMMENT / NOTE	BY
2	9/25/84	REVISED PER J.C.C. COMMENTS	DAR
1	9/6/84	REVISED PER SITE PLAN REQUIREMENTS	DAR

Designed DAR	Drawn GSB
Scale NOTED	Date AUG. 1984
Project No. 5652	
Drawing No. I-D-3-1 of 23	

PC086_FORDS_COLONY_SEC_1_FAIRWAYS_HOLES_10_11_12_17 - 007



STAND-PIPE I.D.	CAP I.D.	STNPIPE. JOINT WEIGHT	CAP WEIGHT
12"	21"	368#	564#
15"	27"	504#	903#
18"	30"	688#	1,098#
21"	36"	864#	1,549#
24"	42"	2,160#	2,087#
27"	48"	2,616#	2,701#
30"	48"	3,120#	2,701#
36"	60"	4,256#	4,441#
42"	66"	5,568#	5,314#
48"	78"	7,056#	7,307#
54"	90"	10,024#	8,887#
60"	96"	11,992#	10,361#
66"	108"	14,136#	12,958#
72"	114"	16,448#	15,115#

FOR PIPE DETAILS, SEE DWG. RS-74-53

PRECAST CONCRETE ANTI-VORTEX DEVICE	DATE	1-27-83	RWS
CONCRETE PIPE & PRODUCTS CO., INC.	SCALE	½"=1'-0" FOR 48" & 78"	
	DWG. NO.	RS-83-9	

(CLOW)

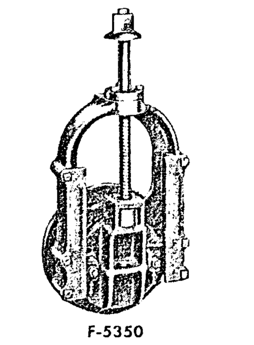
SLUICE GATES

MANUAL, HYDRAULIC, OR ELECTRIC MOTOR OPERATION

Clow Sluice Gates are cast iron, bronze mounted, and have solid bronze adjustable wedges. They are available in sizes 4-inch thru 14-inch, with circular opening, and can be installed in lines having both seating and unseating pressure. Sluice gates are suitable for low head applications only.

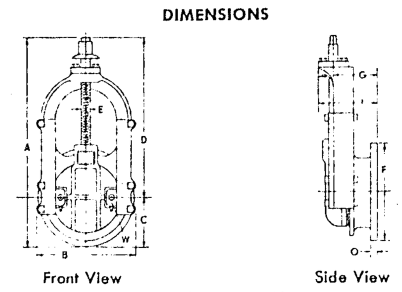
These sluice gates are available with non-rising stem or sliding stem with flanged end connection.

Complete specifications should accompany orders or requests for quotation. Unless otherwise specified, flanged connections will be faced and drilled to the ANSI 125 pound template.



F-5350
Flanged, Non-rising stem

DIMENSIONS



F-5350 Flanged, NRS

Dimensions in Inches

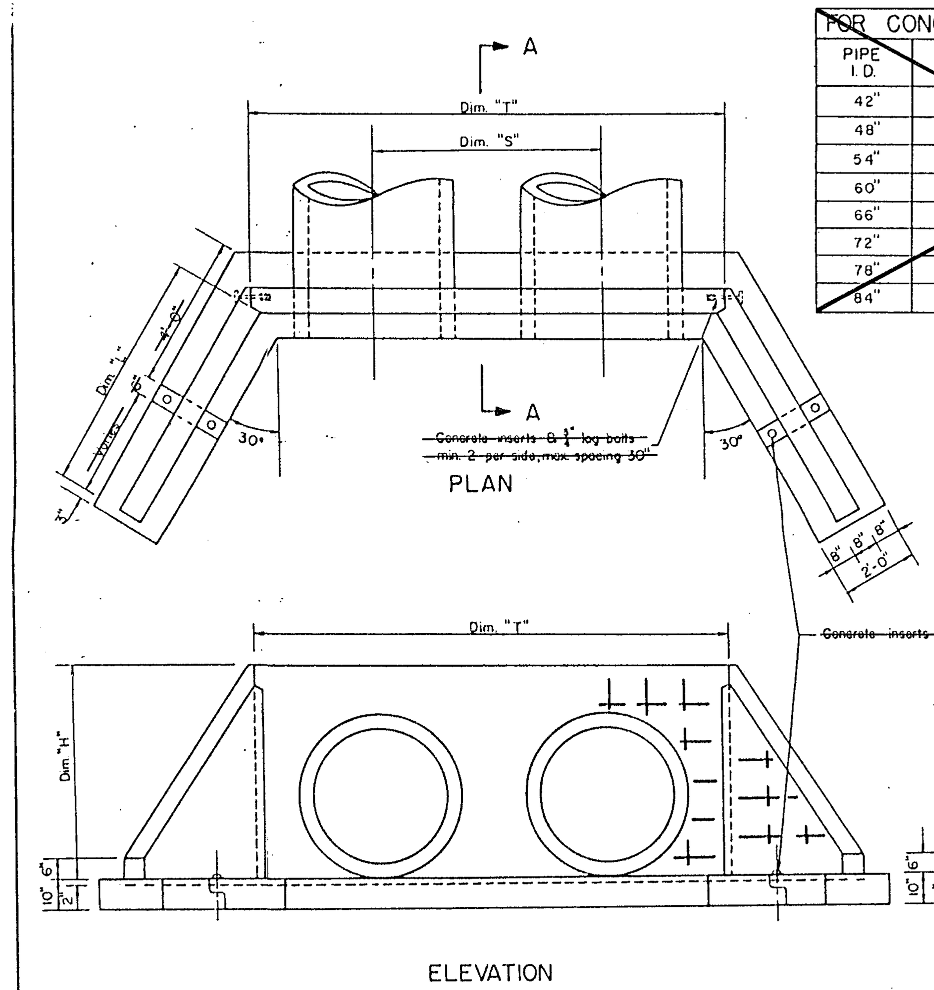
Valve Size Inches	A	B	C	D	E	F	G	I	O	W
4	18⅞	8¼	4½	14⅜	1	9	4⅜	6 3/16	¾	Number of Side Wedges-2
6	24	11¼	5½	18½	1⅛	11	5½	6¼	⅞	
8	29	13¾	6¾	22¼	1¼	13½	6	8⅛	⅞	
10	32⅞	15½	8	24⅞	1⅜	16	6¼	8 7/16	1	
12	38¼	18½	9½	28¾	1½	19	6⅜	8⅞	1	
14	43	20½	10½	32½	1½	21	6⅞	9⅜	1	

ORDERING INFORMATION

1. **Size of openings.**
2. **State** whether gate connects directly to pipe, wall casting, or masonry. Anchor or connecting bolts are not furnished unless specified.
3. **Give maximum head** of water in feet on center of opening, and whether direct or back pressure. Direct, or seating pressure forces the valve to its seat. Back, or unseating pressure forces the valve away from its seat.
4. **Give distance** from center of gate to base of floor stand or cylinder. In the case of gates with extended stems, give distance from center of gate opening to top of extension stem.
5. **Method of operation**, whether manual, hydraulic, or electrical.
6. **Type and material of stem.** State whether non-rising or sliding, and whether stem shall be of steel, bronze, etc.
7. **Direction of opening.** Unless otherwise specified, sluice gates are opened by turning stem to left (counterclockwise).

NOTE: ENDWALL SHALL BE CAST IN PLACE. MIN. BAR LAP 30φ. 18" DOWELLS BETWEEN FOOTING & WALLS.
S=6'-0", T=21'-6", H=5'-0", L=10'-5".

[illegible] 7PC



~~FOR CONCRETE OR CORRUGATED METAL PIPE~~					
PIPE I.D.	DIM. "H"	DIM. "T"	DIM. "S"	DIM. "L" 1½:1 Slope	DIM. "L" 2:1 Slope
42"	5'-6"	12'-6"	6'-0"	6'-7½"	8'-8"
48"	6'-0"	13'-10"	6'-10"	7'-6"	9'-10"
54"	6'-6"	15'-2"	7'-8"	8'-4½"	11'-0"
60"	7'-0"	16'-6"	8'-6"	9'-3"	12'-1½"
66"	7'-7"	17'-10"	9'-4"	10'-1½"	13'-3½"
72"	8'-2"	19'-2"	10'-2"	11'-0"	14'-5½"
78"	8'-8½"	20'-6"	11'-0"	11'-10"	15'-7"
84"	9'-3"	21'-10"	11'-10"	12'-8½"	16'-9"

NOTES

Concrete to be 4000 PSI minimum compressive strength.

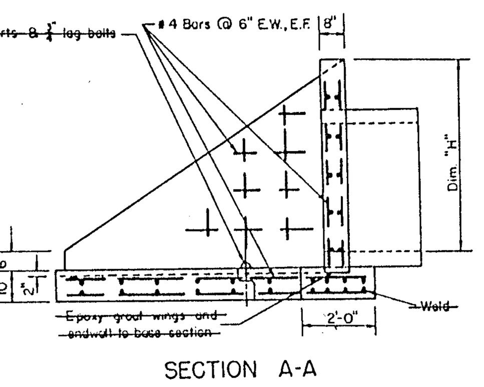
If pipe is to be skewed the opening will be adjusted to accomodate angles up to 15°.

Reinforcing steel in accordance with ASTM A-615 (reinforcing bars).

Pipe opening as required, 4" minimum, 8" maximum larger than O.D. pipe.

In no case shall top of endwall project above fill slope, ditch slope, or shoulder.

Dimensions shown are minimum. Actual measurements may vary with manufacturer's tolerances.



101.18	MODIFIED ENDWALLS FOR MULTIPLE PIPE CULVERTS ~~42"—84"~~ PIPE VIRGINIA DEPARTMENT of HIGHWAYS AND TRANSPORTATION	SPECIFICATION REFERENCE 105.04 302

[illegible]TES

1) SITE [illegible]ARATION: AREAS UNDER THE EMBANKMENT SHALL BE CLEARED & STRIPPED OF TOPSOIL, VEGETATION, ROOTS AND SPOIL FROM PREVIOUS EXCAVATION WORK.

2) EMBANKMENT: THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED BORROW AREAS. IT SHALL BE CLEAN MINERAL SOIL, FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIAL. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL SHOULD CONTAIN SUFFICIENT MOISTURE SO THAT IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. FILL MATERIAL WILL BE PLACED IN 6- TO 8-INCH CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL. COMPACTION SHALL BE OBTAINED BY ROUTING THE HAULING EQUIPMENT OVER THE FILL SO THAT THE ENTIRE SURFACE OF THE FILL IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF THE EQUIPMENT, OR BY USING A COMPACTOR. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTORS ARE USED FOR COMPACTION, THE OVERBUILD MAY BE REDUCED TO NOT LESS THAN 5%.

3) CUTOFF TRENCH: THE CUTOFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE DAM. THE MINIMUM DEPTH SHALL BE 2 FEET. THE CUTOFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE RISER CREST ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE ~~4 FEET, BUT~~ WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE DRAINED DURING THE BACKFILLING-COMPACTING OPERATIONS.

4) ~~PRINCIPAL~~ SPILLWAY: THE RISER OF THE ~~PRINCIPAL~~ SPILLWAY SHALL BE SECURELY ATTACHED TO THE BARREL BY A WATERTIGHT CONNECTION. THE BARREL AND RISER SHALL BE PLACED ON A FIRM COMPACTED SOIL FOUNDATION. THE BASE OF THE RISER SHALL BE FIRMLY ANCHORED ACCORDING TO DESIGN CRITERIA TO PREVENT ITS FLOATING. 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 AT LEAST 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.

5) CONTROL SECTION ~~EMERGENCY SPILLWAY~~: THE CONTROL SECTION ~~EMERGENCY SPILLWAY~~ SHOULD NOT BE CONSTRUCTED OVER FILL MATERIAL. DESIGN ELEVATIONS, WIDTHS, ENTRANCE AND EXIT CHANNEL SLOPES ARE CRITICAL TO THE SUCCESSFUL OPERATION OF THE SPILLWAY AND SHOULD BE ADHERED TO CLOSELY DURING CONSTRUCTION.

6) VEGETATIVE STABILIZATION: FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOPSOILING, 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 VEGETAL COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

TOPSOIL: AT LEAST 2" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS
LIME: 4,000#/ACRE (90#/1000 SF)
SEED: KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1000 SF)
FERTILIZER: 10/20/10 MIX, 1000#/ACRE (25#/1000 SF)
MULCH: STRAW OR HAY (LOCALLY OBTAINED) 4000#/ACRE (90#/1000 SF)

7) ~~ENDWALL: VDH&T EW 6 TC MAY BE SUBSTITUTED FOR THE SPECIFIED EW 6 @ THE CONTRACTOR'S DISCRETION.~~

8) RIP RAP: STONE USED SHALL BE SHOT QUARRY STONE WEIGHING BETWEEN 50 & 150 POUNDS WITH AT LEAST 60 PERCENT OF THE STONES WEIGHING MORE THAN 100 POUNDS EXCEPT THAT APPROXIMATELY 10 PERCENT OF THE STONE WEIGH 50 POUNDS OR LESS.

DRAINAGE DATA

D.A.	= 245 A.C.S.	NORMAL POOL	= 46.0
Tc	= 60 MIN	HIGH WATER	= 48.0
C	= 0.40	TOP OF DAM	= 50.0 (2' FREEBOARD)
I_{10}	= 2.3 IN/HR	TAILWATER	= 40.0
I_{50}	= 3.1 IN/HR	STREAMBED ELEV.	= 37.0±
		HEIGHT OF DAM	= 50-37 = 13'

CALCULATIONS

Q_{10} = 225 cfs
Q_{50} = 304 cfs

BARRELLS

WITH H = 48 - 40 = 8, L = 80', Q min = 304/4 = 76, n = 0.013
(0.98) 109 cfs = 107 cfs (Table 1.266 V.E.S.C.HB)

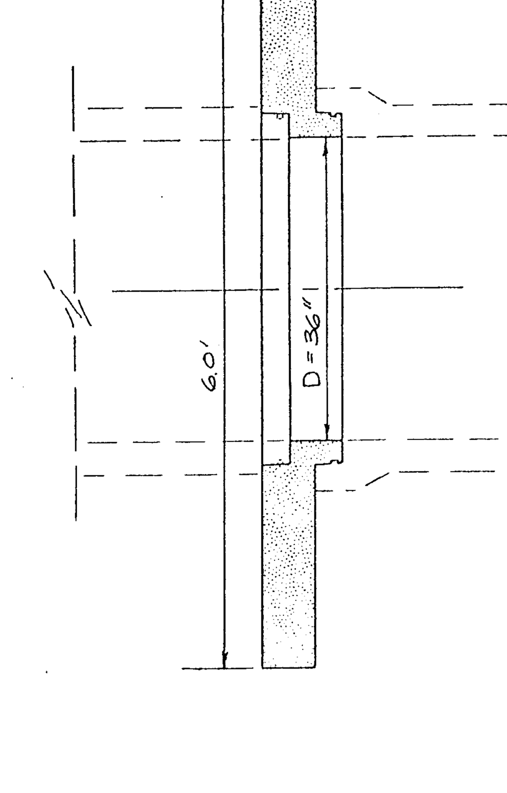
RISERS

WITH H = 48 - 46 = 2, Q min = 304/4 = 76
Q actual = 85 cfs with orifice flow (Plate 1.26h V.E.S.C.HB).

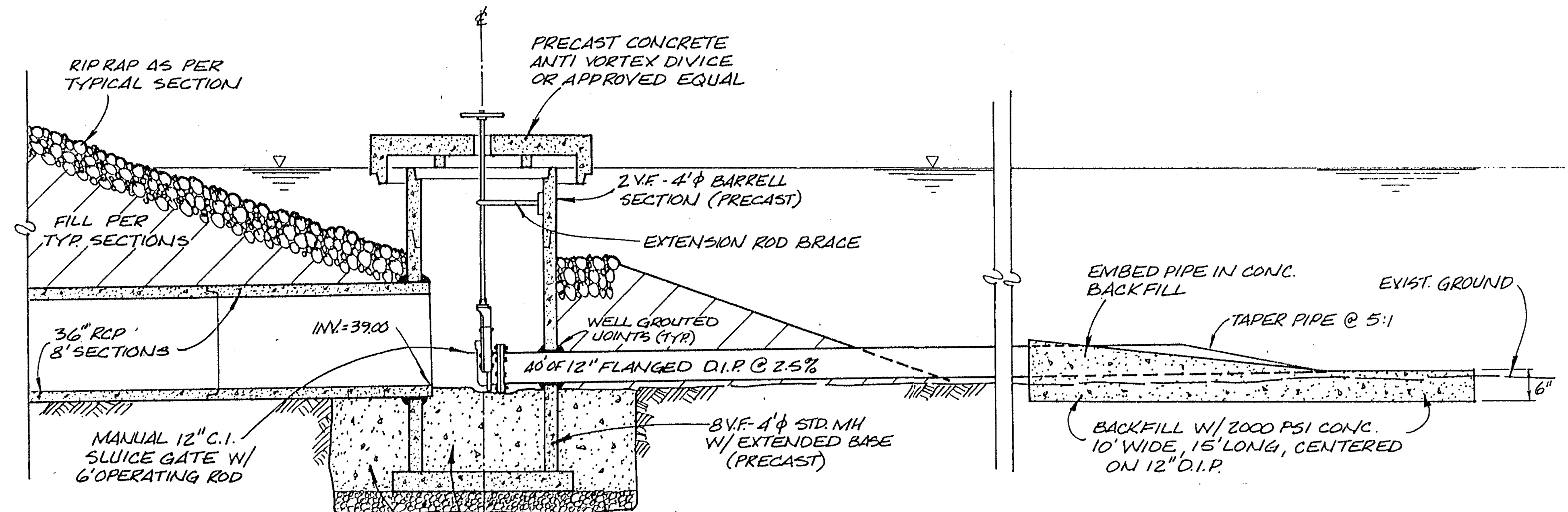
CAPACITY

THE SPILLWAY IS DESIGNED TO PASS FLOW RATES IN EXCESS TO THOSE GENERATED BY A 50 YEAR STORM.

T = 6" FOR D = 12"-42"
T = 8" FOR D = 48" & LARGER



ANTI-SEEP COLLAR FOR DAM SECTION	DATE	1-5-82	RWS
CONCRETE PIPE & PRODUCTS CO., INC.	SCALE	NONE	
	DWG. NO.	RS-82-3	

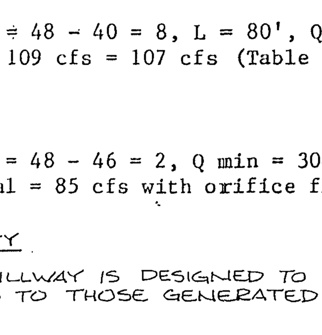


DETAIL OF PRINCIPAL SPILLWAY
WITH POND DEWATERING DEVICE
1":4'

DAM NO. 3
PC 086

AES, a professional corporation
1761 Jamestown Road, Williamsburg, Va. 23185
804-253-0040
Architecture, Engineering, Surveying, Planning

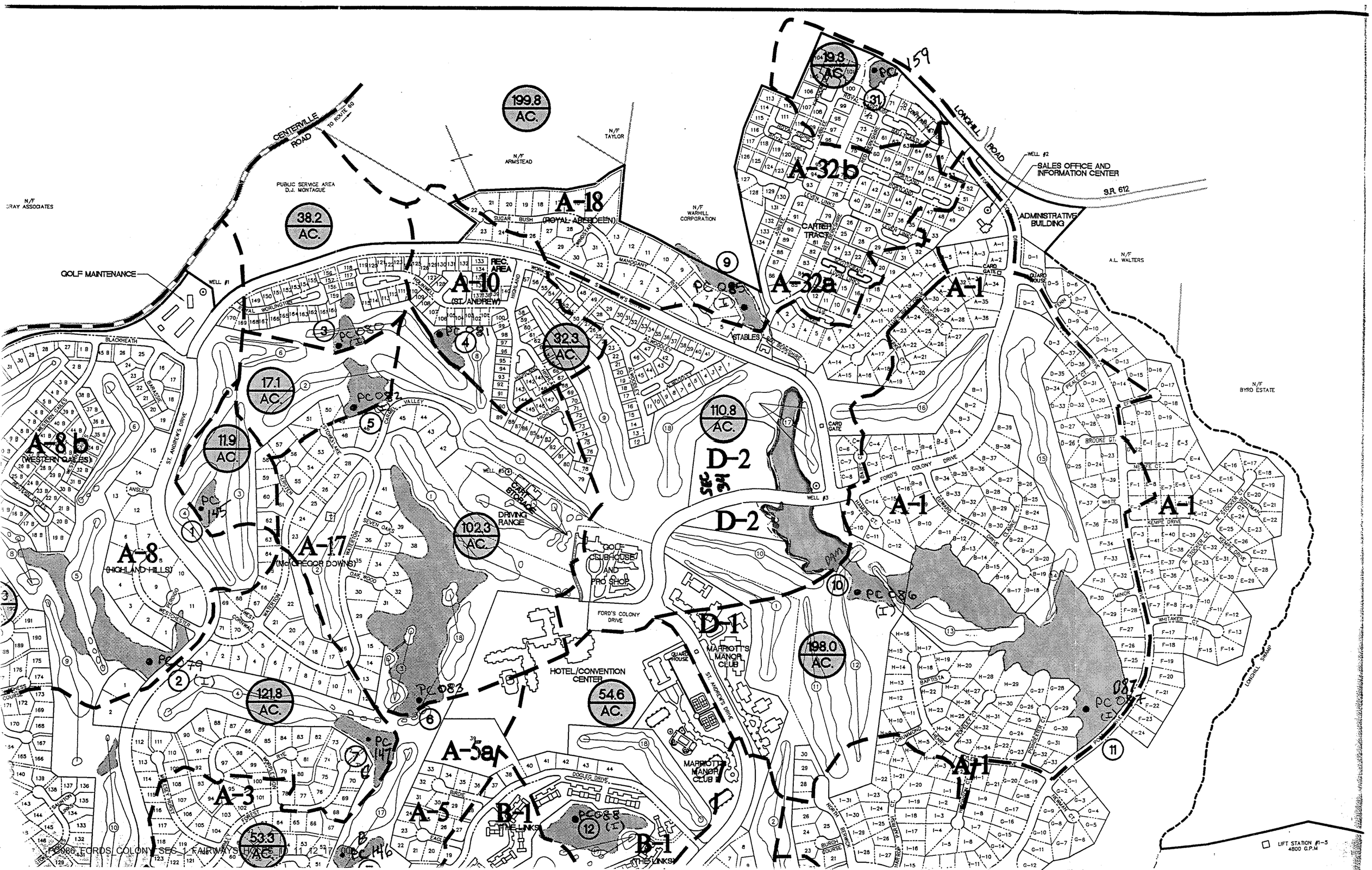
FORD'S COLONY
DAM SITE NO. 3
DETAILS & NOTES
JAMES CITY COUNTY — VIRGINIA



No.	DATE	REVISION / COMMENT / NOTE	BY
1	9/25/84	REVISED PER J.C.C. COMMENTS	DAR

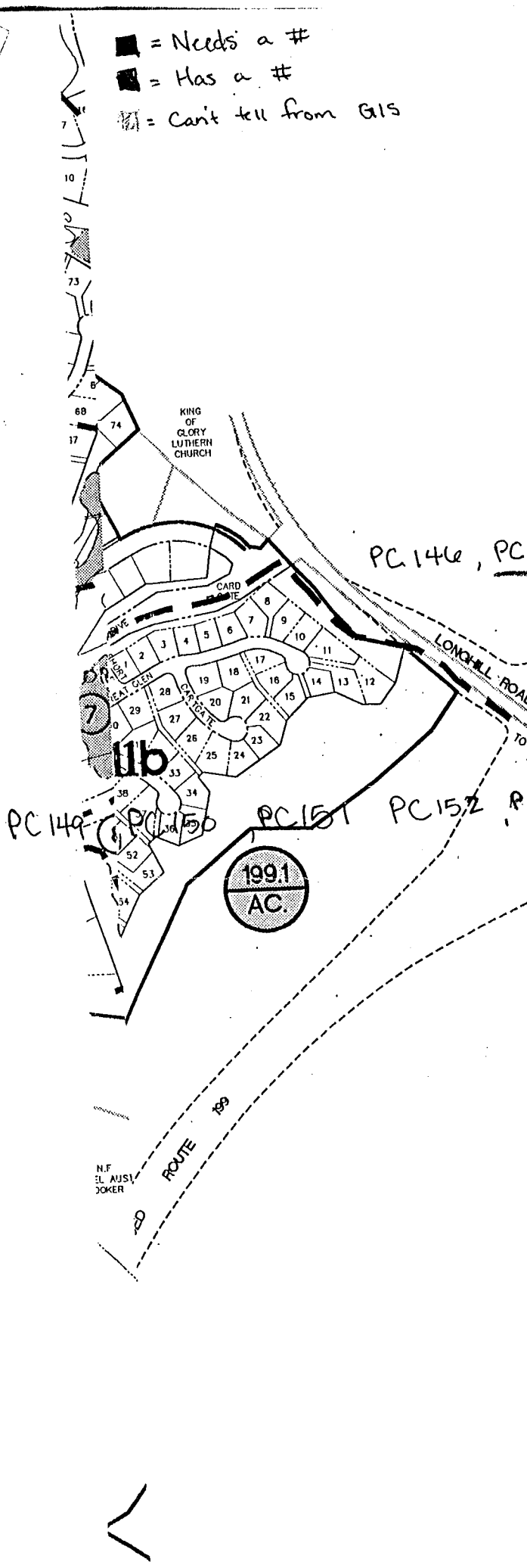
Designed DAR	Drawn GSB
Scale NOTED	Date AUG. 1984
Project No. 5652	
Drawing No. I-D-3-2 of 23	

PC086_FORDS_COLONY_SEC_1_FAIRWAYS_HOLES_10_11_12_17 - 008



CENTERVILLE ROAD
TO ROUTE 60
N/F GRAY ASSOCIATES
PUBLIC SERVICE AREA D.J. MONTAGUE
N/F ARMSTEAD
N/F TAYLOR
N/F WARHILL CORPORATION
LONGHILL ROAD
WELL #2
SALES OFFICE AND INFORMATION CENTER
S.R. 612
ADMINISTRATIVE BUILDING
N/F A.L. WALTERS
N/F BYRD ESTATE
GOLF MAINTENANCE
WELL #1
WELL #3
WELL #5
199.8 AC.
38.2 AC.
17.1 AC.
11.9 AC.
32.3 AC.
110.8 AC.
102.3 AC.
121.8 AC.
54.6 AC.
198.0 AC.
19.3 AC.
A-18 (ROYAL ABERDEEN)
A-10 (ST. ANDREW)
REC. AREA
A-8b (WESTERN GALES)
A-8 (HIGHLAND HILLS)
A-17 (McGREGOR DOWNS)
A-3
A-5
A-5a
B-1 (THE LINKS)
D-1
D-2
A-32a
A-32b
A-1
CARTER TRACT
STABLES
CARD GATE
GUARD HOUSE
DRIVING RANGE
CART STORAGE
GOLF CLUBHOUSE AND PRO SHOP
FORD'S COLONY DRIVE
HOTEL/CONVENTION CENTER
MARRIOTT'S MANOR CLUB
ST. ANDREW'S DRIVE
LONGHILL SWAMP
LIFT STATION #1-5 4800 G.P.M
PC086 FORDS COLONY SEC 1 FAIRWAYS HOLES 10 11 12 17 00

■ = Needs a #
■ = Has a #
▨ = Can't tell from GIS



Master Plan Study
BMP Points

Given: Ford's Colony Total Site Acreage	=	2,483.61 Acres
Additional Land Acquisition (Sec. 3, Casey, Carter, Wilford–New)	=	286.13 Acres
Less Grandfathered Areas:		
Original 18 Hole Golf Course		(178.85)
Additional 9 Hole "Links" Course		(77.68)
Ford's Colony BMP Watershed	=	2,513.21 Acres
Total Golf	=	497.21 Acres±

A. Structural BMP Point Allocation

BMP No.	BMP (Design Type)	BMP Points	Total % Of Site Served	Weighted BMP Points	
PC 145 1.	Dam # 6 (6) H2O but no dam?	8	0.48%	0.04	
PC079 2.	Dam # 2 (5)	6	5.85%	0.35	
PC080 3.	7th Hole Pond (5)	6	1.52%	0.09	
PC081 4.	8th Hole Pond (5)	6	1.28%	0.08	
PC082 5.	Dam # 7 (5)	6	2.20%	0.13	0.18
	Dam # 7 (6)	8	0.68%	0.05	
PC083 6.	Dam # 1 (6)	8	3.49%	0.28	0.65
	Dam # 1 (7)	9	4.07%	0.37	
PC084 7.	Pond A, B, & C (5) PC146 147	6	9.29%	0.56	
~~PC 148 8.~~	~~Pond E (6)~~ NEVER BUILT SEC 3-B 5-61-96	6	1.04%	0.06	
PC085 9.	Sec. 18 Pond (5)	6	7.95%	0.48	
PC086 10.	Dam # 3 (5)	6	4.41%	0.26	
PC087 11.	Dam # 4 (6)	8	11.26%	0.90	1.64
	Dam # 4 (7)	9	8.17%	0.74	
PC088 12.	17th Hole Pond (6)	8	2.17%	0.17	
PC089 13.	16th Hole Pond (5)	6	2.04%	0.12	
PC090 14.	Pond D (5)	6	4.22%	0.25	0.31
	Pond D (6)	8	6.68%	0.06	
PC091 15.	6 Basins in Sec 2 (5)	6	5.25%	0.32	
PC153 16.	6th Hole Pond (7A)	10	1.33%	0.13	
PC 154 17.	5th Hole Pond (7A)	10	1.41%	0.14	0.25
	5th Hole Pond (6)	8	1.33%	0.11	
~~PC 156 18.~~	Chisel Run Lake (5)	6	7.92%	0.48	
PC 155 19.	Sec 13-C Lake (6)	8	1.33%	0.11	
PC111 20.	Sec 13-A Lake (6)	8	1.93%	0.15	
PC112 21.	Sec 13-B Lake (7A)	10	1.87%	0.19	0.39
	Sec 13-B Lake (7A)	10	1.96%	0.20	
PC 156 22.	Sec 14-A Lake (5)	6	3.83%	0.23	0.33
	Sec 14-A Lake (7A)	10	0.98%	0.10	
PC157 23.	13th Hole Pond (7A)	10	0.50%	0.05	
PC 158 24.	Sec 7 Lake (5)	6	3.78%	0.23	
PC093 25.	Sec 9-B Lake (6)	8	1.08%	0.09	
PC094 26.	Sec 7 Pond (5)	6	1.37%	0.08	
PC095 27.	Sec 9-A Lake (6)	8	0.86%	0.07	
PC096 28.	Sec 16 Lake (6)	8	1.35%	0.11	
~~PC 29.~~	Sec 30 Pond #1 (3)	6	0.97%	0.06	
~~PC 30.~~	Sec 30 Pond #2 (3)	6	0.85%	0.05	
PC 159 31.	Sec 32B Pond (5)	6	0.77%	0.05	
PC 160 32.	Sec 6B Pond (7)	9	0.08%	0.01	
PC030 33.	Sec 31 Pond #1 (3)	6	1.04%	0.06	
PC101 34.	Sec 31 Pond #2 (7A)	10	0.44%	0.04	
PC102 35.	Sec 31 Pond #3 (3)	6	0.46%	0.03	
PC103 36.	Sec 31 Pond #4 (7A)	10	0.82%	0.08	
	Total Structural BMP Point Allocation:			8.16	

B. Natural Open Space — 10% Golf Course = 1.98%; Streams & Other = 16.93%

18.91% x 0.1 = 1.89

C. Total Weighted Points — 8.16 + 1.89 = 10.05

GRAPHIC SCALE
600' 0' 600' 1200'
SCALE: 1" = 600'

N

REVISED OVERALL BMP MASTER PLAN
FORD'S COLONY @ WILLIAMSBURG

OWNER/DEVELOPER: REALTEC, INCORPORATED

POWHATAN/BERKELEY DISTRICT — JAMES CITY COUNTY — VIRGINIA

AES CONSULTING ENGINEERS
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(757) 253-0040
Fax (757) 220-8994

MARCH, 2001 — JOB NO. 5652-75 — SCALE: 1"=600'

CONSULTING ENGINEERS
Williamsburg • Richmond

Williamsburg (757) 253-0040
Richmond (804) 330-8040

PROJECT DAM #3
PROJECT NO. 5652-33
SUBJECT ROUTING CALCULATION
SHEET NO. 1 OF 3
CALCULATED BY CBR DATE 9/03

DAM #3

POST-DEVELOPMENT

TOP OF DAM = 50.50'
EMERG. SPILLWAY = 49.75'
(4-48" RISERS) PRINCIPAL SPILLWAY = 46.0'
* AS-BUILT ELEVATIONS DETERMINED BY FIELD SURVEY 8/03.

D.A. = 310 ± AC
T_c = 60 MIN
C = 0.4
I_{10} = 2.3 IN/HR Q_{10} = 285 CFS
I_{50} = 3.1 IN/HR Q_{50} = 384 CFS
I_{100} = 3.35 IN/HR Q_{100} = 415 CFS
* HYDROLOGY FROM OCTOBER 7, 1999 POND ADEQUACY CALCULATION

PRINCIPAL SPILLWAY DESIGN CHECK ←

49.75 - 46.0 = 3.75'

WITH 4-48' CONCRETE RISERS, HOW MUCH DISCHARGE WILL OCCUR WITH 3.75' OF HEAD ON THE RISERS

→ h = 3.75'; φ = 48" $Q_{1-48"}$ = 120 CFS FROM VESCH PLATE 3.14-8

Q_{TOT} = 480 CFS

→ 480 CFS CAN PASS THROUGH RISERS BEFORE UTILIZING EMERGENCY SPILLWAY.

→ CHECK OUTLET BARREL CAPACITY @ EMERGENCY SPILLWAY

WITH 36" (77LF) RCP BARREL & H = 49.75 - 40 = 9.75 (DEPTH) ≅ 9.5

$Q_{1-36"}$ = 119 CFS × .985 (ADJUSTMENT) = 117 CFS FROM VESCH TABLE 3.14-B

Q_{TOT} = 469 CFS

FLOW THRU BARREL CONTROLS ← 480 (RISER) vs 469 (BARREL)

THEREFORE, 100-YR STORM IS FULLY CONTROLLED BY PRINCIPAL SPILLWAY. Q_{100} = 415 < Q_{CAP} = 469 CFS. EMERGENCY SPILLWAY ONLY USED IN STORM EXCEEDING 100-YR.

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PROJECT DAM #3
PROJECT NO. 5652-33
SUBJECT ROUTING CALCULATIONS
SHEET NO. 2 OF 3
CALCULATED BY CBR DATE 9/03

DETERMINE INDIVIDUAL STORM ELEVATIONS.

$Q_{10} = 285$ CFS

4 PRINCIPAL SPILLWAYS ←

$\frac{285}{4} = 71.25$ CFS

DETERMINE h @ 71.25 CFS

$h = 1.45'$ elev = 46.0 + 1.45 = 47.45

TABLE 3.14-B BARREL CAPACITY

$H = 47.45 - 46 = 7.45' \approx 7$ Q = 102 CFS → BARREL DOES NOT CONTROL

$Q_{10} = 285$ elev ≈ 47.5'

$Q_{50} = 384$ CFS

$\frac{384}{4} = 96$ CFS

$h = 2.4'$

elev = 46 + 2.4 = 48.4'

BARREL CAPACITY @ 10YR head condition is more THAN 50-YR FLOW ✓

$Q_{50} = 384$ CFS elev = 48.4'

$Q_{100} = 415$ CFS

$\frac{415}{4} = 104$ CFS

$h \approx 3.0'$

elev = 46.0 + 3.0 = 49.0'

BARREL CAPACITY @ 10YR head condition is more than 100YR FLOW ✓

$Q_{100} = 415$ CFS elev = 49.0'

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PROJECT DAM #3
PROJECT NO. 5652-33
SUBJECT ROUTING CALCULATIONS
SHEET NO. 3 OF 3
CALCULATED BY CBR DATE 9/03

IN CONCLUSION,

Q_{10} = 285 CFS elev = 47.5'
Q_{50} = 384 CFS elev = 48.4'
Q_{100} = 415 CFS elev = 49.0'

TOP OF DAM = 50.5

→ 1.5' OF FREEBOARD FROM 100-YR STORM ELEVATION

EMERGENCY SPILLWAY = 49.75

→ 0.75' OF FREEBOARD FROM 100-YR STORM ELEVATION

⇒ THEREFORE, AS-BUILT CONDITIONS OF DAM ARE IMPROVED WHEN COMPARED TO DESIGN CALCULATIONS. SUBSEQUENTLY, LOWERING ALL STORM EVENT HIGHWATER ELEVATIONS.

CONSULTING ENGINEERS

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December 9, 2003

Mr. Scott J. Thomas, P.E.
Civil Engineer
James City County
101-E Mounts Bay Road
Williamsburg, VA 23187

PC 086

RE: Field Inspection of Dam #3, receiving facility for SP-89-03, Ford's Colony Parking Lot Improvements AES Project No. 5652-33

Dear Mr. Thomas:

AES Consulting Engineers, on behalf of Realtec, Incorporated, hereby submits this field inspection summary for the above referenced Stormwater Management Facility. At your request, the existing BMP/Facility was *previously* evaluated to determine if adequate freeboard exists for the 100-year storm event. Based on my letter to you, dated October 1, 2003, adequate capacity exists within the pond to handle the 100-year storm event. Per your subsequent comments and as a second part to this evaluation, a field inspection summary was completed for the stormwater management facility to aid in determining if the facility is in good working order.

The inspection of the facility was completed in September 2003. A copy of the inspection report has been included with this submittal for your records. As shown in the inspection report, there are no major problems with the stormwater management facility and it appears to be in good working order. Should you have any questions or need any additional information, please give me a call.

Sincerely,

AES Consulting Engineers

Charles B. Records, P.E.
Project Manager

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Pond Adequacy Calculations

Ford's Colony at Williamsburg
Section 32 (Lots 1-26, 79-92, 130-134)

Pond above Dam #3

James City County

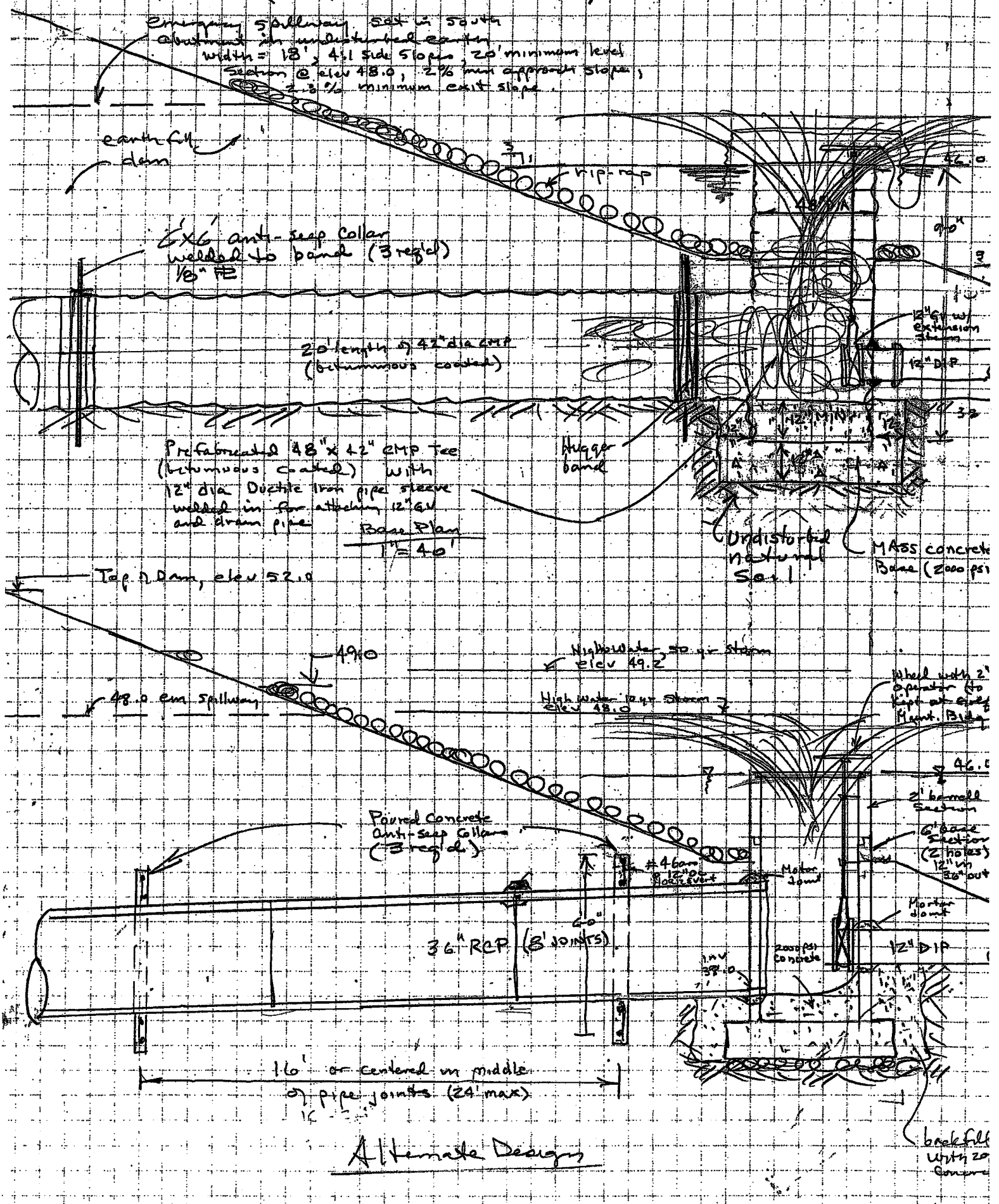
Prepared by:
AES Consulting Engineers
5248 Olde Towne Rd.
Williamsburg, Va. 23188
(757) 253-0040

Submitted: October 7,1999

CONSULTING ENGINEERS

Principal Spillway
(Using Corrugated Metal Pipe)

7/28/84



Alternate Designs

7/28/8

Emergency Spillway

With triple 48" CMP riser & 42" barrel, cap of principal spillway with 2' WL rise is 85 x 3 = 255 cfs

thus: $Q_{emergency\ spillway} = Q_{50} - 255 = 304 - 255 = 49$ cfs (say 50 cfs for design)

or

with triple 48" std MH riser & 36" RCP barrell, cap of prin. spill = 82 x 3 = 246 cfs

and $Q_{em.\ spill} = 304 - 246 = 58$ cfs

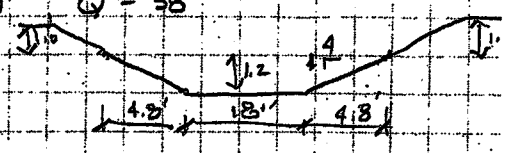
Assume earth spillway, trapezoidal section, 4:1 side slopes, 20' control section

slope of exit reactor = 48 - 38 = 10' in say 200' i.e. 5' in 100'

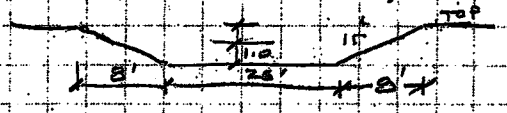
alternate designs:

(a) b = 18', h_p = 1.2', V = 4.5, S = 2.8, x = 59' Q = 58

$$\left(\text{Vel for } S_e = 5\right) = \frac{4.5\,(5^{0.5})}{2.8} = 2.6$$



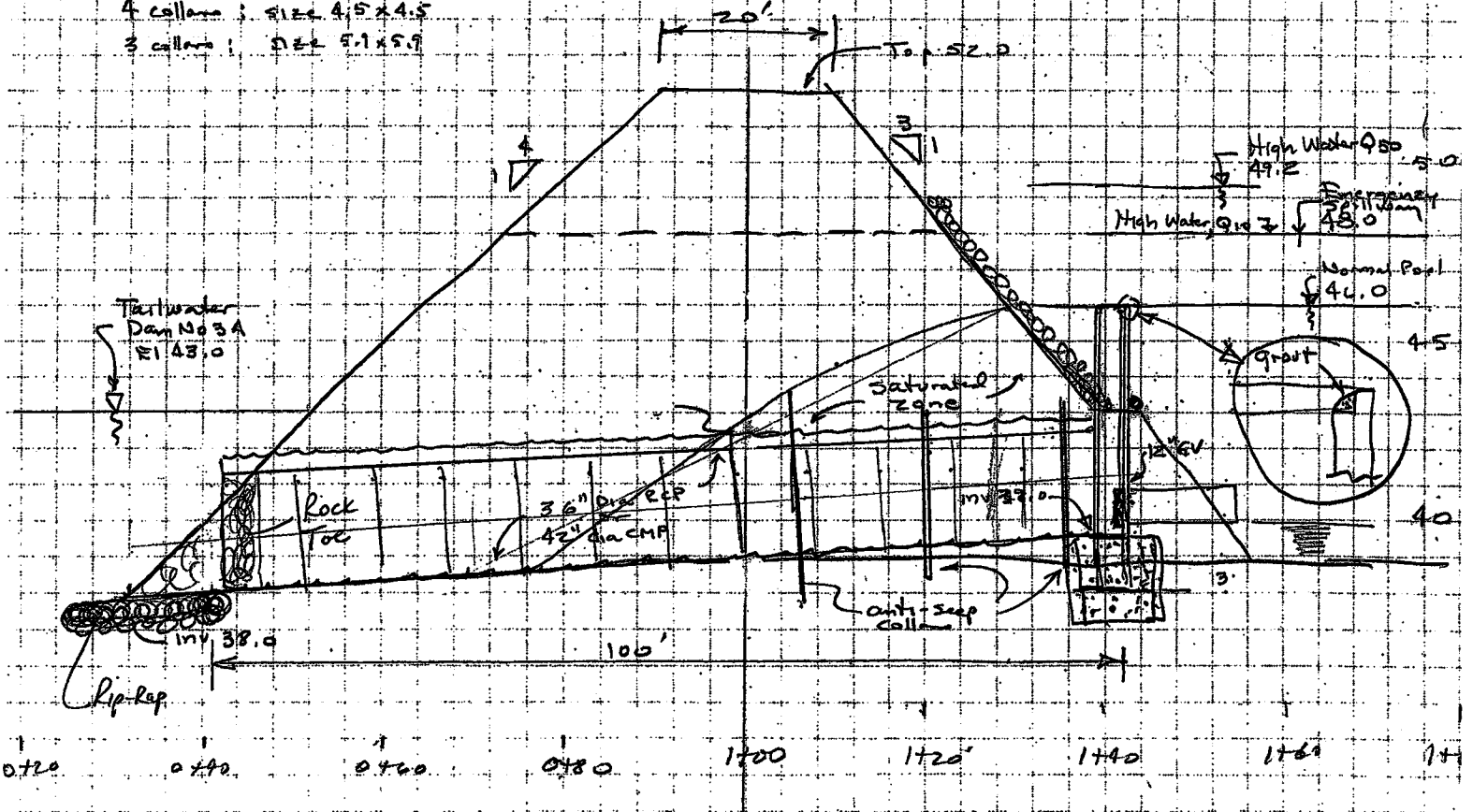
b) b = 20', h_p = 1.0, V = 4.0, S = 3.0, x = 52'



Anti-Seep Collars: Y = 46 - 38 = 8', Z = 3, S = .01 (1' in 100'), L_S = 62

4 collars: size 4.5 x 4.5

3 collars: size 5.1 x 5.1



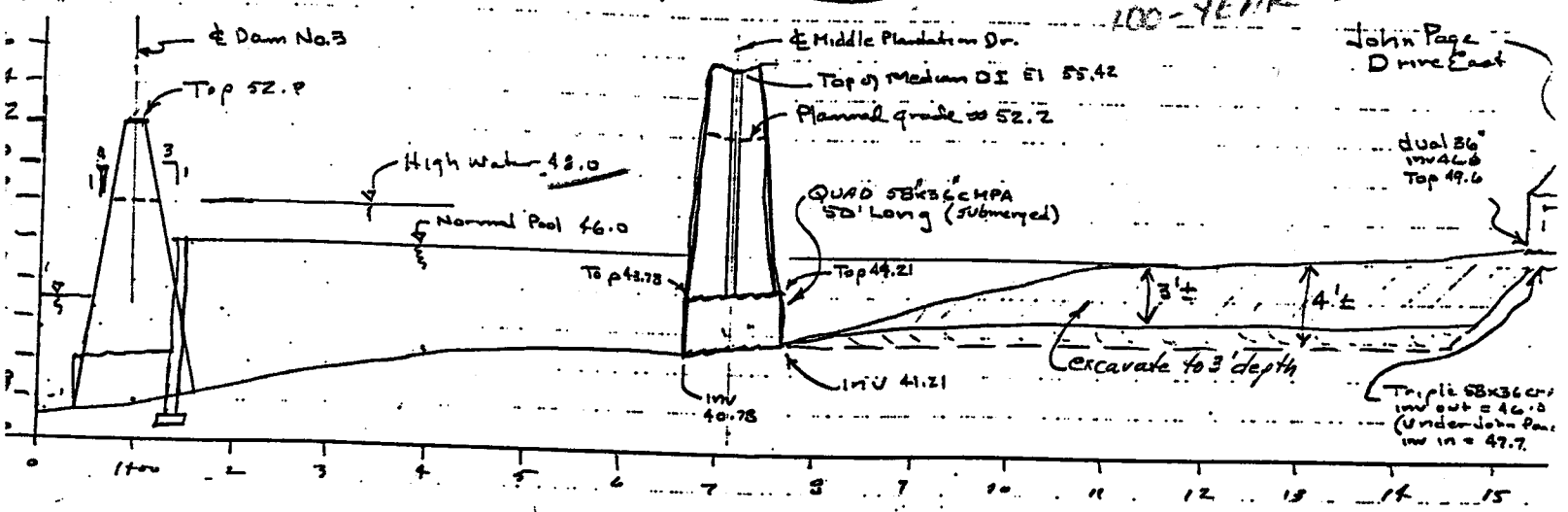
Dam No 3 — Upstream from ~~#6~~ 12 Green & North of #10 Green

7/28/84
Fords Colony
per Charlie Duke
Job #5652

D.A. = 245 Acres
T.c. = 60 minutes
C = 0.4
I_{10} = 2.3 in/hr
I_{50} = 3.1 in/hr
Q_{10} = 225 cfs
Q_{50} = 304 cfs

Normal Pool elev. 46.0
High Water elev. 48.0
Top of Dam elev. 52.0 (4' freeboard)
Tailwater elev. 40.0 (Normal Pool Lake 4)
or Tailwater elev 43.0 (Dam #3A Below #13 Green)
Streambed elev 38.0 ± original ground
Height of Dam = 52 - 38 = 14'

Use Small Pond design Procedure found in VEC Manual & SCS Manual
Size principal spillway to pass 10 yr storm
Size emergency spillway to pass 50 yr storm WHAT ABOUT 100-YEAR DHH



Note: Raising the W.L. of Lake 3 will cause permanent ponding on adjacent property and could result in a lawsuit ..... Do not recommend this ....instead, excavate to achieve desired depth.

Principal Spillway Dam No 3, Q_{10} = 225 cfs

allow 2' of W.L. rise between emergency spillway & prin. spillway
From Chart on pg 111-23, it will take a 96" dia (8') pipe to pass 225 cfs
This is too big - Try 3 pipes Q_{10} each = 225/3 = 75 cfs ✓
A 48" riser gives weir flow of 75 cfs ie 1.5' of head, at 2' head Q = 86 cfs (orifice flow)
With 4 pipes, it will take a 42" Riser and 1.5 feet of head to pass 225 cfs
With two pipes, it will take a 54" riser to pass 225 cfs with 2' of head & orifice flow
Use 3 - 48" risers - can use std Manhole or CMP pipe (bitum. coated)

With H = 48.0 - 43.0 Tailwater from Dam #3A = 5' and L = 100', for pipe flow = 75 cfs min
a 42" dia CMP barrel will pass 85 cfs with L=100 and H=5'
a 36" RCP barrel will pass 82 cfs with L=100 & H=5' } — Worst Case

With H = 48 - 40 Tailwater from Dam #4, L=100, Q min = 75 cfs
a 36" CMP barrel will pass 74 cfs with L=100' & H=8'
a 30" RCP Barrel will pass 70 cfs with L=100 & H=8' } best case

Use Triple 48" dia CMP riser with 42" dia barrel x100'
or
Use Triple 48" dia Std Manhole with 36" dia barrel

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PROJECT Ford's Colony - Section 32
PROJECT NO. 5652-32D
SUBJECT Adequacy Calculations
SHEET NO. 1 OF 1
CALCULATED BY CBR DATE 10/6/99

DAM NO. 3 (RECEIVING POND FOR SEC. 18 POND)
POST-DEVELOPMENT
D.A. = 31.0 +/- AC.

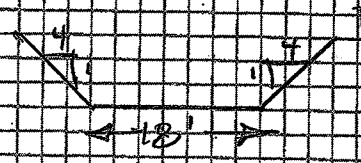
TOP OF DAM = 52.0
EMERGENCY SPILLWAY @ 2.8% MIN. EXIT SLOPE

T_c = 60 MIN
C = 0.4
I_{10} = 2.3 IN/HR
I_{50} = 3.1 IN/HR
I_{100} = 3.35 IN/HR
Q_{10} = 28.5 CFS
Q_{50} = 38.4 CFS
Q_{100} = 41.5 CFS

THE PRINCIPAL SPILLWAY FOR THE POND WAS DESIGNED TO CARRY 22.5 CFS.

FOR ADEQUACY TO HANDLE ADDITIONAL RUNOFF THE REMAINING FLOW MUST BE CARRIED VIA THE EMERGENCY SPILLWAY.

REQUIRED FLOW THROUGH EMERGENCY SPILLWAY FOR ADEQUACY = Q_{10} = 22.5 CFS = 28.5 - 22.5 = 6.0 CFS
Q_{50} - 22.5 CFS = 38.4 - 22.5 = 15.9 CFS
Q_{100} - 22.5 CFS = 41.5 - 22.5 = 19.0 CFS



2.8% EXIT SLOPE
n = 0.30

USING VDOT PLATE 2.8.63 FROM DRAINAGE MANUAL (CONSERVATIVE CHANNEL CHART FOR THIS X-SECTION) [n=0.30, 18' BOTTOM WIDTH, 2:1 SS]

10 YR. @ Q = 6.0 CFS d_{10} = 1.20' $\vec{V}_{10}$ = 2.6 FPS ∴ FREEBOARD = 2.80'
50 YR. @ Q = 15.9 CFS d_{50} = 2.00' $\vec{V}_{50}$ = 3.6 FPS ∴ FREEBOARD = 2.00'
100 YR. @ Q = 19.0 CFS d_{100} = 2.25' $\vec{V}_{100}$ = 3.9 FPS ∴ FREEBOARD = 1.75

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PROJECT NO. 5652-32A
SUBJECT ADEQUACY CALCULATIONS
SHEET NO. 1 OF 1
CALCULATED BY CBR DATE 10/6/99

DAM NO. 3 (RECEIVING POND FOR SEC. 18 POND)
POST-DEVELOPMENT
D.A. = 310 +/- AC.? ORIG DA
TOP OF DAM = 52.0
T_c = 60 MIN
C = 0.4
I_{10} = 2.3 IN/HR
I_{50} = 3.1 IN/HR
I_{100} = 3.35 IN/HR
Q_{10} = 285 CFS
Q_{50} = 384 CFS
Q_{100} = 415 CFS

245.00
30.34
275.34

EMERGENCY SPILLWAY @ 2.8% MIN. EXIT SLOPE

310.00 NOW
245.00 ORIG
55.00

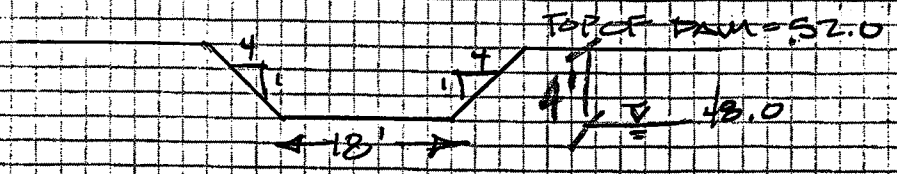
197.84
167.50
30.34 (SEC 32)

275.34 ≠ 55.00 AC. WHY??

THE PRINCIPAL SPILLWAY FOR THE POND WAS DESIGNED TO CARRY 225 CFS. ✓ OK

FOR ADEQUACY TO HANDLE ADDITIONAL RUNOFF THE REMAINING FLOW MUST BE CARRIED VIA THE EMERGENCY SPILLWAY.

REQUIRED FLOW THROUGH EMERGENCY SPILLWAY FOR ADEQUACY = Q_{10} - 225 CFS = 285 - 225 = 60 CFS
Q_{50} - 225 CFS = 384 - 225 = 159 CFS
Q_{100} - 225 CFS = 415 - 225 = 190 CFS



2.8% EXIT SLOPE
n = 0.30

USING VDOT PLATE 2.8.63 FROM DRAINAGE MANUAL (CONSERVATIVE CHANNEL CHART FOR THIS X-SECTION) [N=0.30 18' BOTTOM WIDTH 2:1 SS]

10 YR. @ Q = 60 CFS d_{10} = 1.20' $\vec{V}_{10}$ = 2.6 FPS ∴ FREEBOARD = 2.80'
50 YR. @ Q = 159 CFS d_{50} = 2.00' $\vec{V}_{50}$ = 3.6 FPS ∴ FREEBOARD = 2.00'
100 YR. @ Q = 190 CFS d_{100} = 2.25' $\vec{V}_{100}$ = 3.9 FPS ∴ FREEBOARD = 1.75'

∴ RECEIVING POND OK FOR ADDITIONAL FLOW.
FB = 1.75' > 1.0 FT.

48.0
2.25
50.25

52.0 TOP
50.25
1.75' OK

CONSULTING ENGINEERS

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October 1, 2003

PC 086

Mr. Scott J. Thomas, P.E.
Civil Engineer
James City County
101-E Mounts Bay Road
Williamsburg, VA 23187

RE: Engineering Evaluation of Dam #3, receiving facility for SP-89-03, Ford's Colony Parking Lot Improvements AES Project No. 5652-33

Dear Mr. Thomas:

AES Consulting Engineers, on behalf of Realtec, Incorporated, hereby submits the attached engineering evaluation for the above referenced Stormwater Management Facility. At your request, the existing BMP/Facility has been evaluated to determine if adequate freeboard exists for the 100-year storm event. As part of this analysis, the 10 and 50-year storm events were also examined to determine their respective high water elevations.

The as-built elevation data used for this analysis was field verified by conventional survey methods in August 2003. The remainder of the attached calculation package consists of the original design, dated July 1984, and supplemental calculations, dated October 1999. The supplemental calculations were completed with the Ford's Colony Section 32 project due to additional area being introduced into this facility.

As the calculations indicate, there is 1.5 feet of freeboard from the 100-year storm to the top of the dam. Additionally, there is 0.75 feet of freeboard from the 100-year storm to the crest of the emergency spillway. Therefore, adequate capacity exists within the pond to handle the 100-year storm event. Should you have any questions or need any additional information, please give me a call.

Sincerely,

AES Consulting Engineers

Charles B. Records, P.E.
Project Manager

Need Field Inspection Component.
(Are there any field problems, clogging, etc.)

PC 086

r.doc

Reservoir Report

Hydraflow Hydrographs by Intelisolve

Reservoir No. 1 - Dam 3

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	46.00	223,694	0	0
2.00	48.00	291,037	514,731	514,731
4.00	50.00	358,220	649,257	1,163,988 (current pond volume)

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	0.0	0.0	0.0
Span in	= 12.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 36.53	0.00	0.00	0.00
Length ft	= 130.0	0.0	0.0	0.0
Slope %	= 1.04	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 12.60	0.00	0.00	0.00
Crest El. ft	= 46.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	46.00	0.00	---	---	---	0.00	---	---	---	---	0.00
2.00	514,731	48.00	9.22	---	---	---	9.22	---	---	---	---	9.22
4.00	1,163,988	50.00	9.97	---	---	---	9.90	---	---	---	---	9.90

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

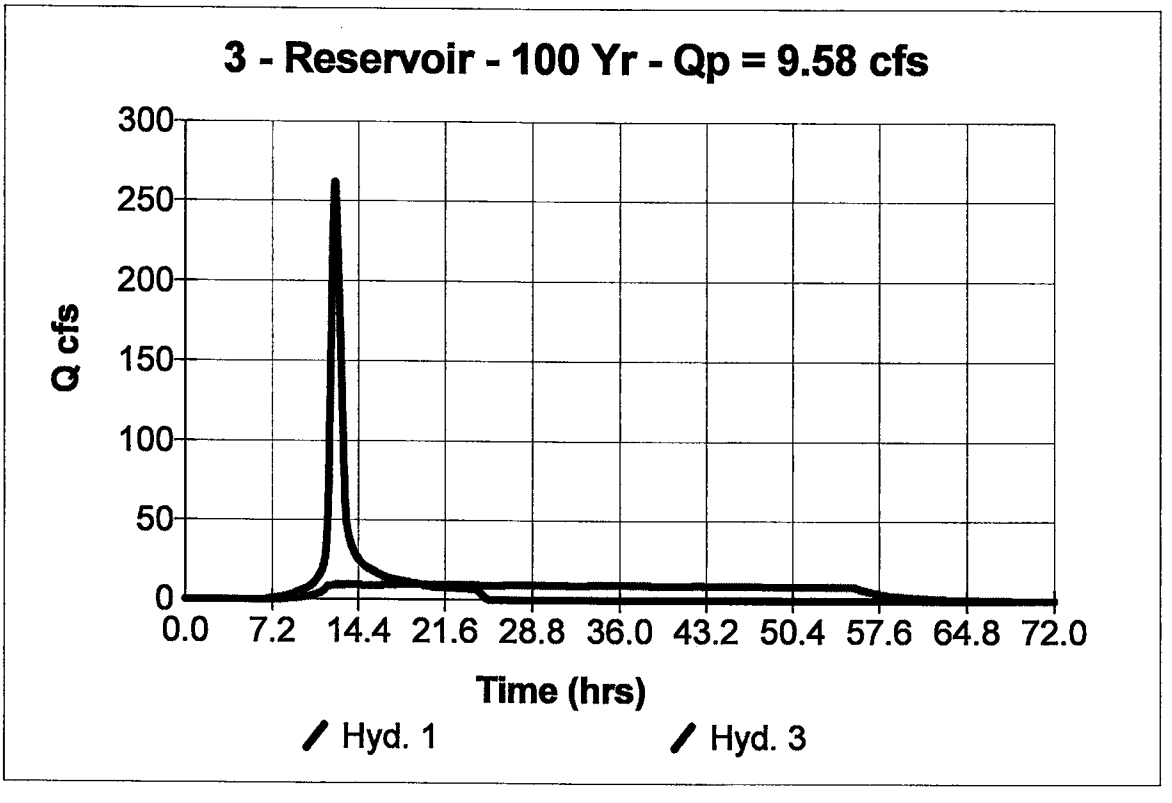
Hyd. No. 3

Dam 3 Routed

Hydrograph type	= Reservoir	Peak discharge	= 9.58 cfs
Storm frequency	= 100 yrs	Time interval	= 3 min
Inflow hyd. No.	= 1	Reservoir name	= Dam 3
Max. Elevation	= 49.93 ft - Current Design Elevation	Max. Storage	= 1,141,627 cuft

Storage Indication method used.

Hydrograph Volume = 1,572,094 cuft



Reservoir Report

Hydraflow Hydrographs by Intelisolve

Reservoir No. 2 - Dam 3 (revised)

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	46.00	222,119	0	0
2.00	48.00	288,397	510,516	510,516
4.00	50.00	354,500	642,897	1,153,413 (NET REDUCTION – 10,575 cu.ft)

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	0.0	0.0	0.0
Span in	= 12.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 36.53	0.00	0.00	0.00
Length ft	= 130.0	0.0	0.0	0.0
Slope %	= 1.04	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 12.60	0.00	0.00	0.00
Crest El. ft	= 46.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	—	—	—
Multi-Stage	= Yes	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	46.00	0.00	—	—	—	0.00	—	—	—	—	0.00
2.00	510,516	48.00	9.22	—	—	—	9.22	—	—	—	—	9.22
4.00	1,153,413	50.00	9.97	—	—	—	9.90	—	—	—	—	9.90

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

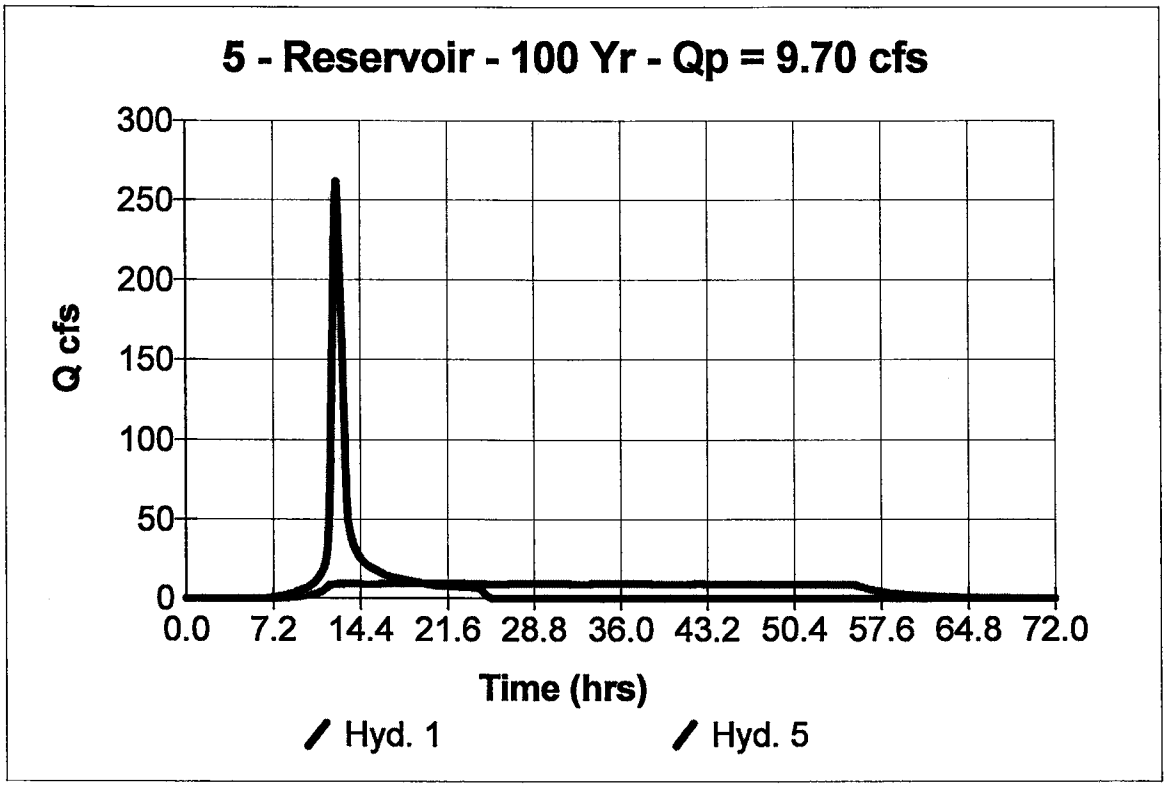
Hyd. No. 5

Dam 3 Routed (Revised)

Hydrograph type	= Reservoir	Peak discharge	= 9.70 cfs
Storm frequency	= 100 yrs	Time interval	= 3 min
Inflow hyd. No.	= 1	Reservoir name	= Dam 3 (revised)
Max. Elevation	= 49.96 ft - Revised Elevation	Max. Storage	= 1,139,805 cuft

Storage Indication method used.

Hydrograph Volume = 1,572,178 cuft



AES
CONSULTING ENGINEERS

Line # 03-1462

ATTN: Environmental

5248 Olde Towne Road • Suite 1 • Williamsburg, Virginia 23188
(757) 253-0040 • Fax (757) 220-8994 • E-mail aes@aesva.com

October 23, 2003

OCT 2003
RECEIVED
ENVIRONMENTAL DIVISION

Scott J. Thomas, P.E.
James City County Environmental Division
101-E Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784

RE: Lot 35, Section XIII-A Ford's Colony at Williamsburg
AES Project No.23911-1

Dear Mr. Thomas:

AES Consulting Engineers is submitting an analysis of the 100-year water surface elevation (WSEL) of the pond known as, Dam 3, in Ford's Colony Section XIII-A. The revisions are required because of the proposed grading activities on Lot 35, Section 13-A of Ford's Colony, which lessens the volume of Dam 3.

To provide a baseline, AES researched the design files and identified the 100-year WSEL to be 49.93 ft (occurring at the 50 contour on mapping associated with the area). According to the current development plan, the grading for the lot will result in altering down to the 48 contour. Our calculations show that the total net loss in volume due to the planned impact will be approximately 10,575 cu. ft., which translates to a change of less than a tenth of a percent in the total storage volume of the pond. The change in the WSEL due to the 100-year storm is negligible (less than a tenth of a foot).

It is our judgment that the grading activities will not have any effects, adverse or otherwise on the area surrounding the pond. We are providing a copy of the previous calculations, as well as the revised calculations for your review. Please feel free to call if you have any questions or concerns regarding this project.

Sincerely,

AES Consulting Engineers

Jason Grimes, E.I.T.
Project Engineer

V. Marc Bennett, P.E.
Project Manager

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