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: **CC-017**

DATE VERIFIED: **March 21, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 11, 2010

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

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: CC017

PIN: 5010100009

Subdivision, Tract, Business or Owner Name (if known): Kingsmill

Property Description: Government Center

Site Address: 101 Mounts Bay Road

(For internal use only)	**Box**	12		**Drawer:**	7	
Agreements: (in file as of scan date)	**Y**		**Book or Doc#:**	0732	**Page:**	0986
				181		432

Comments
Owner of the parcel is James City County; The Kingsmill North Quarter BMP located on parcel behind 168 North Quarter

CC017

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

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

004985

THIS DECLARATION, made this 28th day of March, 19 95, between Busch Properties, Inc., and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: Deed Book No. 181, page 432, (North Quarter) Kingsmill Village, Tax Map # (50-1) (1-1), and James City County, Virginia, hereinafter referred to as the "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 runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

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

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the FACILITY 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 FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY 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 FACILITY 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 FACILITY.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. 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 FACILITY.

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

IN WITNESS WHEREOF. the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 28th day of March, 1995.

COVENANTOR(S)
BUSCH PROPERTIES, INC. DBA
Kingsmill on the James

William B. Voliva, Jr.
Vice President
Kingsmill on the James

ATTEST:

COVENANTOR(S)

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I, the undersigned Notary Public, in and for the Commonwealth at large jurisdiction aforesaid, do certify that William B. Voliva, Jr., whose name is signed as such to the foregoing writing bearing date 28th day of March, 1995, this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 28th day of March, of 1995.

Notary Public
Nancy A. Ehly

My Commission expires: January 31, 1996

Approved as to form:

0261U.Wpf
Revised 9/92

VIRGINIA: City of Williamsburg and County of
[illegible] Court of the
[illegible] City the
5 April 95 This Covenants
[illegible] Executed and
admitted to record at 12:46 o'clock
Teste: [illegible], Clerk
by [illegible]
Deputy Clerk

James City County, Virginia
Environmental Division

CONST DATE 7/01/95?
50-0

Stormwater Management/BMP Facilities
Record Drawing/Construction Certification
Review Tracking Form

County Plan No.: S-70-94 (FORM TUTTERS NECK NORTH)
Project Name: Kingsmill North Quarter
Stormwater Management Facility: Dry Det. Basin.
Phase: ☑ I ☐ II ☐ III

☑ Information Received. Date: Unknown. Request Tom Quinn 7/27/01.
☐ Administrative Check.
- ☑ Record Drawing Date: 11/19/96
- ☑ Construction Certification Date: 10/13/95 NICE
- ☐ RD/CC Standard Forms (Required after Feb 1st 2001) NOT NEEDED.
- ☑ Inspection/Maint Agreement Yes Info:
- ☐ Other:

☑ Standard E&SC Note on Approved Plan Requiring RD/CC
☑ Yes ☐ No Sheet: County comment #5 10/14/94 requires AB
☑ Assign County BMP ID Code Code: CC 017
☑ Log into Division "As-Built" Tracking Log
☑ GIS Map (obtain information GPIN, Owner, Site Area, etc.)
☑ Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
☑ Initial As-Built File setup.
☑ Forward Inspector Review Form. Feedback:
☑ Pre-Inspection Drawing Review (Quick look)
☑ Final Inspection (field observation) Date: 08/24/01
☑ Record Drawing Review Date: 08/24/01
☑ Construction Certification Review Date: 08/24/01
☐ Actions:
- ☐ No comments.
- ☑ Comments. Letter Forwarded. Date: Aug 24 '01
  - ☑ Record Drawing (RD)
  - ☑ Construction Certification (CC)
  - ☑ Construction-Related (CR) → Reinspect 11/02/01
  - ☐ Site Issues (SI)
  - ☐ Other :

☐ Second Submission:
☐ Third Submission:

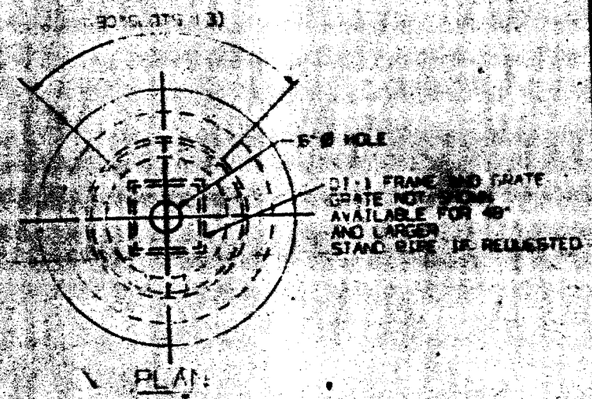
☑ Approved for stormwater managment facility purposes (RD/CC/CR/Other). Proceed with bond release.
☑ Notify Darryl & Joan of acceptability email (preferred) or verbal.
☑ Clean active file of all stormwater management related material and finish/establish "As-Built" file.
☑ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
☐ Add to JCC Hydrology & Hydraulic database (optional).

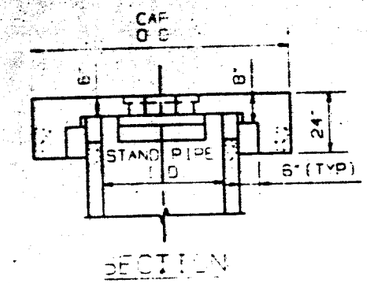
BMP Certification Information Acceptable

Plan Reviewer: Scott J. Thomas Date: 11/12/01

RECORD DWG

STAND-PIPE I.D.	CAP O.D.	APPROX. CAP WEIGHT
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	1.327t
[illegible]	[illegible]	1.329t
[illegible]	69½"	1.753t
[illegible]	73½"	2.053t
[illegible]	80½"	2.[illegible]73t
54"	87½"	2.572t
60"	94½"	2.910t
66"	101½"	3.286t
72"	107"	3.409t
78"	114"	3.799t
84"	124"	4.809t
96"	133"	5.506t
108"	147"	5.822t



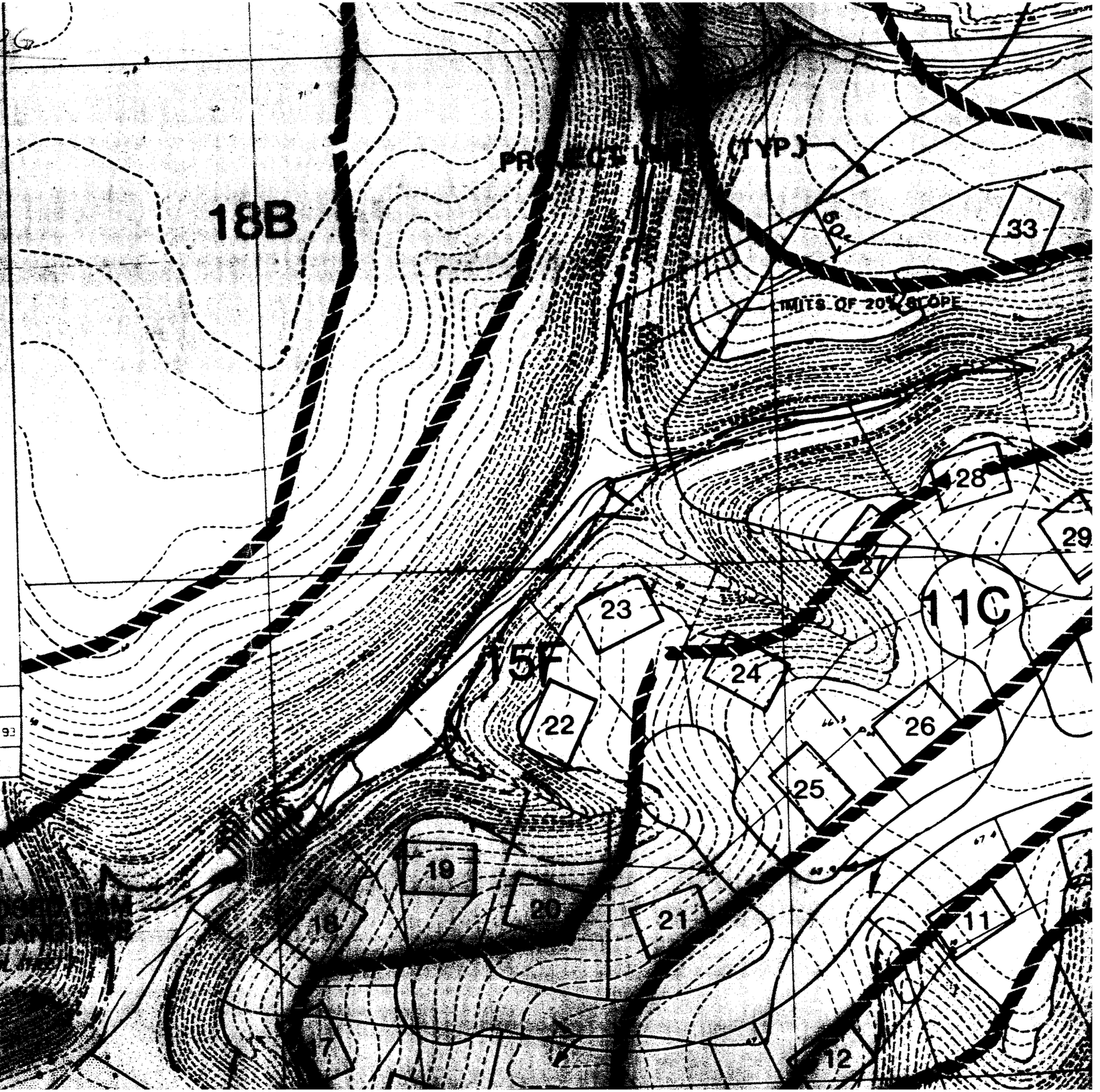


ANTI-VORTEX DEVICE

CPP
CONCRETE PIPE & PRODUCTS CO., INC.

DATE 01 24-93

PAGE 14 1



CLASS I DRY RIP-RAP
d50 = 1.8', W = 35', L = 40', DEPTH 18" MIN. OVER FILTER FABRIC

CONCRETE LYNE EMERGENCY SPILLWAY

PROPOSED BMP AND STANDPIPE SEE SHEET 5

ELEV. 17.37 7.5' ø CMP TOP

INV. = 8.47

VARIABLE WIDTH DRAINAGE & MAINTENANCE EASEMENT AND COMMON AREA.

10' GRAVEL ACCESS ROAD (SEE DETAIL THIS SHEET)

STA. 29+80, 25' RT.
L = 8' D. DBL. D.I.
RIM 46.50
INV. 43.00

15" C.P.E.P. FES
INV. = 07.6

160.0 L.F. 15" C.P.E.P.
MINIMUM COVER = 18"
MINIMUM SLOPE = 1.5%

20' INGRESS / EGRESS EASEMENT TO BMP

FM-FLUSHING CONNECTION (TYP. SEE DETAIL)

BLOW OFF VALVE, TYP.

GRINDER PUMPS (TYP.)

200 L.F. 1½" PVC SCH 40

SILT FENCE, TYPICAL

CBR #5

200 L.F. 15" C.P.E.P.
MINIMUM COVER = 18"
MINIMUM SLOPE = 1.5%

20' DRAINAGE EASEMENT (TYP.)

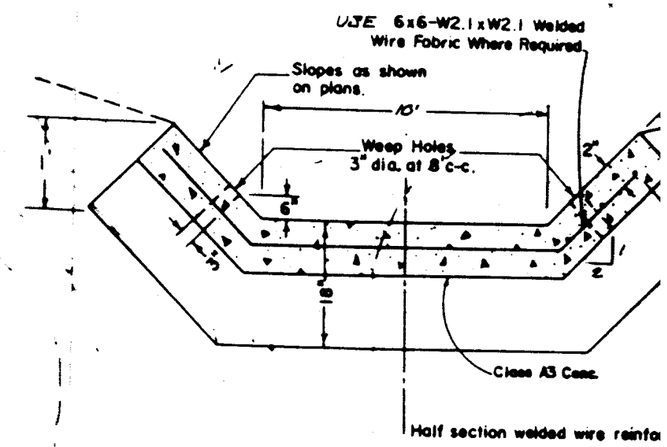
LIMITS OF CLEARING, TYPICAL

2" PVC (SCH 40) F.M.

4" D.I. W.L.

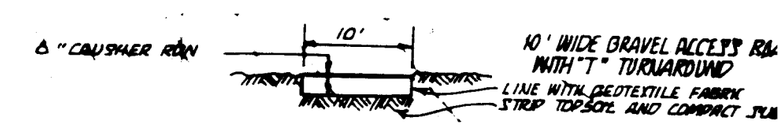
DENOTES GRINDER PUMP LOTS, TYPICAL

GRINDER PUMP, SEE DETAIL (TYP.)

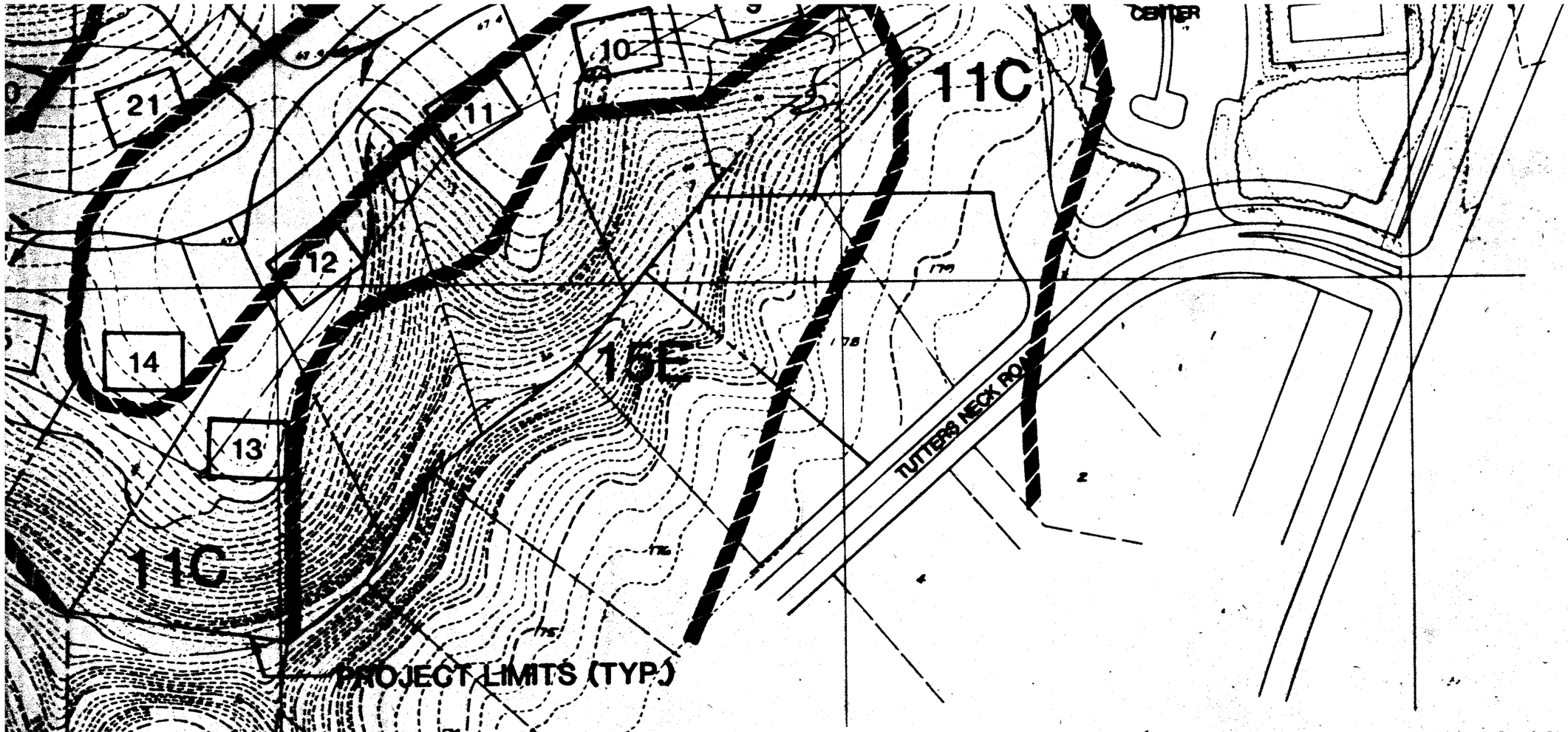


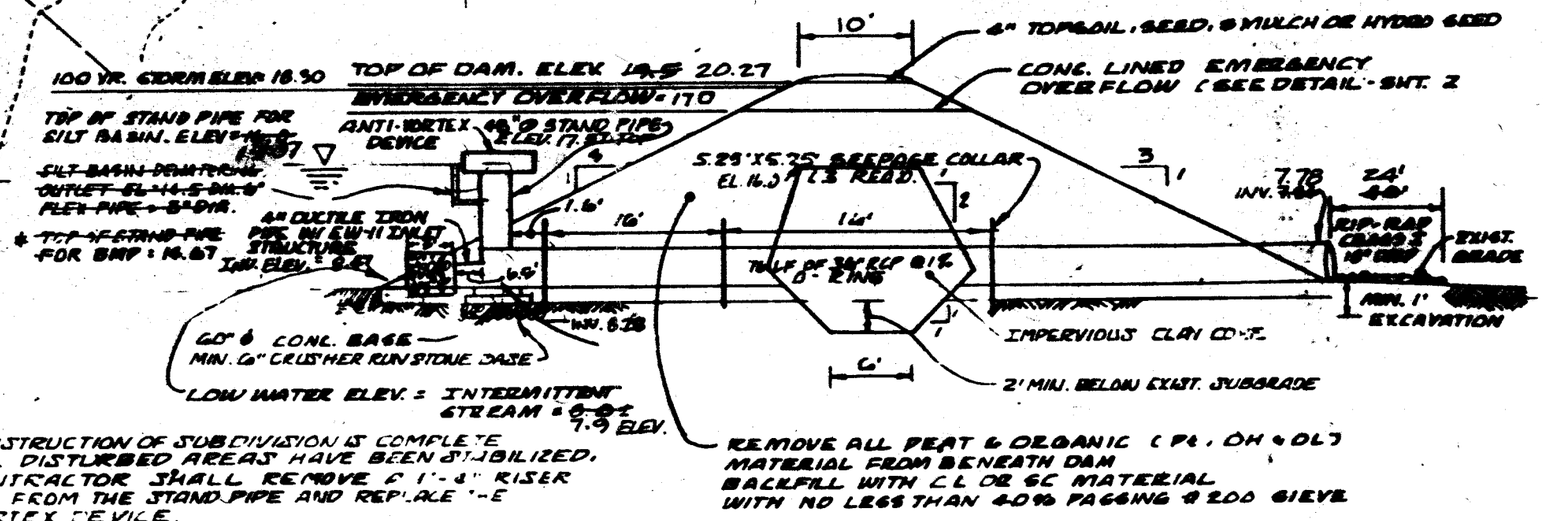
SECTION A-A

N.T.S.



CC017_KINGSMILL_VILLAGE_NORTH_QUARTER





* ONCE CONSTRUCTION OF SUBDIVISION IS COMPLETE AND ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE CONTRACTOR SHALL REMOVE & 1'-8" RISER SECTION FROM THE STAND PIPE AND REPLACE W/ ANTI VORTEX DEVICE.

DAM CROSS SECTION

N.T.S.

TIDAL WETLANDS

TIDAL SHORES

SLOPES GREATER

NON-TIDAL WETLA

NON-TIDAL WETLA

100' BUFFER

HYDRIC SOILS

IMPACTED WETLANDS

SOIL LEGEND

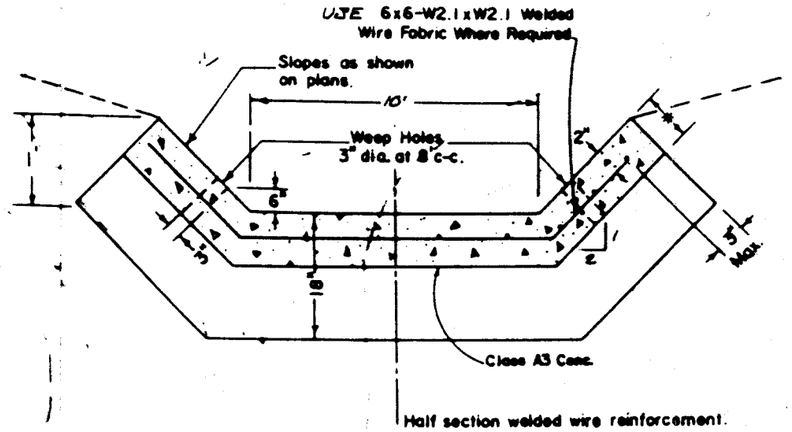
SYMBOL	
11C	CRAVEN-I
14B	EMPORIA
15E	EMPORIA
15F	EMPORIA
18B	KEMPSVIL
19B	KEMPSVIL

2-6% slop

0 100

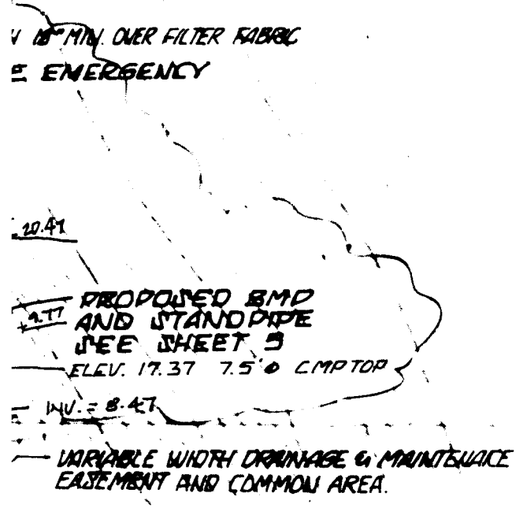
GRAPHIC

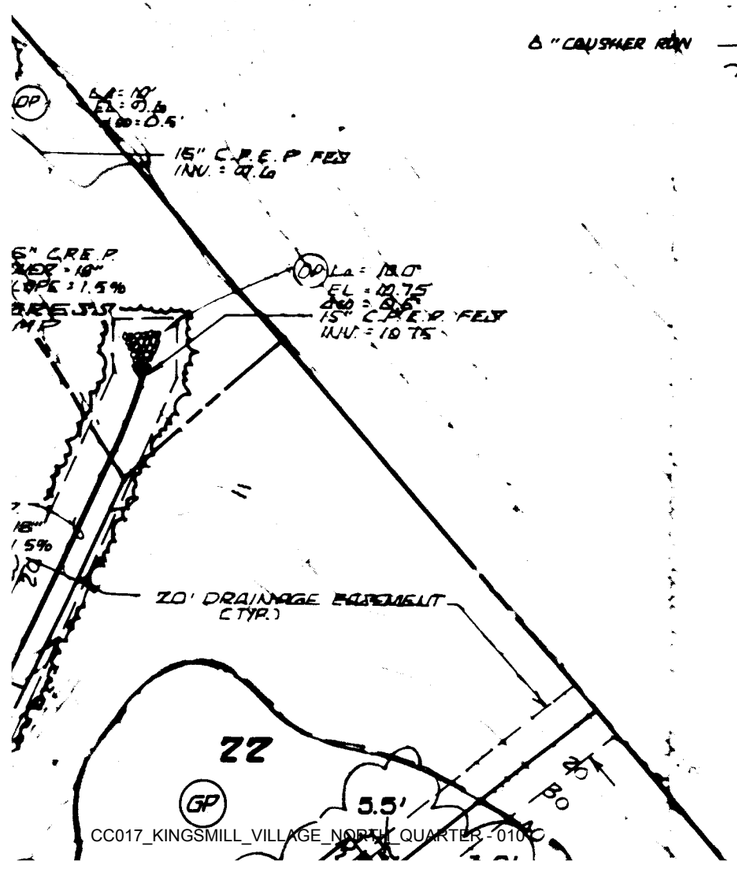
REVISED: 11
REVISED: 11/
REVISED: /

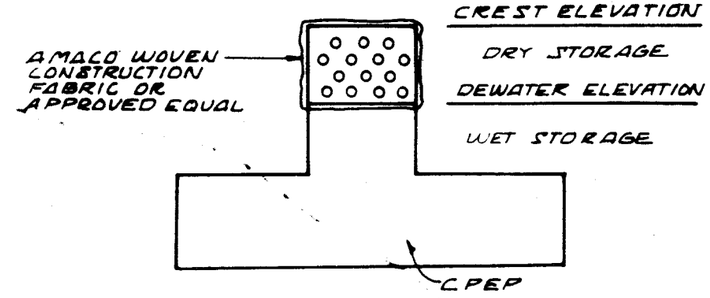


SECTION A-A

N.T.S.







DETAIL OF C.P.E.P. TEE

N.T.S

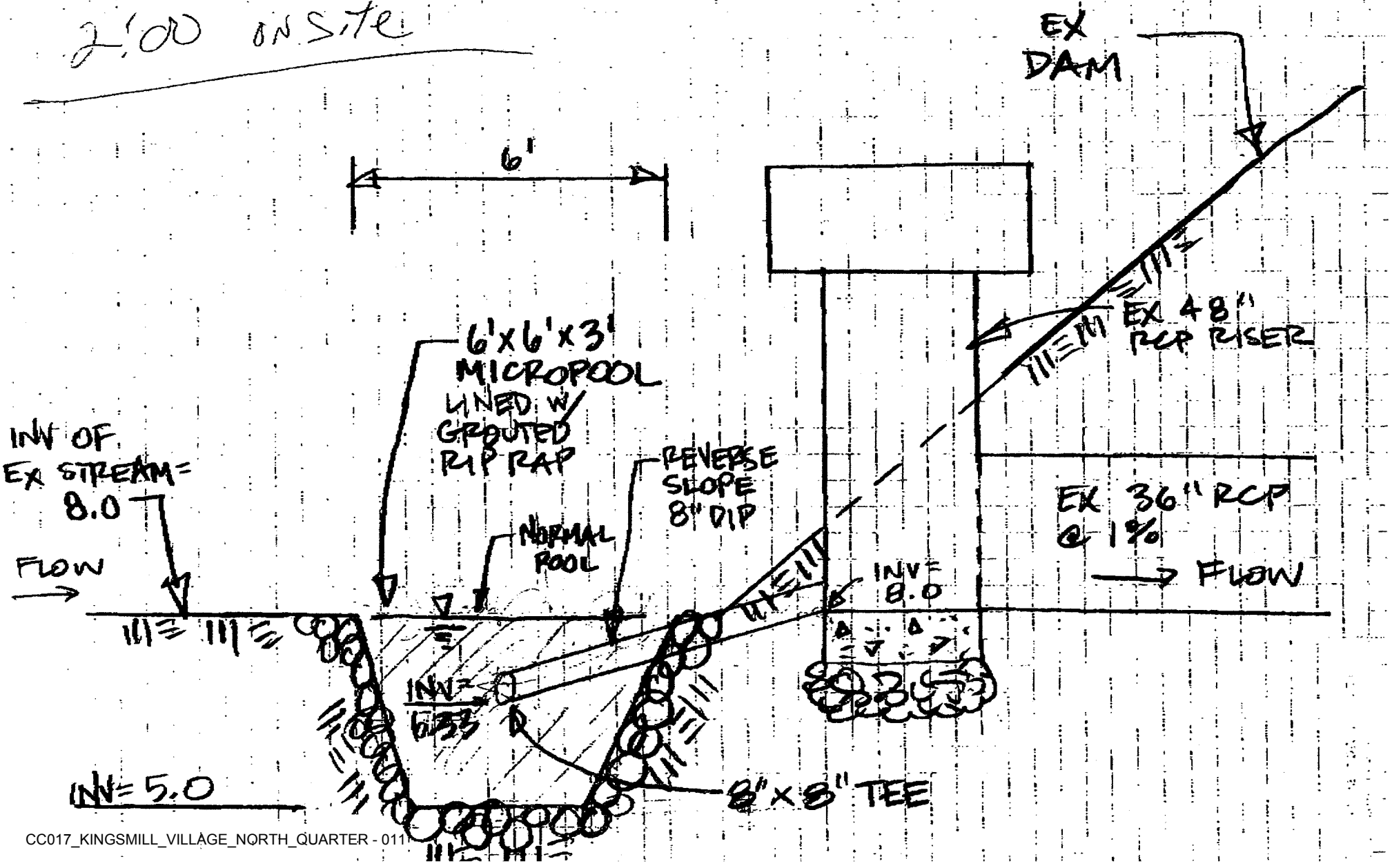
CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 0100

KINGSMILL VILLAGE BMP RETROFIT

9/5/97
7753

Deanie FAX
220-0452

2:00 ON SITE



File
Busch
North Quarter

BUSCH PROPERTIES, INC.

300 McLaws Circle
WILLIAMSBURG, VA 23185

FAX COVERSHEET

TO: Pat Menacino

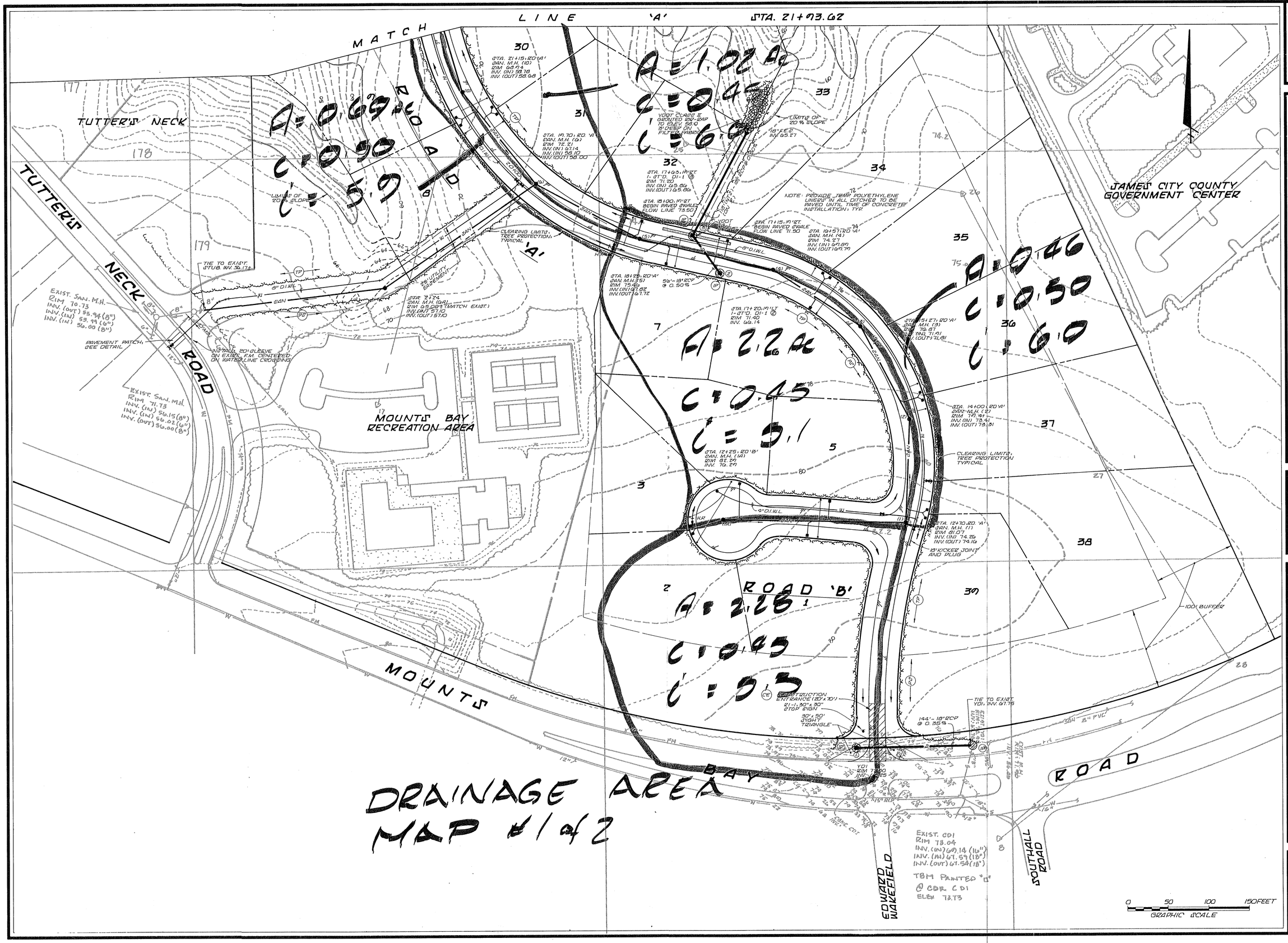
FAX NO.: 253-6850 ***TELEPHONE NO.:***

FROM: Tom Dunn

DATE: September 9, 1997

NUMBER OF PAGES (INCLUDING COVERSHEET): 2

RISER RETROFIT - 1997



COMMONWEALTH OF VIRGINIA
LARRY S. BARRY
No. 9490
PROFESSIONAL ENGINEER

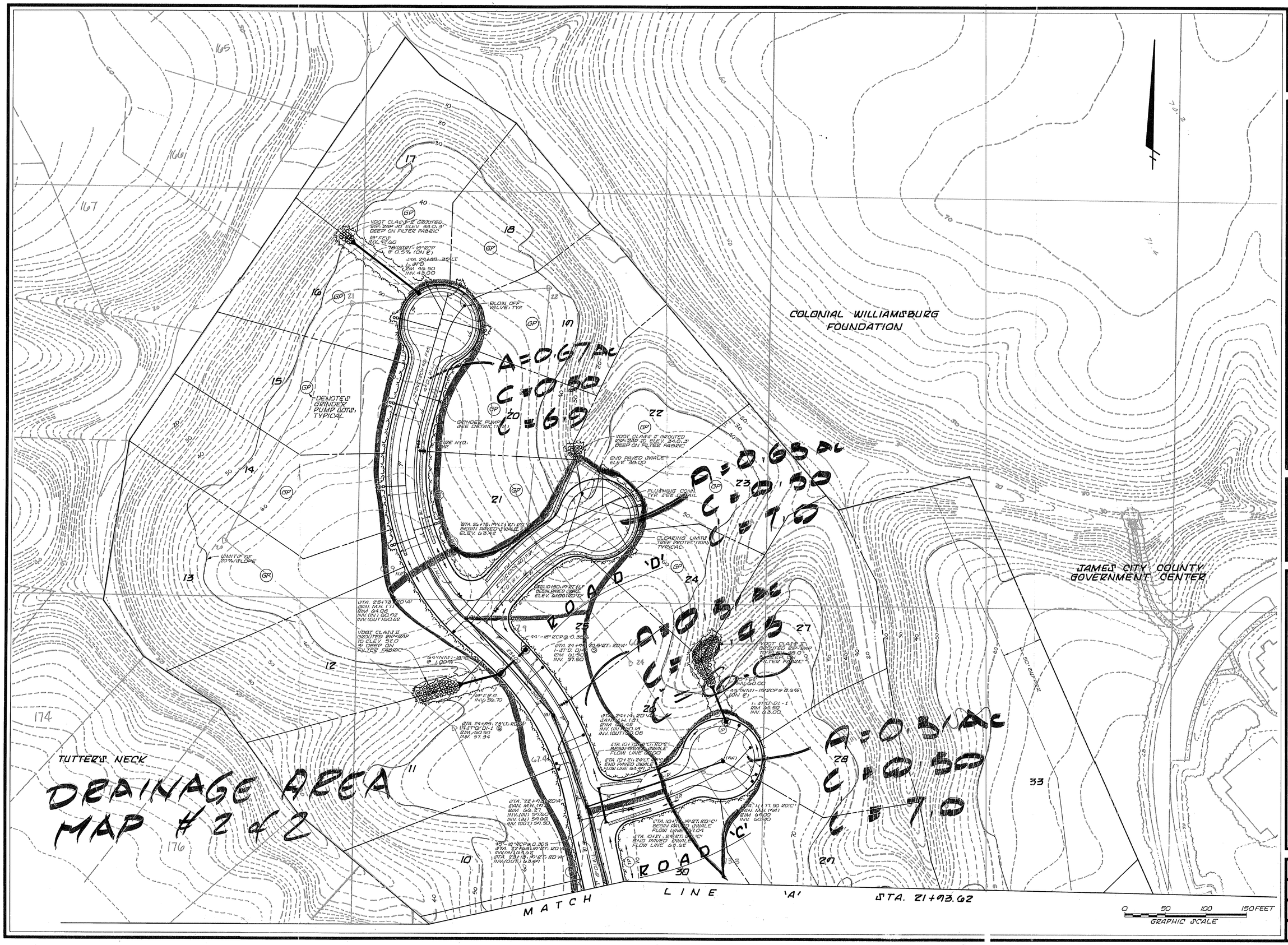
Langley and McDonald, P.C.
Engineers • Surveyors • Planners
Landscape Architects • Environmental Consultants
WILLIAMSBURG
VIRGINIA BEACH

DES.	RWE
DWN.	CFR
CHK.	KSM
DATE	8/31/94

TUTTER'S NECK NORTH
KINGSMILL on the James
SANITARY SEWER, DRAINAGE & WATER PLAN

SHEET	OF
DISK	
PROJ. NO.	71069B-234
DWG.	

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 013



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SANITARY SEWER, DRAINAGE & WATER PLAN

SHEET	OF
DISK	
PROJ. NO.	
DWG.	

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 014

ROUTE 199

ROUTE 199

COLONIAL PIPELINE EASEMENT

COUNTRY ROAD

COLONIAL WILLIAMSBURG SCENIC EASEMENT

JAMES CITY COUNTY GOVERNMENT CENTER

MOUNT'S BAY ROAD

COUNTRY ROAD

SOUTHALL ROAD

PHASE I

FUTURE DEVELOPMENT

INITIAL POND LOCATION

FUTURE DEVELOPMENT

MOUNT'S BAY ROAD RECREATION CENTER

PROPOSED POND LOCATION

RPA

TUTTER'S NECK

bottom elev (5')

6PT - Elev 13 ± Top of water - temp pool (2.5VR)

9PT - Elev 20 ± - Top of water - temp (4VR)

Natural Open Space - 4.4 ac - areas over 25%

60% Imp. - 17.9 is div out of 23.5 total of drainage basin inc already develop. (5.7ac) - 32% imp.

13.5 built, left @ 60% Imp.

23.5 ac - total
- 5.7 ac - already developed
17.8 left to develop.
4.4 - 25% slopes
13.4 ac

13.4 ac
2.6 ac - Cons. Easement
10.8 ac
x.6 imp → 6.5 ac imp.

13.4 ac
x.4 imp
5.4 ac
assume 6 ac imp. - 45%

35'

POSSIBLE BMP SITES
KINGSMILL VILLAGE

SCALE: 1" - 100' MARCH, 1991

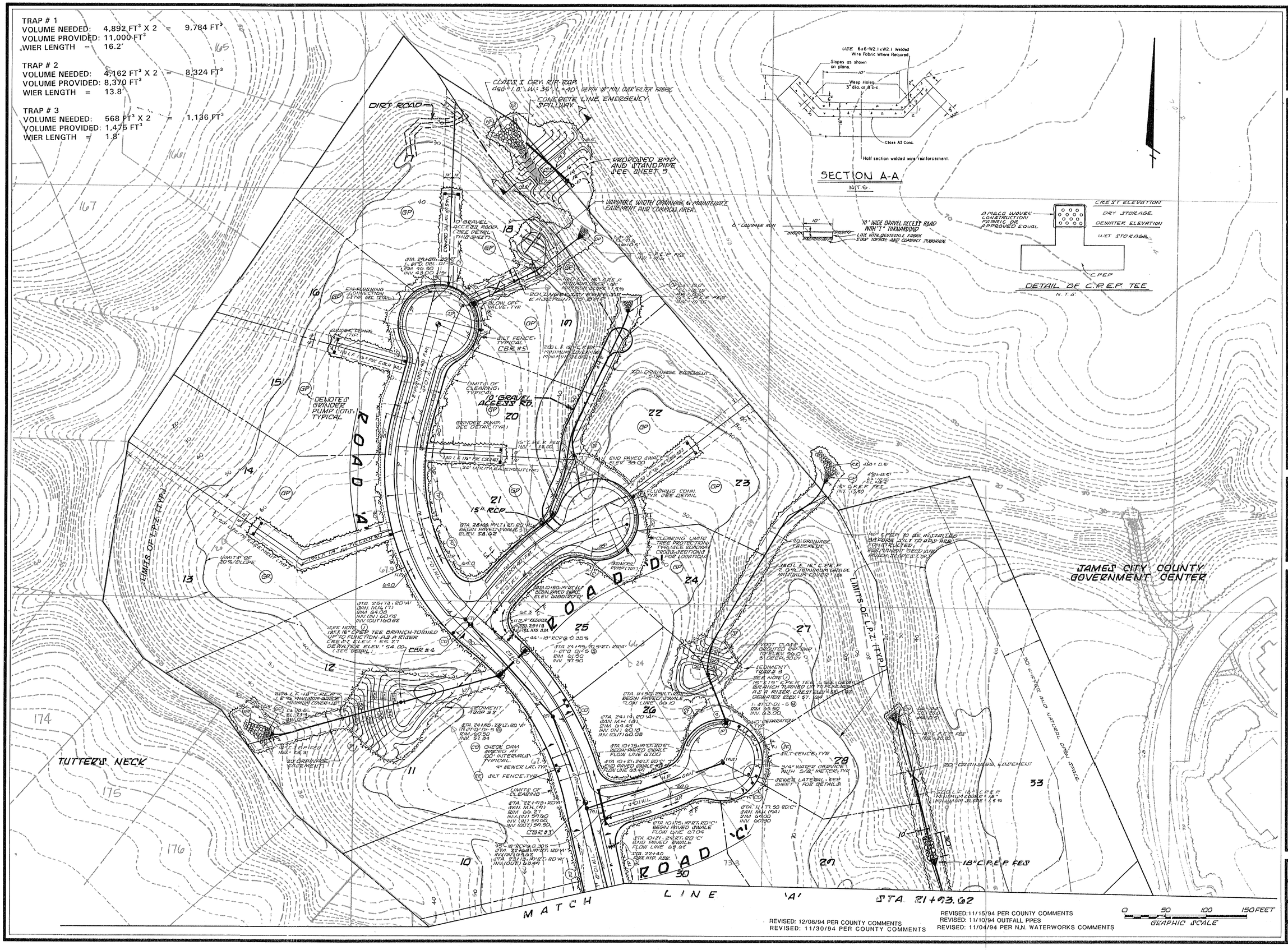
PREPARED BY
LANGLEY AND McDONALD
A PROFESSIONAL CORPORATION
ENGINEERS-PLANNERS-SURVEYORS
WILLIAMSBURG - VIRGINIA BEACH

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 015

TRAP # 1
VOLUME NEEDED: 4,892 FT³ X 2 = 9,784 FT³
VOLUME PROVIDED: 11,000 FT³
WIER LENGTH = 16.2'

TRAP # 2
VOLUME NEEDED: 4,162 FT³ X 2 = 8,324 FT³
VOLUME PROVIDED: 8,370 FT³
WIER LENGTH = 13.8'

TRAP # 3
VOLUME NEEDED: 568 FT³ X 2 = 1,136 FT³
VOLUME PROVIDED: 1,475 FT³
WIER LENGTH = 1.8'



REVISED: 12/08/94 PER COUNTY COMMENTS
REVISED: 11/30/94 PER COUNTY COMMENTS
REVISED: 11/15/94 PER COUNTY COMMENTS
REVISED: 11/10/94 OUTFALL PPES
REVISED: 11/04/94 PER N.N. WATERWORKS COMMENTS

COMMONWEALTH OF VIRGINIA
LARRY S. BARRY
No. 9858
PROFESSIONAL ENGINEER

Langley and McDonald, P.C.
Engineers • Surveyors • Planners
Landscape Architects • Environmental Consultants
WILLIAMSBURG
VIRGINIA BEACH

DES.	RWE
DWN.	CFR
CHK.	KSM
DATE	8/31/94

KINGSMILL VILLAGE
KINGSMILL on the James
SANITARY SEWER, DRAINAGE & WATER PLAN

SHEET	2 OF 15
DISK	
PROJ. NO.	71069B-234
DWG.	5467W

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 016

Langley and McDonald — Transmittal

ENGINEERS•PLANNERS•SURVEYORS

5544 Greenwich Road
☐ Virginia Beach, Virginia 23462
(804) 473-2000

201 Packets Court
☐ Williamsburg, Virginia 23185
(804) 253-2975

Project: NORTH QUARTER @ KINGSMILL

To: DARRYL COOK

From: BILL BROWN

Date: 7/3/97

Reply requested: ☐ Yes ☐ No

Reply to:

We are sending you:
- ☑ Attached
- ☐ Under separate cover via:
- ☑ Prints
- ☐ Copy of letter
- ☐ Plans
- ☐ Specifications
- ☐ Shop drawings
- ☐

Transmitted as checked below:
- ☐ For your use
- ☐ As requested
- ☐ For review and comment
- ☐ For approval
- ☐ Return for correction
- ☐ Approved as noted
- ☐ Approved
- ☐

RECEIVED JUL 1997 CODE COMPLIANCE OFFICE

Copies	Date	No.	Description
2			REVISIONS to BMP @ NORTH QUARTER

Remarks: OK - DEC 7/17/97

Copies / Enclosures
1. File: 71069 & 270 ☐
2. ☐
3. ☐
4. ☐

Langley and McDonald

By: Bill B

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

#4

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 017

Rd "A" LANE
Rt. SIDE

CUT — MED. — FILL

PROJECT: Kingsmill Village
BY ___ DATE 11/14/94

STA.	TO STA.	FLOW	0.9 WS/CA (10')	0.6 WS/CA (15')	0.5 WS/CA (20')	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft/Ft	ALLOW VEL	Earth n=.03 VEL.	Protective Lining n=.05 Qn	VEL.	DEP.	n=.015 Qn	DEP.	I_{10}	Q_{10}	DEP. Ft	REMARKS
10+00	11+00	↑	0.021	0.021	0.034	0.076	0.214		3.5	0.75		.0300	3½	2.4						5.1	1.09	0.37'	
11+00	12+00	↑	0.021	0.021	0.034	0.076	0.138		3.5	0.48		.0300	3½	2.2						5.1	0.70	0.31'	
12+00	12+80 29	↑	0.017	0.017	0.028	—	0.062		3.5	0.22	C	.0300	3½	1.8						5.1	0.31	0.23'	
12+80 29	14+00	↓	0.025	0.025	0.041	—	0.091		3.5	0.32		.0200	3½	1.7						5.1	0.46	0.29'	
14+00	15+00	↓	0.021	0.021	0.023	0.065	0.156		3.5	0.55		.0200	3½	1.9						5.1	0.80	0.35'	
15+00	16+00	↓	0.021	0.021	0.023	0.065	0.221		3.5	0.77		.0200	3½	2.1						5.1	1.13	0.40'	
16+00	17+00	↓	0.021	0.021	0.023	0.065	0.286		3.5	1.00		.0200	3½	2.3						5.1	1.46	0.44'	
17+00	17+63	↓	0.013	0.013	0.015	0.041	0.327		3.5	1.14	LP	.0047	3½	1.4					0.41	5.1	1.67	0.47'	PG-2A PAVED DITCH 17+20 – 17+63
17+63			STR # 3			D1-5				Rim =		71.20											
17+63	18+00	↑	0.008	0.008	0.013	0.029	0.065		3.5	0.23		.0540	3½	2.26					0.14	5.1	0.33	0.16	PG-2A PAVED DITCH 18+00 17+63
18+00	18+46.15	↑	0.010	0.010	0.016	—	0.036		3.5	0.13		.03	3½	1.58						5.1	0.16	0.16	
18+46.15	20+00	↓	0.032	0.032	0.076	—	0.140		3.5	0.49		.035	3½	2.33						5.1	0.71	0.30	
20+00	21+00	↓	0.021	0.021	0.077	0.119	0.259		3.5	0.91		.015	3½	1.98						5.1	1.32	0.45	
21+00	22+00	↓	0.021	0.021	0.121	0.163	0.422		3.5	1.47		.015	3½	2.23						5.1	2.15	0.54	
22+00	22+68	↓	0.014	0.014	0.057	0.085	0.507		3.5	1.75		.015	3½	2.33						5.1	2.59	0.58	
	18"		RCP			0.074			From Road "C" Rt.														
						0.065			From Road "C" Lt.														
22+68	24+00	↓	0.027	0.027	0.030	0.084	0.73		3.5	2.56		.015	3½	2.56						5.1	3.72	0.66	
24+00	24+95	↓	0.020	0.020	0.022	0.062	0.79		3.5	2.77		.015	3½	2.80						5.1	4.03	0.68	
24+95			STR #			5		D1-5															
25+65.14	24+95	↑	0.014	0.014	0.005	—	0.033		3.5	0.116		.0138	3½	1.14						5.1	0.17	0.21	
26+58.49	25+65.14	↑	0.019	0.019	0.019	—	0.057		3.5	0.20		.0138	3½	1.31						5.1	0.29	0.26	TO ROAD "D"

2-27

"A" LANE
Rt. SIDE

CUT | MED. | FILL

PROJECT: KINGSMILL VILLAGE
BY____ DATE 11/14/94

STA.	TO STA.	FLOW	0.9 WS/CA	0.6 WS/CA	0.5 WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft-Ft	ALLOW. VEL.	Earth n=.03 VEL.	Protective Lining n=.05 Qn	n=.05 VEL.	n=.05 DEP.	n=015 Qn	n=015 DEP.	I_{10}	Q_{10}	DEP.	REMARKS
26+58.41	28+00		0.032	0.032	0.036	—	0.10		3.5	0.35		.0674	3'/1	2.73						5.1	0.51	0.24	
28+00	29+00		0.021	0.021	0.018	0.06	0.16		3.5	0.56		.0674	3'/1	3.07					0.19	5.1	0.82	0.22	28+00 BEGIN PG-2A
29+00	30+00																						

2-27

Rd H LANE
Lt. SIDE

CUT (10' 15') — MED. — FILL

PROJECT: KINGSMILL VILLAGE
BY____ DATE 11/14/94

STA. TO STA.		FLOW	0.9 WS/CA	0.6 WS/CA	0.4 WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft-Ft	ALLOW. VEL.	Earth n=.03 VEL.	Protective Lining n=.05 Qn	n=.05 VEL.	n=.05 DEP.	n=.015 Qn	n=.015 DEP.	I_{10}	Q_{10}	DEP.	REMARKS
10+00	11+00	↑	0.021	0.021	0.046	0.088	0.469		3.5	1.64		.0300	3.0	2.97						5.1	2.39	0.49	
11+00	12+65	↑	0.037	0.033	0.092	0.162	0.381		3.5	1.33		.0300	3.0	2.82						5.1	1.94	0.46	
From Road "B"		↑					0.219																
From Road "B"		|					0.158																
12+65	14+00	↓	0.021	0.021	0.007	0.049	0.207		3.5	0.72		.0200	3.0	2.08						5.1	1.06	0.39	
14+00	15+00	↓	0.021	0.021	0.037	0.079	0.286		3.5	1.00		.0200	3.0	2.25						5.1	1.46	0.44	
15+00	16+00	↓	0.021	0.021	0.099	0.141	0.427		3.5	1.49		.0200	3.0	2.49						5.1	2.18	0.52	
16+00	17+20	↓	0.025	0.025	0.20	0.25	0.677		3.5	2.37		.0200	3.0	2.80						5.1	3.45	0.61	
17+20		|	STR # 2			D1-5		RIM =		71.40					Low Pt.								
17+20	17+80	↑	0.012	0.012	0.17	0.19	0.36		3.5	1.26													
17+80	18+46	↑	0.018	0.018	0.13		0.17		3.5	0.60		.030	3.0	2.78									
		|																					
18+46	20+00	↓	0.028	0.028	0.037		0.093		3.5	0.33		.035	3.0	2.11						5.1	0.47	0.26	
20+00	21+00	↓	0.021	0.021	0.027	0.069	0.162		3.5	0.57		.015	3.0	1.76						5.1	0.83	0.38	
21+00	22+00	↓	0.021	0.021	0.018	0.060	0.222		3.5	0.78		.015	3.0	1.90						5.1	1.13	0.42	
22+00	23+00	↓	0.021	0.021	0.018	0.060	0.282		3.5	0.99		.015	3.0	2.02						5.1	1.44	0.47	
23+00	24+00	↓	0.021	0.021	0.018	0.060	0.342		3.5	1.20		.015	3.0	2.12						5.1	1.74	0.50	
24+00	24+95	↓	0.020	0.020	0.017	0.057	0.399		3.5	1.40		.015	3.0	2.20						5.1	2.03	0.53	
24+95		|	STR #	6		D1-5		RIM =		60.50													
24+95	26+58	↑	0.034	0.034	0.03		0.098		3.5	0.34		.0138								5.1	0.50		
		|																					
26+58	28+00	↓	0.029	0.029	0.026		0.084		3.5	0.29		.0674	3.0	2.61					0.15	5.1	0.43	0.17	27+95 BEGIN PG-2A
28+00	29+00	↓	0.021	0.021	0.028	0.070	0.154		3.5	0.54		.0674	3.0	3.05					0.19	5.1	0.79	0.22	
29+00	30+00	↓																					

2-2

Rd 6 LANE
Lt. SIDE

CUT | MED. | FILL

PROJECT: KINGSMILL VILLAGE BY___ DATE 11/14/94

STA. TO STA.		FLOW	0.9 WS/CA	0.6 WS/CA	0.4 WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft/Ft	ALLOW VEL	Earth n=.03 VEL	Protective Lining n=.05 Qn	VEL.	DEP.	n=.015 Qn	DEP.	I_{10}	Q_{10}	DEP.	REMARKS
12+17	11+00	↓	0.072	0.028	0.068	–	0.168		3.5	0.59	C	.0075	3.0'	1.37						5.1	0.86	0.14	
11+00	10+00	↓	0.026	0.017	0.008	0.051	0.219		3.5	0.77	C	.0075	3'/.	1.46						5.1	1.12	0.18	
Road "C" Lt																							
10+00	11+12.5	↑	0.023	0.023	0.019	–	0.065		3.5	0.23		0.109	3'/.	2.95					.12	5.1	0.33	0.14	PG-2A
11+12.5	11+77.5	↓	0.061	0.021	0.01	–	0.092		3.5	0.32		0.028	3'/.	1.92						5.1	0.47	0.27	
Road "D" Lt																							
From Road "A"						–	0.057																
10+00	11+00		0.021	0.021	0.02	0.062	0.119		3.5	0.42		0.25	3'/.	4.68					.13	5.1	0.61	0.15	PG-2A
11+00	12+04		0.06	0.015	0.02	0.095	0.214		3.5	0.74		0.25	3'/.	5.39					.16	5.1	1.09	0.19	PG-2A

2-27

Rd. "B" LANE
Rt. SIDE

CUT — MED. — FILL

PROJECT: KINGSMILL VILLAGE
BY ____ DATE 11/14/94

STA.	TO STA.	FLOW	0.9 WS/CA	0.6 WS/CA	0.4 WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft/Ft	ALLOW VEL	Earth n=.03 VEL.	Protective Lining n=.05 Qn	n=.05 VEL.	n=.05 DEP.	n=.015 Qn	n=.015 DEP.	I_{10}	Q_{10}	DEP.	REMARKS
~~12+17~~	11+00	↓	0.067	0.022	0.015		0.104		3.5	0.36		.0075	3.0'	1.21						5.1	0.53	0.36	
~~11+00~~	10+00	↓	0.026	0.021	0.007	0.054	0.158		3.5	0.55		.0075	3.0'	1.34						5.1	0.81	0.43	
ROAD "C"				Right																			
~~10+00~~	11+12.5	↑	0.023	0.023	.028	—	0.074		3.5	0.26		.016	3'/1	2.45					0.14	5.1	0.38	0.17	PG-2A
~~11+12.5~~	11+77.5	↓	0.070	0.025	0.10	—	0.195		3.5	0.68		.03	3'/1	2.38						5.1	0.99	36	
ROAD "D"				Right																			
~~D+00~~	11+00	↓	0.021	0.021	0.01	—	0.052		3.5	0.18		0.07	3'/1	2.75					0.12	5.1	0.26	0.14	PG-2A
~~11+00~~	12+04.28	↓	0.090	0.017	0.17	0.277	0.329		3.5	1.15		0.25	3'/1	6.02					0.19	5.1	1.68	0.22	PG-2A

2-27

S-70-94

L&M

COMPUTATION SHEET FOR THE DESIGN OF STORM SEWERS

DESIGN DATA

RAINFALL FREQUENCY 10 YRS.

MANNINGS' "n" 0.013

TYPE OF PIPE RCP

RUNOFF COEFFICIENTS

PAVED OTHER

GRASS

ROOFS

JOB NAME KINGSMILL

JOB NO. 710609B-234

DATE 8/31/94

DESIGNED BY RWE SHEET 1 OF 1

LOCATION COMMENTS	FROM STRUCTURE	TO STRUCTURE	AREA TO STRUCTURE (AC)	RUNOFF COEFFICIENT "C"	C x A	SUM OF C x A	TIME TO INLET (MIN.)	PIPE FLOW TIME (MIN)	INTENSITY (IN/HR)	TOTAL RUNOFF (CFS)	LENGTH (FT)	SEWER DIAM. (IN.)	SEWER SLOPE FT/FT	SEWER CAPACITY FULL (CFS)	VELOCITY FULL (FPS)	VELOCITY ACTUAL (FPS)	FALL IN SEWER (FT)	DROP THRU STRUC. (FT)	SEWER INVERT ELEVATION UPPER END	SEWER INVERT ELEVATION LOWER END	SEWER RIM ELEVATION UPPER END	SEWER RIM ELEVATION LOWER END	PIPE COVER UPPER END	PIPE COVER LOWER END
	1	EXIST	2.28	0.45	1.03	1.03	14	—	5.3	5.44	144	18	.0035	6.21	3.5	3.9	—	—	68.25	67.74	72.50	70.91		
✓	2	3	2.20	0.45	0.99	0.99	15	0.22	5.1	5.05	56	18	.005	7.43	4.2	4.5			66.14	65.86	71.4	71.2		
✓	3	FES	0.46	0.50	0.23	1.22	15.3		5.1	6.22	118	18	.005	7.43	4.2	4.7			65.86	65.27	71.2	—		
✓	4	FES	0.31	0.50	0.16	0.16	5		7.0	1.12	35	15	.086	18.9	15.4	4.0			63.0	60.0	66.0	—		
✓	Culvert		1.02	0.45	0.46	0.46	10	.23	6.00	2.75	45	18	.003	5.75	3.26	3.21			FES 63.63	FES 63.49	—	—		
✓	5	6	0.51	0.45	0.23	0.69	10.2	.21	6.00	4.14	44	18	.0035	6.21	3.52	3.77			57.50	57.34	61.5	60.5		
✓	6	FES	0.69	0.50	0.35	1.04	10.4		5.9	6.14	64	18	.01	10.5	5.9	6.1			57.34	56.7	60.5	—		
✓	7	FES	0.67	0.50	0.34	0.34	6.0		6.9	2.04	78	18	.005	7.43	4.20	1.81			43.00	42.60	46.50	—		

FROM

Langley and McDonald
A PROFESSIONAL CORPORATION
ENGINEERS • PLANNERS • SURVEYORS
VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

Subject "DRY" EXTENDED POND

Computed By _____ Checked By _____

Project No. 71069B196

Client BPI

Date _____ Sheet No. _____

DESIGN CRITERIA

1) SWAMP TYPE BOTTOM → ~~3~~ 6"-12" perm. pool
2) 24-HR RELEASE OF EITHER ONE-INCH STORM OR 1ST FLUSH (½"/impervious acre)
3) UPPER STAGE TO CONTROL 2-YR STORM
   → DISCHARGE NOT TO EXCEED PRE-DEVELOPMENT LEVEL

LOWER STAGE VOLUME = VOLB = [(Rm)(Ry)/12] (A)

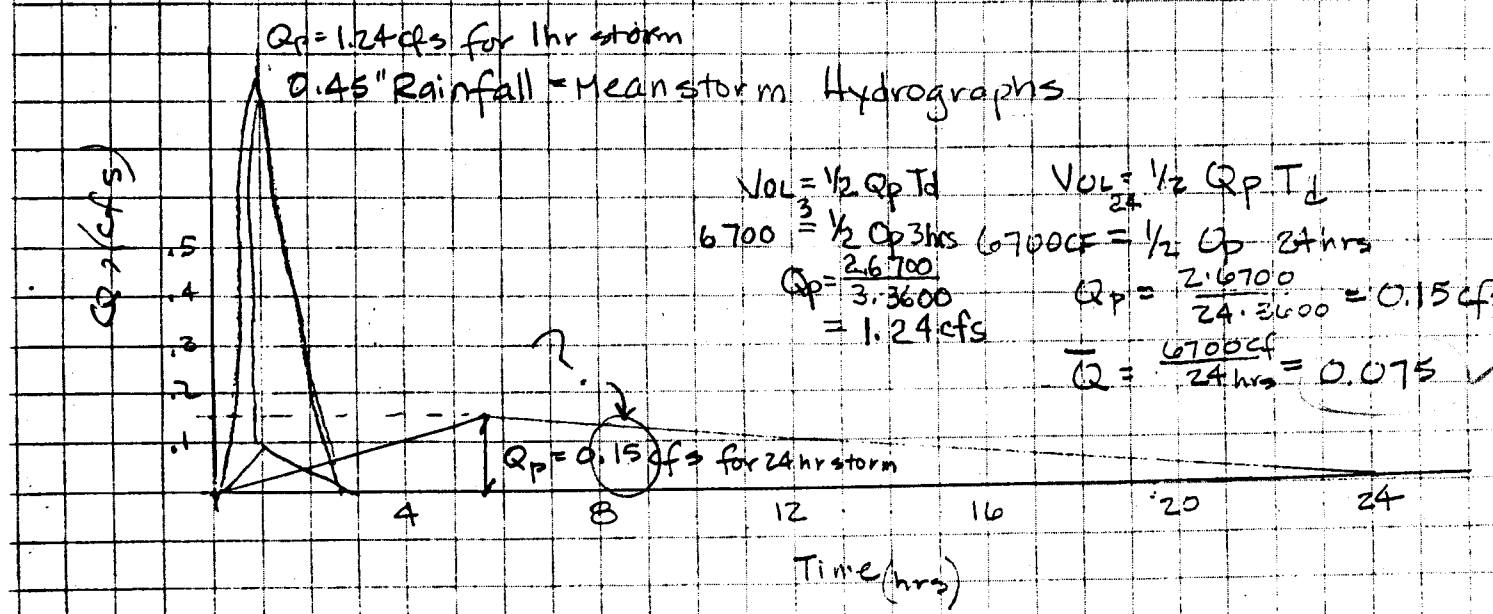
Rm = 0.45 inches rainfall

Ry = 0.05 + (0.009 x 35% impervious)*
= 36.5%

A = 11.24 acre drainage basin

VOLB = [(0.45)(0.365)/12] (11.24) = 0.15 ac-ft
= 6700 C.F.

below elev. 18.5 → ROUTED THROUGH POND OVER 24 HRS



$VOL = \frac{1}{2} Q_p T_d$

$6700 = \frac{1}{2} Q_p 3hrs$

$Q_p = \frac{2 \cdot 6700}{3 \cdot 3600} = 1.24 cfs$

$VOL_{24} = \frac{1}{2} Q_p T_d$

$6700 cf = \frac{1}{2} Q_p 24 hrs$

$Q_p = \frac{2 \cdot 6700}{24 \cdot 3600} = 0.15 cfs$

$\bar{Q} = \frac{6700 cf}{24 hrs} = 0.075$

* 32 units ÷ 11.1 acre site = 2.9 du/ac ⇒ ~35% Impervious cover

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VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

Subject _____
Computed By _____ Checked By _____

Project No. BPI
Client _____
Date 8/28/90 Sheet No. _____

COMP "C" VALUE

?

DEV. AREA = 4.86 AC. (PICKED UP BY STORM DRAINS)
OPEN SPACE = 11.24 AC. − (2.23 AC. + 4.86 AC.) = 4.15 AC.

4.86 AC.	x	0.6	=	2.9
4.15 AC.	x	0.3	=	1.2
9.01				4.1 ÷ 9.01 = 0.45 C/ALL

PRE-DEV. RUNOFF

? - short

Q_2 = ACI
Q_2 = 11.24 (0.25) (5.2"/HR)
Q_2 = 14.6 c.f.s. PRE-DEV.

T_c = 7.5 min
= 0.129 hrs

POST
Q_2 = 11.24 (0.45) (5.2) = 26.3

FOR EMERG. SPILLWAY - 10 YR. STORM
Q = ACI
Q = (11.4)(0.45)(7"/HR)
Q = 36 c.f.s.

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VIRGINIA BEACH – WILLIAMSBURG, VIRGINIA

Subject _____

Computed By _____ Checked By _____

Project No. _____
Client _____
Date _____ Sheet No. _____

10 YR STORM FLOW

$Q_{10} = ACI_{10}$
$Q_{10} = (11.24)(0.45)(6.7'')$
$Q_{10} = 34$ c.f.s.

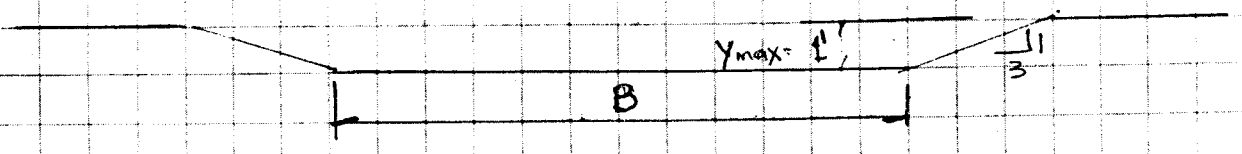
TOTAL 100YR STORM FLOW

$Q_{100} = ACI_{100}$
$Q_{100} = (11.24)(0.45)(8.75)$
$Q_{100} = 44$ cfs

Assume portion of 100-yr storm = to 10yr storm will be carried through storm pipe and remainder will be carried by emergency spillway (Q_s)

$Q_{100} = Q_{10} + Q_s$

$Q_s = Q_{100} - Q_{10} = 44 - 34 = 10$ cfs



POND-2 Version: 5.13 S/N: 1220515075
EXECUTED: 09-20-1990 11:13:27

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************************
*                      *
*                      *
*   Kingsmill Village  *
*   Shallow Marsh BMP  *
*       9/20/90        *
* (CHECK SHORT 1"RAINFALL) *
************************
```

Inflow Hydrograph: a:3HR1IN .HYD
Rating Table file: a:RSTAND21.PND

-----INITIAL CONDITIONS-----
Elevation = 18.50 ft
Outflow = 0.00 cfs
Storage = 149 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
18.50	0.0	149
19.00	0.0	437
19.50	0.1	972
20.00	0.1	1,897
20.50	0.1	3,122
21.00	0.1	4,486
21.50	0.1	6,000
22.00	0.1	7,669
22.50	6.5	9,471
23.00	11.7	11,380
23.50	14.3	13,397
24.00	16.5	15,528
24.50	18.5	17,873
25.00	20.2	20,548
25.50	21.8	23,575
26.00	23.3	26,975
26.50	24.7	30,610
27.00	26.1	34,331
27.50	27.3	38,138

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.1	0.1
0.2	0.2
0.5	0.6
1.1	1.2
1.7	1.8
2.5	2.6
3.3	3.4
4.3	4.4
5.3	11.8
6.3	18.0
7.4	21.7
8.6	25.1
9.9	28.4
11.4	31.6
13.1	34.9
15.0	38.3
17.0	41.7
19.1	45.2
21.2	48.5

Time increment (t) = 60.0 min.

POND-2 Version: 5.13 S/N: 1220515075
EXECUTED: 09-20-1990 11:13:27

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:3HR1IN .HYD
Outflow Hydrograph: a:OUT .HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
60.0	1.20
120.0	0.60
180.0	0.00
240.0	0.00
300.0	0.00
360.0	0.00
420.0	0.00
480.0	0.00
540.0	0.00
600.0	0.00
660.0	0.00
720.0	0.00
780.0	0.00
840.0	0.00
900.0	0.00
960.0	0.00
1020.0	0.00
1080.0	0.00
1140.0	0.00
1200.0	0.00
1260.0	0.00
1320.0	0.00
1380.0	0.00
1440.0	0.00
1500.0	0.00
1560.0	0.00
1620.0	0.00
1680.0	0.00
1740.0	0.00
1800.0	0.00
1860.0	0.00
1920.0	0.00
1980.0	0.00
2040.0	0.00
2100.0	0.00
2160.0	0.00
2220.0	0.00
2280.0	0.00
2340.0	0.00
2400.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)	
-----	0.1	0.1	0.00	18.50	
1.2	1.1	1.3	0.10	20.09	
1.8	2.7	2.9	0.10	21.17	
0.6	3.1	3.3	0.10	21.41	—
0.0	2.9	3.1	0.10	21.29	
0.0	2.7	2.9	0.10	21.17	
0.0	2.5	2.7	0.10	21.05	
0.0	2.3	2.5	0.10	20.93	
0.0	2.1	2.3	0.10	20.80	
0.0	1.9	2.1	0.10	20.66	
0.0	1.7	1.9	0.10	20.53	
0.0	1.5	1.7	0.10	20.39	
0.0	1.3	1.5	0.10	20.24	
0.0	1.1	1.3	0.10	20.09	
0.0	0.9	1.1	0.10	19.93	
0.0	0.7	0.9	0.10	19.74	
0.0	0.5	0.7	0.10	19.54	
0.0	0.4	0.5	0.06	19.30	
0.0	0.3	0.4	0.03	19.15	
0.0	0.3	0.3	0.01	19.07	
0.0	0.3	0.3	0.01	19.04	2OH
0.0	0.3	0.3	0.00	19.02	ok
0.0	0.2	0.3	0.00	19.01	-clos
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	
0.0	0.2	0.2	0.00	19.00	

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:3HR1IN .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

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

Peak Inflow = 1.20 cfs
Peak Outflow = 0.10 cfs
Peak Elevation = 21.41 ft

***** Summary of Approximate Peak Storage *****

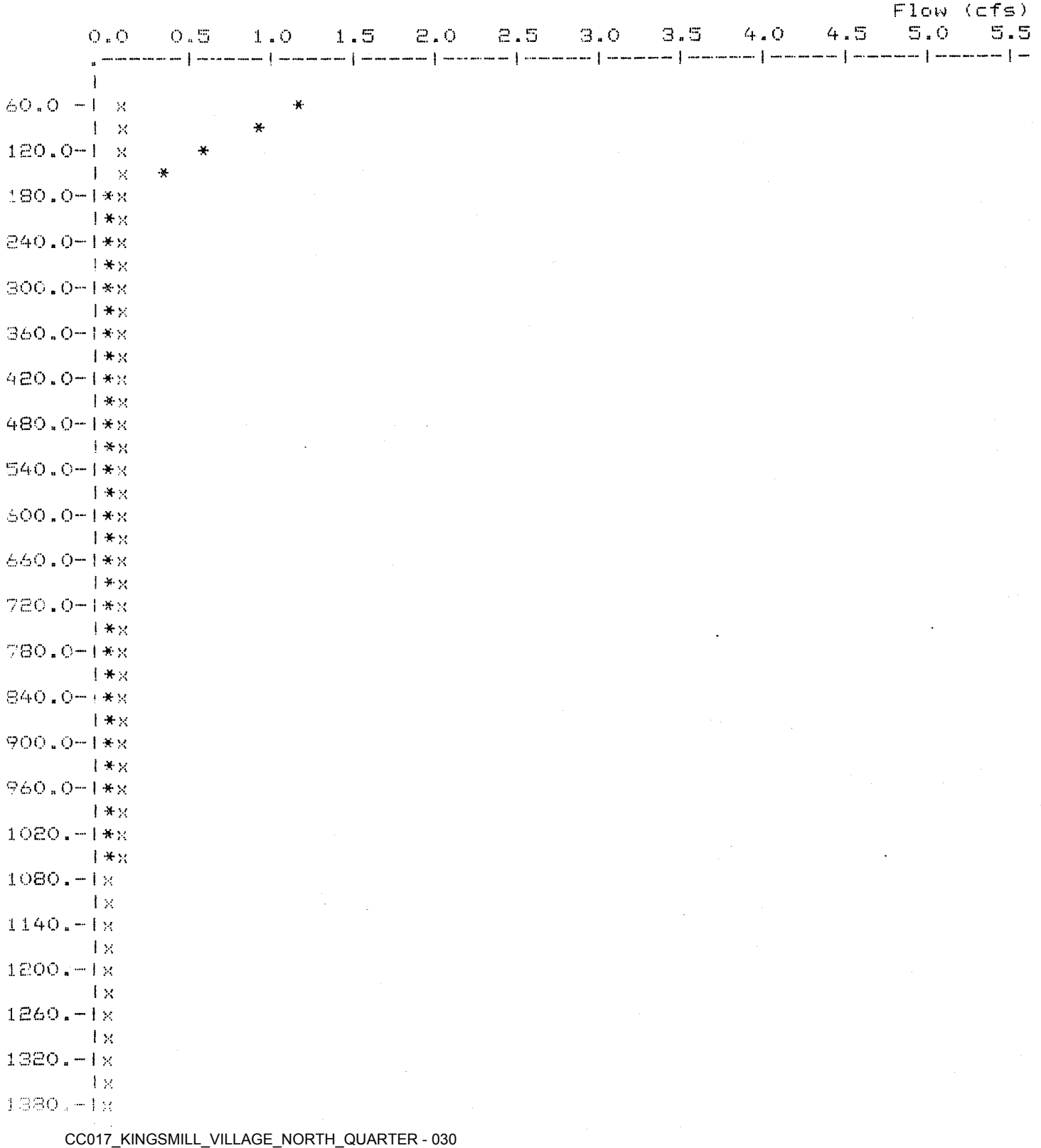
Initial Storage = 149 cu-ft
Peak Storage From Storm = 5,580 cu-ft

Total Storage in Pond = 5,729cu-ft

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:3HR1IN .HYD
Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990
11:13:27

Peak Inflow = 1.20 cfs
Peak Outflow = 0.10 cfs
Peak Elevation = 21.41 ft



```
     . |x
1500.-|x
 `    |x
1560.-|x
      |x
1620.-|x
      |x
1680.-|x
      |x
1740.-|x
      |x
1800.-|x
      |x
1860.-|x
      |x
1920.-|x
      |x
1980.-|x
      |x
2040.-|x
      |
    TIME
    (min)
```

*	File:	a:2HR1IN	.HYD	Qmax =	1.2 cfs
x	File:	a:OUT	.HYD	Qmax =	0.1 cfs

POND-2 Version: 5.13 S/N: 1220515075
EXECUTED: 09-20-1990 11:19:56

```
************************
*                      *
*                      *
*  Kingsmill Village   *
*  Shallow Marsh BMP   *
*       9/20/90        *
*  2YR DESIGN STORM    *
************************
```

Inflow Hydrograph: a:2YRPOST .HYD
Rating Table file: a:RSTAND21.PND

-----INITIAL CONDITIONS-----
Elevation = 18.50 ft
Outflow = 0.00 cfs
Storage = 149 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
18.50	0.0	149
19.00	0.0	437
19.50	0.1	972
20.00	0.1	1,897
20.50	0.1	3,122
21.00	0.1	4,486
21.50	0.1	6,000
22.00	0.1	7,669
22.50	6.5	9,471
23.00	11.7	11,380
23.50	14.3	13,397
24.00	16.5	15,528
24.50	18.5	17,873
25.00	20.2	20,548
25.50	21.8	23,575
26.00	23.3	26,975
26.50	24.7	30,610
27.00	26.1	34,331
27.50	27.3	38,138

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.6	0.6
1.9	1.9
4.2	4.3
8.1	8.2
13.3	13.4
19.2	19.3
25.6	25.7
32.8	32.9
40.5	47.0
48.6	60.3
57.3	71.6
66.4	82.9
76.4	94.9
87.8	108.0
100.7	122.5
115.3	138.6
130.8	155.5
146.7	172.8
163.0	190.3

Time increment (t) = 7.8 min.

EXECUTED: 09-20-1990 11:19:56

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:2YRPOST .HYD
Outflow Hydrograph: a:OUT .HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
7.8	26.30
15.6	13.10
23.4	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0.6	0.6	0.00	18.50
26.3	26.7	26.9	0.10	21.58
39.4	40.0	66.1	13.04	23.26
13.1	35.3	53.1	8.90	22.73

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: a:RSTAND21.FND
Inflow Hydrograph: a:2YRPOST .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

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

Peak Inflow = 26.30 cfs
Peak Outflow = 13.04 cfs < 14.6 cfs ok
Peak Elevation = 23.26 ft

***** Summary of Approximate Peak Storage *****

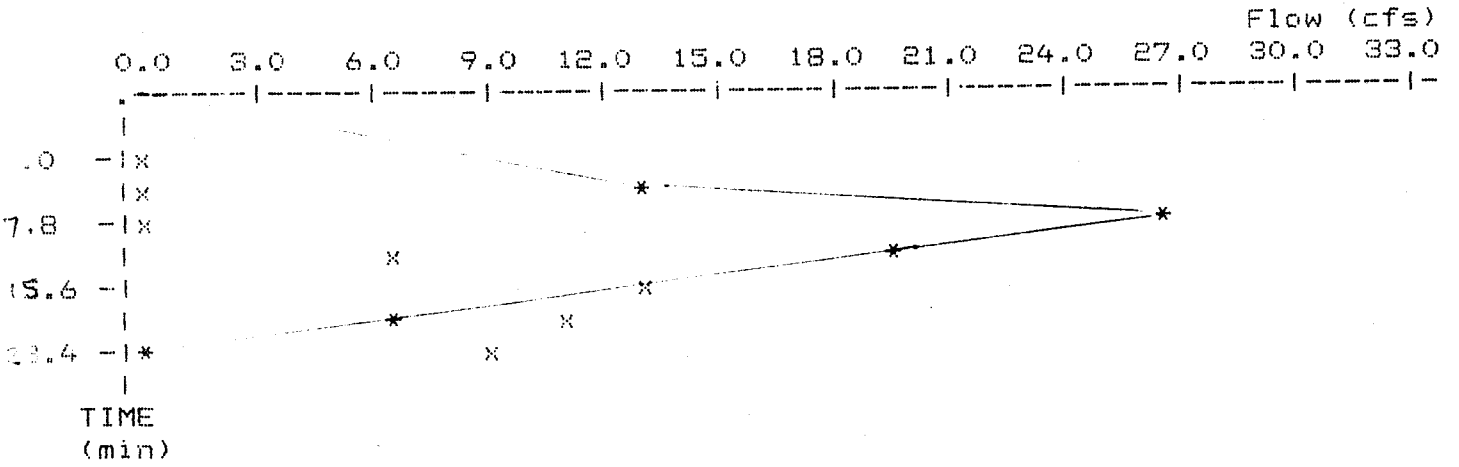
Initial Storage = 149 cu-ft
Peak Storage From Storm = 12,275 cu-ft

Total Storage in Pond = 12,423cu-ft

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:2YRPOST .HYD
Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990
11:19:56

Peak Inflow = 26.30 cfs
Peak Outflow = 13.04 cfs
Peak Elevation = 23.26 ft



* File: a:2YRPOST .HYD Qmax = 26.3 cfs
x File: a:OUT .HYD Qmax = 13.0 cfs

OND-2 Version: 5.13 S/N: 1220515075
XECUTED: 09-20-1990 11:31:20

```
**********************
*                    *
*                    *
*  Kingsmill Village *
*  Shallow Marsh BMP *
*      9/20/90       *
*  CHECK 10YR STORM  *
**********************
```

Inflow Hydrograph: a:10YR .HYD
Rating Table file: a:RSTAND21.PND

----INITIAL CONDITIONS----
Elevation = 18.50 ft
Outflow = 0.00 cfs
Storage = 149 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
18.50	0.0	149
19.00	0.0	437
19.50	0.1	972
20.00	0.1	1,897
20.50	0.1	3,122
21.00	0.1	4,486
21.50	0.1	6,000
22.00	0.1	7,669
22.50	6.5	9,471
23.00	11.7	11,380
23.50	14.3	13,397
24.00	16.5	15,528
24.50	18.5	17,873
25.00	20.2	20,548
25.50	21.8	23,575
26.00	23.3	26,975
26.50	24.7	30,610
27.00	26.1	34,331
27.50	27.3	38,138

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
2.8	2.8
8.1	8.1
18.0	18.1
35.1	35.2
57.8	57.9
83.1	83.2
111.1	111.2
142.0	142.1
175.4	181.9
210.7	222.4
248.1	262.4
287.6	304.1
331.0	349.5
380.5	400.7
436.6	458.4
499.5	522.8
566.9	591.6
635.8	661.9
706.3	733.6

Time increment (t) = 1.8 min.

ND-2 Version: 5.13 S/N: 1220515075
XECUTED: 09-20-1990 11:31:20

nd File: a:RSTAND21.PND
nflow Hydrograph: a:10YR .HYD
utflow Hydrograph: a:OUT .HYD

NFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
1.8	7.20
3.6	14.40
5.4	21.60
7.2	28.80
9.0	36.00
10.8	32.40
12.6	28.80
14.4	25.20
16.2	21.60
18.0	18.00
19.8	14.40
21.6	10.80
23.4	7.20
25.2	3.60
27.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
------	2.8	2.8	0.00	18.50
7.2	9.9	10.0	0.02	19.09
21.6	31.3	31.5	0.10	19.89
36.0	67.1	67.3	0.10	20.69
50.4	117.3	117.5	0.10	21.60
64.8	169.1	182.1	6.53	22.50
68.4	212.1	237.5	12.68	23.19
61.2	243.6	273.3	14.88	23.63
54.0	265.2	297.6	16.16	23.92
46.8	278.3	312.0	16.85	24.09
39.6	283.7	317.9	17.11	24.15
32.4	282.1	316.1	17.03	24.13
25.2	274.0	307.3	16.64	24.04
18.0	260.2	292.0	15.86	23.85
10.8	241.5	271.0	14.76	23.60
3.6	218.8	245.1	13.18	23.28

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:10YR .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

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

Peak Inflow = 36.00 cfs
Peak Outflow = 17.11 cfs
Peak Elevation = 24.15 ft

***** Summary of Approximate Peak Storage *****

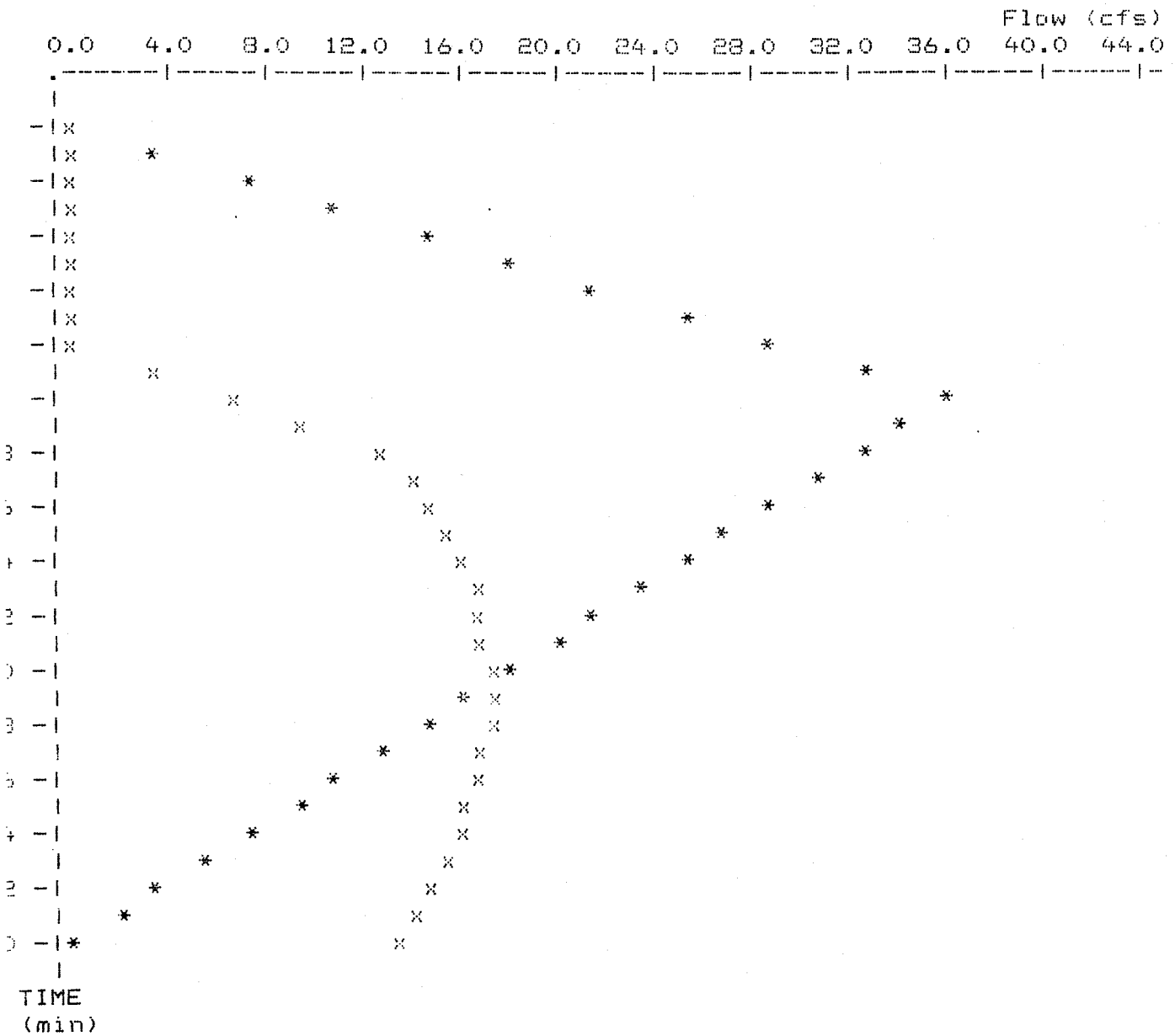
Initial Storage = 149 cu-ft
Peak Storage From Storm = 16,096 cu-ft

Total Storage in Pond = 16,244cu-ft

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:10YR .HYD
Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990
11:31:20

Peak Inflow = 36.00 cfs
Peak Outflow = 17.11 cfs
Peak Elevation = 24.15 ft



File: a:10YR .HYD Qmax = 36.0 cfs
File: a:OUT .HYD Qmax = 17.1 cfs

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
18.50	0.0	
19.00	0.0	1
19.50	0.1	1
20.00	0.1	1
20.50	0.1	1
21.00	0.1	1
21.50	0.1	1
22.00	0.1	1 +2
22.50	6.5	1 +2
23.00	11.7	1 +2
23.50	14.3	1 +2
24.00	16.5	1 +2
24.50	18.5	1 +2
25.00	20.2	1 +2
25.50	21.8	1 +2
26.00	23.3	1 +2
26.50	24.7	1 +2
27.00	26.1	1 +2
27.50	27.3	1 +2
28.00	0.0	

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

Outlet Structure File: a:RSTAND21.STR
Planimeter Input File: a:VOL .VOL
Rating Table Output File: a:RSTAND21.PND

Min. Elev.(ft) = 18.5 Max. Elev.(ft) = 28 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table	Q Table
ORIFICE-VC	1	->	1
STAND PIPE	2	->	2

Outflow rating table summary was stored in file:
a:RSTAND21.PND

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

STAND PIPE
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	22.
E2 elev.(ft)?	28
Crest elev.(ft)?	22
Diameter (ft)?	1.75
Weir coefficient?	3.3
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	22.7
Transition height (ft)?	2

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

ORIFICE-VC
Orifice - Vertical Circular

E1 elev.(ft)?	18.52
E2 elev.(ft)?	28 ?
Orifice coeff.?	.6
Invert elev.(ft)?	18.5
Datum elev.(ft)?	18.56
Diameter (ft)?	.125

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

Outflow Rating Table for Structure #1
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
18.50	0.0	E < E1=18.52
19.00	0.0	H =.44
19.50	0.1	H =.940
20.00	0.1	H =1.44
20.50	0.1	H =1.94
21.00	0.1	H =2.44
21.50	0.1	H =2.94
22.00	0.1	H =3.44
22.50	0.1	H =3.94
23.00	0.1	H =4.44
23.50	0.1	H =4.94
24.00	0.1	H =5.44
24.50	0.1	H =5.94
25.00	0.1	H =6.440
25.50	0.2	H =6.940
26.00	0.2	H =7.440
26.50	0.2	H =7.940
27.00	0.2	H =8.440
27.50	0.2	H =8.940
28.00	0.0	E = or > E2=28

C = .6 A = 1.227185E-02 sq.ft.
H (ft) = Table elev. - Datum elev. (18.56 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13 S/N: 1220515075
Date Executed: Time Executed:

****

Kingsmill Village
Shallow Marsh BMP

****

Outflow Rating Table for Structure #2
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
18.50	0.0	E < Inv.El.= 22
19.00	0.0	E < El=22.
19.50	0.0	E < El=22.
20.00	0.0	E < El=22.
20.50	0.0	E < El=22.
21.00	0.0	E < El=22.
21.50	0.0	E < El=22.
22.00	0.0	Weir: H =0.0
22.50	6.4	Weir: H =.5
23.00	11.6	Orifice: H =1.0
23.50	14.2	Orifice: H =1.5
24.00	16.4	Orifice: H =2.0
24.50	18.3	Orifice: H =2.5
25.00	20.1	Orifice: H =3.0
25.50	21.7	Orifice: H =3.5
26.00	23.2	Orifice: H =4.0
26.50	24.6	Orifice: H =4.5
27.00	25.9	Orifice: H =5.0
27.50	27.2	Orifice: H =5.5
28.00	0.0	E = or > E2=28

Weir Cw = 3.3 Weir length = 5.497787 ft
Orifice Co = .6 Orifice area = 2.405282 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
No transition used, transition zone begins above 22.63835 ft
Weir equation = Orifice equation @ elev.= 22.63835 ft

EMERGENCY SPILLWAY

MAN-MADE CHANNELS

ARIABLES LIST:

Y - FLOW DEPTH	B - CHANNEL BOTTOM WIDTH	S - CHANNEL SLOPE
Q - FLOWRATE	M - CHANNEL SIDE SLOPE	N - CHANNEL ROUGHNESS

ARIABLE TO BE SOLVED (Y,Q,B,M,S OR N) ? Y

(CFS)	? 36
(FT)	? 6
(FT/FT)	? 3
(FT/FT)	? .005
(FT^1/6)	? .015

RESULTS

Y=	0.83 FT	
A=	7.03 SF	
P=	11.24 FT	
V=	5.12 FPS	
F=	1.13	SUPER-CRITICAL FLOW

Shift> <Prt Sc> print <Return> repeat <Space Bar> back to menu

---

FLUME

MAN-MADE CHANNELS

ARIABLES LIST:

Y - FLOW DEPTH	B - CHANNEL BOTTOM WIDTH	S - CHANNEL SLOPE
Q - FLOWRATE	M - CHANNEL SIDE SLOPE	N - CHANNEL ROUGHNESS

ARIABLE TO BE SOLVED (Y,Q,B,M,S OR N) ? Y

(CFS)	? 36
(FT)	? 1
(FT/FT)	? 3
(FT/FT)	? .1667
(FT^1/6)	? .015

RESULTS

Y=	0.62 FT	
A=	1.76 SF	
P=	4.91 FT	
V=	20.43 FPS	
F=	5.89	SUPER-CRITICAL FLOW

Shift> <Prt Sc> print <Return> repeat <Space Bar> back to menu

---

Replacement of 36" pipe w/ 30" pipe thru BMP.

EXECUTED: 04-26-1995 08:12:11 24 HR SCS Return Freq: 2 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN002.HYD
Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

FINAL COMPS CC017

EXECUTED: 04-26-1995 08:12:11 24 HR SCS Return Freq: 2 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	-----	0.0	0.0	0.00	8.00
666.0	1.00	2.0	2.0	2.0	0.02	8.06
672.0	2.00	3.0	4.8	5.0	0.06	8.14
678.0	2.00	4.0	8.6	8.8	0.10	8.25
684.0	2.00	4.0	12.4	12.6	0.14	8.36
690.0	2.00	4.0	16.0	16.4	0.19	8.47
696.0	2.00	4.0	19.5	20.0	0.23	8.57
702.0	4.00	6.0	25.0	25.5	0.28	8.71
708.0	5.00	9.0	33.2	34.0	0.37	8.94
714.0	7.00	12.0	44.3	45.2	0.44	9.22
720.0	16.00	23.0	66.2	67.3	0.55	9.75
726.0	36.00	52.0	116.9	118.2	0.67	10.83
732.0	62.00	98.0	213.1	214.9	0.89	12.44
738.0	64.00	126.0	337.1	339.1	1.00	13.79
744.0	46.00	110.0	440.3	447.1	3.43	14.65
750.0	30.00	76.0	490.8	516.3	12.75	15.08
756.0	21.00	51.0	504.0	541.8	18.90	15.21
762.0	16.00	37.0	503.5	541.0	18.71	15.20
768.0	13.00	29.0	499.2	532.5	16.68	15.16
774.0	11.00	24.0	494.3	523.2	14.42	15.11
780.0	9.00	20.0	489.8	514.3	12.29	15.07
786.0	8.00	17.0	485.8	506.8	10.46	15.03
792.0	8.00	16.0	483.3	501.8	9.27	15.01
798.0	8.00	16.0	481.6	499.3	8.85	14.99
804.0	7.00	15.0	479.4	496.6	8.57	14.97
810.0	7.00	14.0	477.0	493.4	8.25	14.95
816.0	6.00	13.0	474.2	490.0	7.88	14.93
822.0	6.00	12.0	471.2	486.2	7.49	14.90
828.0	5.00	11.0	468.1	482.2	7.08	14.88
834.0	5.00	10.0	464.8	478.1	6.65	14.85
840.0	5.00	10.0	462.2	474.8	6.30	14.83
846.0	5.00	10.0	460.1	472.2	6.03	14.81
852.0	4.00	9.0	457.7	469.1	5.71	14.79
858.0	4.00	8.0	454.9	465.7	5.36	14.77
864.0	4.00	8.0	452.8	462.9	5.08	14.75
870.0	4.00	8.0	451.1	460.8	4.85	14.74
876.0	4.00	8.0	449.7	459.1	4.68	14.73
882.0	4.00	8.0	448.7	457.7	4.53	14.72
888.0	4.00	8.0	447.8	456.7	4.42	14.71
894.0	4.00	8.0	447.1	455.8	4.34	14.70
900.0	4.00	8.0	446.6	455.1	4.27	14.70
906.0	4.00	8.0	446.2	454.6	4.21	14.70
912.0	4.00	8.0	445.9	454.2	4.17	14.69
918.0	3.00	7.0	444.8	452.9	4.03	14.69
924.0	3.00	6.0	443.2	450.8	3.81	14.67

EXECUTED: 04-26-1995 08:12:11 24 HR SCS Return Freq: 2 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	441.9	449.2	3.65	14.66
936.0	3.00	6.0	440.9	447.9	3.51	14.65
942.0	3.00	6.0	440.1	446.9	3.40	14.65
948.0	3.00	6.0	439.4	446.1	3.32	14.64
954.0	3.00	6.0	438.9	445.4	3.25	14.64
960.0	3.00	6.0	438.5	444.9	3.20	14.63
966.0	3.00	6.0	438.2	444.5	3.16	14.63
972.0	3.00	6.0	437.9	444.2	3.13	14.63
978.0	3.00	6.0	437.7	443.9	3.10	14.63
984.0	3.00	6.0	437.6	443.7	3.08	14.63
990.0	3.00	6.0	437.4	443.6	3.06	14.62
996.0	3.00	6.0	437.3	443.4	3.05	14.62
1002.0	3.00	6.0	437.3	443.3	3.04	14.62
1008.0	3.00	6.0	437.2	443.3	3.03	14.62
1014.0	3.00	6.0	437.2	443.2	3.02	14.62
1020.0	3.00	6.0	437.1	443.2	3.02	14.62
1026.0	3.00	6.0	437.1	443.1	3.02	14.62
1032.0	3.00	6.0	437.1	443.1	3.01	14.62
1038.0	2.00	5.0	436.2	442.1	2.91	14.61
1044.0	2.00	4.0	434.8	440.2	2.72	14.60
1050.0	2.00	4.0	433.7	438.8	2.57	14.59
1056.0	2.00	4.0	432.8	437.7	2.45	14.59
1062.0	2.00	4.0	432.1	436.8	2.36	14.58
1068.0	2.00	4.0	431.5	436.1	2.28	14.57
1074.0	2.00	4.0	431.0	435.5	2.22	14.57
1080.0	2.00	4.0	430.7	435.0	2.18	14.57
1086.0	2.00	4.0	430.4	434.7	2.14	14.57
1092.0	2.00	4.0	430.2	434.4	2.11	14.56
1098.0	2.00	4.0	430.0	434.2	2.09	14.56
1104.0	2.00	4.0	429.9	434.0	2.07	14.56
1110.0	2.00	4.0	429.8	433.9	2.06	14.56
1116.0	2.00	4.0	429.7	433.8	2.04	14.56
1122.0	2.00	4.0	429.6	433.7	2.03	14.56
1128.0	2.00	4.0	429.6	433.6	2.03	14.56
1134.0	2.00	4.0	429.5	433.6	2.02	14.56
1140.0	2.00	4.0	429.5	433.5	2.02	14.56
1146.0	2.00	4.0	429.4	433.5	2.01	14.56
1152.0	2.00	4.0	429.4	433.4	2.01	14.56
1158.0	2.00	4.0	429.4	433.4	2.01	14.56
1164.0	2.00	4.0	429.4	433.4	2.01	14.56
1170.0	2.00	4.0	429.4	433.4	2.01	14.56
1176.0	2.00	4.0	429.4	433.4	2.00	14.56
1182.0	2.00	4.0	429.4	433.4	2.00	14.56
1188.0	2.00	4.0	429.4	433.4	2.00	14.56
1194.0	2.00	4.0	429.4	433.4	2.00	14.56
1200.0	2.00	4.0	429.4	433.4	2.00	14.56

EXECUTED: 04-26-1995 08:12:11 24 HR SCS Return Freq: 2 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	429.4	433.4	2.00	14.56
1212.0	2.00	4.0	429.3	433.4	2.00	14.56
1218.0	2.00	4.0	429.3	433.3	2.00	14.56
1224.0	2.00	4.0	429.3	433.3	2.00	14.56
1230.0	2.00	4.0	429.3	433.3	2.00	14.56
1236.0	2.00	4.0	429.3	433.3	2.00	14.56
1242.0	2.00	4.0	429.3	433.3	2.00	14.56
1248.0	2.00	4.0	429.3	433.3	2.00	14.56
1254.0	2.00	4.0	429.3	433.3	2.00	14.56
1260.0	2.00	4.0	429.3	433.3	2.00	14.56
1266.0	2.00	4.0	429.3	433.3	2.00	14.56
1272.0	2.00	4.0	429.3	433.3	2.00	14.56
1278.0	2.00	4.0	429.3	433.3	2.00	14.56
1284.0	2.00	4.0	429.3	433.3	2.00	14.56
1290.0	2.00	4.0	429.3	433.3	2.00	14.56
1296.0	2.00	4.0	429.3	433.3	2.00	14.56
1302.0	2.00	4.0	429.3	433.3	2.00	14.56
1308.0	2.00	4.0	429.3	433.3	2.00	14.56
1314.0	2.00	4.0	429.3	433.3	2.00	14.56
1320.0	2.00	4.0	429.3	433.3	2.00	14.56
1326.0	2.00	4.0	429.3	433.3	2.00	14.56
1332.0	2.00	4.0	429.3	433.3	2.00	14.56
1338.0	2.00	4.0	429.3	433.3	2.00	14.56
1344.0	2.00	4.0	429.3	433.3	2.00	14.56
1350.0	2.00	4.0	429.3	433.3	2.00	14.56
1356.0	2.00	4.0	429.3	433.3	2.00	14.56
1362.0	2.00	4.0	429.3	433.3	2.00	14.56
1368.0	2.00	4.0	429.3	433.3	2.00	14.56
1374.0	2.00	4.0	429.3	433.3	2.00	14.56
1380.0	2.00	4.0	429.3	433.3	2.00	14.56
1386.0	1.00	3.0	428.5	432.3	1.90	14.55
1392.0	1.00	2.0	427.1	430.5	1.71	14.54
1398.0	1.00	2.0	426.0	429.1	1.56	14.53
1404.0	1.00	2.0	425.1	428.0	1.45	14.52
1410.0	1.00	2.0	424.4	427.1	1.35	14.52
1416.0	1.00	2.0	423.8	426.4	1.28	14.51
1422.0	1.00	2.0	423.4	425.8	1.22	14.51
1428.0	1.00	2.0	423.1	425.4	1.18	14.50
1434.0	1.00	2.0	422.8	425.1	1.14	14.50
1440.0	1.00	2.0	422.6	424.8	1.11	14.50
1446.0	1.00	2.0	422.4	424.6	1.10	14.50
1452.0	1.00	2.0	422.2	424.4	1.10	14.50
1458.0	1.00	2.0	422.0	424.2	1.10	14.50
1464.0	1.00	2.0	421.8	424.0	1.10	14.49
1470.0	1.00	2.0	421.6	423.8	1.10	14.49
1476.0	1.00	2.0	421.4	423.6	1.10	14.49

EXECUTED: 04-26-1995 08:12:11 24 HR SCS Return Freq: 2 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	421.2	423.4	1.10	14.49
1488.0	1.00	2.0	421.0	423.2	1.10	14.49
1494.0	1.00	2.0	420.8	423.0	1.10	14.49
1500.0	0.00	1.0	419.6	421.8	1.10	14.48
1506.0	0.00	0.0	417.4	419.6	1.09	14.46
1512.0	0.00	0.0	415.2	417.4	1.09	14.44
1518.0	0.00	0.0	413.1	415.2	1.08	14.42
1524.0	0.00	0.0	410.9	413.1	1.08	14.41
1530.0	0.00	0.0	408.7	410.9	1.08	14.39
1536.0	0.00	0.0	406.6	408.7	1.07	14.37
1542.0	0.00	0.0	404.5	406.6	1.07	14.35
1548.0	0.00	0.0	402.3	404.5	1.07	14.34
1554.0	0.00	0.0	400.2	402.3	1.06	14.32

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:1UTBM002.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 64.00 cfs
Peak Outflow = 18.90 cfs
Peak Elevation = 15.21 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	94,114 cu-ft
Total Storage in Pond	=	94,114 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 04-26-1995 08:20:00 24 HR SCS Return Freq: 10 years

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*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN010.HYD
Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

EXECUTED: 04-26-1995 08:20:00 24 HR SCS Return Freq: 10 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	0.0	0.0	0.00	8.00
666.0	5.00	10.0	9.8	10.0	0.11	8.29
672.0	6.00	11.0	20.3	20.8	0.23	8.59
678.0	6.00	12.0	31.6	32.3	0.36	8.89
684.0	7.00	13.0	43.7	44.6	0.44	9.20
690.0	8.00	15.0	57.7	58.7	0.51	9.55
696.0	9.00	17.0	73.5	74.7	0.58	9.92
702.0	15.00	24.0	96.3	97.5	0.60	10.42
708.0	21.00	36.0	130.9	132.3	0.72	11.10
714.0	27.00	48.0	177.3	178.9	0.80	11.90
720.0	55.00	82.0	257.5	259.3	0.90	12.99
726.0	106.00	161.0	416.3	418.5	1.09	14.45
732.0	162.00	268.0	572.6	684.3	55.87	15.88
738.0	163.00	325.0	762.1	897.6	67.73	16.98
744.0	111.00	274.0	864.7	1036.1	85.71	17.56
750.0	69.00	180.0	869.9	1044.7	87.39	17.59
756.0	48.00	117.0	830.0	986.9	78.48	17.36
762.0	36.00	84.0	775.0	914.0	69.46	17.06
768.0	28.00	64.0	706.4	839.0	66.31	16.69
774.0	24.00	52.0	629.9	758.4	64.26	16.26
780.0	20.00	44.0	567.8	673.9	53.05	15.84
786.0	18.00	38.0	536.7	605.8	34.55	15.53
792.0	16.00	34.0	518.9	570.7	25.88	15.36
798.0	15.00	31.0	508.2	549.9	20.87	15.25
804.0	14.00	29.0	501.6	537.2	17.80	15.19
810.0	14.00	28.0	497.7	529.6	15.97	15.15
816.0	13.00	27.0	495.1	524.7	14.78	15.12
822.0	12.00	25.0	492.8	520.1	13.68	15.10
828.0	11.00	23.0	490.5	515.8	12.63	15.08
834.0	10.00	21.0	488.3	511.5	11.60	15.05
840.0	10.00	20.0	486.6	508.3	10.83	15.04
846.0	10.00	20.0	485.8	506.6	10.43	15.03
852.0	9.00	19.0	484.8	504.8	9.98	15.02
858.0	9.00	18.0	483.8	502.8	9.51	15.01
864.0	9.00	18.0	483.3	501.8	9.26	15.01
870.0	8.00	17.0	482.4	500.3	8.95	15.00
876.0	8.00	16.0	480.9	498.4	8.76	14.98
882.0	8.00	16.0	479.7	496.9	8.60	14.97
888.0	8.00	16.0	478.7	495.7	8.47	14.97
894.0	8.00	16.0	478.0	494.7	8.38	14.96
900.0	8.00	16.0	477.4	494.0	8.30	14.96
906.0	8.00	16.0	476.9	493.4	8.24	14.95
912.0	8.00	16.0	476.5	492.9	8.19	14.95
918.0	7.00	15.0	475.4	491.5	8.04	14.94
924.0	7.00	14.0	473.8	489.4	7.83	14.93

EXECUTED: 04-26-1995 08:20:00 24 HR SCS Return Freq: 10 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	472.5	487.8	7.66	14.91
936.0	7.00	14.0	471.4	486.5	7.52	14.91
942.0	7.00	14.0	470.6	485.4	7.41	14.90
948.0	6.00	13.0	469.2	483.6	7.22	14.89
954.0	6.00	12.0	467.2	481.2	6.97	14.87
960.0	6.00	12.0	465.7	479.2	6.77	14.86
966.0	6.00	12.0	464.5	477.7	6.61	14.85
972.0	6.00	12.0	463.5	476.5	6.48	14.84
978.0	5.00	11.0	462.0	474.5	6.28	14.83
984.0	5.00	10.0	459.9	472.0	6.01	14.81
990.0	5.00	10.0	458.3	469.9	5.80	14.80
996.0	5.00	10.0	457.1	468.3	5.64	14.79
1002.0	5.00	10.0	456.1	467.1	5.50	14.78
1008.0	5.00	10.0	455.3	466.1	5.40	14.77
1014.0	5.00	10.0	454.6	465.3	5.32	14.77
1020.0	5.00	10.0	454.1	464.6	5.25	14.76
1026.0	5.00	10.0	453.7	464.1	5.20	14.76
1032.0	5.00	10.0	453.4	463.7	5.16	14.76
1038.0	5.00	10.0	453.2	463.4	5.12	14.75
1044.0	5.00	10.0	453.0	463.2	5.10	14.75
1050.0	5.00	10.0	452.8	463.0	5.08	14.75
1056.0	5.00	10.0	452.7	462.8	5.06	14.75
1062.0	5.00	10.0	452.6	462.7	5.05	14.75
1068.0	4.00	9.0	451.7	461.6	4.93	14.74
1074.0	4.00	8.0	450.2	459.7	4.74	14.73
1080.0	4.00	8.0	449.1	458.2	4.59	14.72
1086.0	4.00	8.0	448.1	457.1	4.46	14.71
1092.0	4.00	8.0	447.4	456.1	4.37	14.71
1098.0	4.00	8.0	446.8	455.4	4.29	14.70
1104.0	4.00	8.0	446.4	454.8	4.23	14.70
1110.0	4.00	8.0	446.0	454.4	4.18	14.70
1116.0	4.00	8.0	445.7	454.0	4.15	14.69
1122.0	4.00	8.0	445.5	453.7	4.11	14.69
1128.0	4.00	8.0	445.3	453.5	4.09	14.69
1134.0	4.00	8.0	445.1	453.3	4.07	14.69
1140.0	4.00	8.0	445.0	453.1	4.06	14.69
1146.0	4.00	8.0	444.9	453.0	4.05	14.69
1152.0	4.00	8.0	444.9	452.9	4.04	14.69
1158.0	4.00	8.0	444.8	452.9	4.03	14.69
1164.0	4.00	8.0	444.8	452.8	4.02	14.68
1170.0	4.00	8.0	444.7	452.8	4.02	14.68
1176.0	3.00	7.0	443.9	451.7	3.91	14.68
1182.0	3.00	6.0	442.5	449.9	3.72	14.67
1188.0	3.00	6.0	441.3	448.5	3.57	14.66
1194.0	3.00	6.0	440.4	447.3	3.45	14.65
1200.0	3.00	6.0	439.7	446.4	3.36	14.64

EXECUTED: 04-26-1995 08:20:00 24 HR SCS Return Freq: 10 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	439.1	445.7	3.28	14.64
1212.0	3.00	6.0	438.7	445.1	3.22	14.63
1218.0	3.00	6.0	438.3	444.7	3.18	14.63
1224.0	3.00	6.0	438.0	444.3	3.14	14.63
1230.0	3.00	6.0	437.8	444.0	3.11	14.63
1236.0	3.00	6.0	437.6	443.8	3.09	14.63
1242.0	3.00	6.0	437.5	443.6	3.07	14.62
1248.0	3.00	6.0	437.4	443.5	3.06	14.62
1254.0	3.00	6.0	437.3	443.4	3.04	14.62
1260.0	3.00	6.0	437.2	443.3	3.03	14.62
1266.0	3.00	6.0	437.2	443.2	3.03	14.62
1272.0	3.00	6.0	437.1	443.2	3.02	14.62
1278.0	3.00	6.0	437.1	443.1	3.02	14.62
1284.0	3.00	6.0	437.1	443.1	3.01	14.62
1290.0	3.00	6.0	437.0	443.1	3.01	14.62
1296.0	3.00	6.0	437.0	443.0	3.01	14.62
1302.0	3.00	6.0	437.0	443.0	3.01	14.62
1308.0	3.00	6.0	437.0	443.0	3.01	14.62
1314.0	3.00	6.0	437.0	443.0	3.00	14.62
1320.0	3.00	6.0	437.0	443.0	3.00	14.62
1326.0	3.00	6.0	437.0	443.0	3.00	14.62
1332.0	3.00	6.0	437.0	443.0	3.00	14.62
1338.0	3.00	6.0	437.0	443.0	3.00	14.62
1344.0	3.00	6.0	437.0	443.0	3.00	14.62
1350.0	3.00	6.0	437.0	443.0	3.00	14.62
1356.0	3.00	6.0	437.0	443.0	3.00	14.62
1362.0	2.00	5.0	436.2	442.0	2.90	14.61
1368.0	2.00	4.0	434.8	440.2	2.71	14.60
1374.0	2.00	4.0	433.6	438.8	2.56	14.59
1380.0	2.00	4.0	432.7	437.6	2.45	14.59
1386.0	2.00	4.0	432.0	436.7	2.35	14.58
1392.0	2.00	4.0	431.5	436.0	2.28	14.57
1398.0	2.00	4.0	431.0	435.5	2.22	14.57
1404.0	2.00	4.0	430.7	435.0	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.05	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

EXECUTED: 04-26-1995 08:20:00 24 HR SCS Return Freq: 10 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.09	14.43
1548.0	0.00	0.0	412.1	414.3	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:1UTBM010.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow	=	163.00 cfs
Peak Outflow	=	87.39 cfs
Peak Elevation	=	17.59 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	172,313 cu-ft
Total Storage in Pond	=	172,313 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 04-26-1995 08:30:17 24HR SCS Return Freq: 25 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN025.HYD
Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	0.0	0.0	0.00	8.00
666.0	6.00	11.0	10.7	11.0	0.13	8.31
672.0	6.00	12.0	22.2	22.7	0.26	8.64
678.0	7.00	13.0	34.5	35.2	0.39	8.97
684.0	8.00	15.0	48.5	49.5	0.46	9.32
690.0	10.00	18.0	65.4	66.5	0.55	9.73
696.0	11.00	21.0	85.2	86.4	0.60	10.18
702.0	18.00	29.0	112.9	114.2	0.65	10.75
708.0	24.00	42.0	153.3	154.9	0.80	11.50
714.0	31.00	55.0	206.6	208.3	0.87	12.34
720.0	62.00	93.0	297.6	299.6	0.98	13.42
726.0	119.00	181.0	465.2	478.6	6.71	14.85
732.0	182.00	301.0	637.3	766.2	64.47	16.31
738.0	183.00	365.0	841.5	1002.3	80.38	17.42
744.0	125.00	308.0	933.6	1149.5	107.94	17.96
750.0	78.00	203.0	925.8	1136.6	105.42	17.91
756.0	54.00	132.0	877.9	1057.8	89.96	17.63
762.0	40.00	94.0	818.6	971.9	76.62	17.30
768.0	31.00	71.0	754.6	889.6	67.54	16.95
774.0	26.00	57.0	680.3	811.6	65.64	16.55
780.0	22.00	48.0	601.3	728.3	63.47	16.10
786.0	20.00	42.0	553.8	643.3	44.75	15.70
792.0	18.00	38.0	529.9	591.8	30.98	15.46
798.0	17.00	35.0	515.9	564.9	24.48	15.33
804.0	16.00	33.0	507.7	548.9	20.63	15.25
810.0	15.00	31.0	502.4	538.7	18.15	15.19
816.0	14.00	29.0	498.6	531.4	16.39	15.16
822.0	14.00	28.0	496.1	526.6	15.24	15.13
828.0	13.00	27.0	494.3	523.1	14.40	15.11
834.0	12.00	25.0	492.3	519.3	13.48	15.09
840.0	12.00	24.0	490.8	516.3	12.77	15.08
846.0	11.00	23.0	489.5	513.8	12.16	15.07
852.0	11.00	22.0	488.3	511.5	11.60	15.05
858.0	10.00	21.0	487.2	509.3	11.07	15.04
864.0	10.00	20.0	486.0	507.2	10.55	15.03
870.0	9.00	19.0	485.0	505.0	10.05	15.02
876.0	9.00	18.0	483.9	503.0	9.54	15.01
882.0	9.00	18.0	483.3	501.9	9.28	15.01
888.0	9.00	18.0	483.0	501.3	9.14	15.00
894.0	9.00	18.0	482.9	501.0	9.07	15.00
900.0	9.00	18.0	482.8	500.9	9.04	15.00
906.0	9.00	18.0	482.8	500.8	9.02	15.00
912.0	9.00	18.0	482.7	500.8	9.01	15.00
918.0	8.00	17.0	481.9	499.7	8.90	14.99
924.0	8.00	16.0	480.5	497.9	8.71	14.98

EXECUTED: 04-26-1995 08:30:17 24HR SCS Return Freq: 25 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	479.4	496.5	8.56	14.97
936.0	8.00	16.0	478.5	495.4	8.45	14.96
942.0	8.00	16.0	477.8	494.5	8.35	14.96
948.0	7.00	15.0	476.4	492.8	8.18	14.95
954.0	7.00	14.0	474.6	490.4	7.93	14.93
960.0	7.00	14.0	473.1	488.6	7.74	14.92
966.0	7.00	14.0	471.9	487.1	7.58	14.91
972.0	7.00	14.0	471.0	485.9	7.46	14.90
978.0	6.00	13.0	469.5	484.0	7.26	14.89
984.0	6.00	12.0	467.5	481.5	7.00	14.87
990.0	6.00	12.0	465.9	479.5	6.79	14.86
996.0	6.00	12.0	464.6	477.9	6.63	14.85
1002.0	6.00	12.0	463.6	476.6	6.50	14.84
1008.0	6.00	12.0	462.8	475.6	6.39	14.84
1014.0	6.00	12.0	462.2	474.8	6.31	14.83
1020.0	6.00	12.0	461.7	474.2	6.25	14.83
1026.0	6.00	12.0	461.3	473.7	6.20	14.82
1032.0	6.00	12.0	461.0	473.3	6.16	14.82
1038.0	5.00	11.0	460.0	472.0	6.02	14.81
1044.0	5.00	10.0	458.4	470.0	5.81	14.80
1050.0	5.00	10.0	457.1	468.4	5.64	14.79
1056.0	5.00	10.0	456.1	467.1	5.51	14.78
1062.0	5.00	10.0	455.3	466.1	5.40	14.77
1068.0	5.00	10.0	454.6	465.3	5.32	14.77
1074.0	5.00	10.0	454.1	464.6	5.25	14.76
1080.0	5.00	10.0	453.7	464.1	5.20	14.76
1086.0	5.00	10.0	453.4	463.7	5.16	14.76
1092.0	5.00	10.0	453.2	463.4	5.13	14.75
1098.0	5.00	10.0	453.0	463.2	5.10	14.75
1104.0	5.00	10.0	452.8	463.0	5.08	14.75
1110.0	4.00	9.0	451.9	461.8	4.96	14.74
1116.0	4.00	8.0	450.4	459.9	4.76	14.73
1122.0	4.00	8.0	449.2	458.4	4.60	14.72
1128.0	4.00	8.0	448.2	457.2	4.48	14.71
1134.0	4.00	8.0	447.5	456.2	4.38	14.71
1140.0	4.00	8.0	446.9	455.5	4.30	14.70
1146.0	4.00	8.0	446.4	454.9	4.24	14.70
1152.0	4.00	8.0	446.0	454.4	4.19	14.70
1158.0	4.00	8.0	445.7	454.0	4.15	14.69
1164.0	4.00	8.0	445.5	453.7	4.12	14.69
1170.0	4.00	8.0	445.3	453.5	4.09	14.69
1176.0	4.00	8.0	445.2	453.3	4.07	14.69
1182.0	4.00	8.0	445.0	453.2	4.06	14.69
1188.0	4.00	8.0	444.9	453.0	4.05	14.69
1194.0	4.00	8.0	444.9	452.9	4.04	14.69
1200.0	4.00	8.0	444.8	452.9	4.03	14.69

EXECUTED: 04-26-1995 08:30:17 24HR SCS Return Freq: 25 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	444.8	452.8	4.02	14.69
1212.0	4.00	8.0	444.7	452.8	4.02	14.68
1218.0	4.00	8.0	444.7	452.7	4.01	14.68
1224.0	4.00	8.0	444.7	452.7	4.01	14.68
1230.0	4.00	8.0	444.7	452.7	4.01	14.68
1236.0	4.00	8.0	444.6	452.7	4.01	14.68
1242.0	4.00	8.0	444.6	452.6	4.01	14.68
1248.0	4.00	8.0	444.6	452.6	4.00	14.68
1254.0	4.00	8.0	444.6	452.6	4.00	14.68
1260.0	4.00	8.0	444.6	452.6	4.00	14.68
1266.0	3.00	7.0	443.8	451.6	3.90	14.68
1272.0	3.00	6.0	442.4	449.8	3.71	14.67
1278.0	3.00	6.0	441.3	448.4	3.56	14.66
1284.0	3.00	6.0	440.4	447.3	3.45	14.65
1290.0	3.00	6.0	439.7	446.4	3.35	14.64
1296.0	3.00	6.0	439.1	445.7	3.28	14.64
1302.0	3.00	6.0	438.7	445.1	3.22	14.63
1308.0	3.00	6.0	438.3	444.7	3.18	14.63
1314.0	3.00	6.0	438.0	444.3	3.14	14.63
1320.0	3.00	6.0	437.8	444.0	3.11	14.63
1326.0	3.00	6.0	437.6	443.8	3.09	14.63
1332.0	3.00	6.0	437.5	443.6	3.07	14.62
1338.0	3.00	6.0	437.4	443.5	3.05	14.62
1344.0	3.00	6.0	437.3	443.4	3.04	14.62
1350.0	3.00	6.0	437.2	443.3	3.03	14.62
1356.0	3.00	6.0	437.2	443.2	3.03	14.62
1362.0	2.00	5.0	436.3	442.2	2.92	14.62
1368.0	2.00	4.0	434.9	440.3	2.73	14.60
1374.0	2.00	4.0	433.7	438.9	2.58	14.59
1380.0	2.00	4.0	432.8	437.7	2.46	14.59
1386.0	2.00	4.0	432.1	436.8	2.36	14.58
1392.0	2.00	4.0	431.5	436.1	2.29	14.58
1398.0	2.00	4.0	431.1	435.5	2.23	14.57
1404.0	2.00	4.0	430.7	435.1	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.06	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

EXECUTED: 04-26-1995 08:30:17 24HR SCS Return Freq: 25 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.09	14.43
1548.0	0.00	0.0	412.1	414.3	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow	=	183.00 cfs
Peak Outflow	=	107.94 cfs
Peak Elevation	=	17.96 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	187,485 cu-ft
Total Storage in Pond	=	187,485 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 04-26-1995 08:40:35 24 HR SCS Return Freq: 100 years

```
*************************************
*                                   *
*              JOINT BMP            *
*        TUTTERS NECK NORTH         *
*         KINGSMILL VILLAGE         *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
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Inflow Hydrograph: b:POSIN100.HYD
Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 04-26-1995 08:40:35 24 HR SCS Return Freq: 100 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	-----	0.0	0.0	0.00	8.00
666.0	8.00	15.0	14.7	15.0	0.17	8.43
672.0	9.00	17.0	31.0	31.7	0.35	8.87
678.0	10.00	19.0	49.0	50.0	0.47	9.34
684.0	12.00	22.0	69.9	71.0	0.57	9.84
690.0	13.00	25.0	93.7	94.9	0.60	10.36
696.0	15.00	28.0	120.3	121.7	0.68	10.90
702.0	25.00	40.0	158.7	160.3	0.80	11.59
708.0	34.00	59.0	215.9	217.7	0.90	12.48
714.0	44.00	78.0	292.0	293.9	0.97	13.36
720.0	87.00	131.0	420.8	423.0	1.10	14.49
726.0	166.00	253.0	567.8	673.8	53.02	15.84
732.0	251.00	417.0	828.3	984.8	78.21	17.35
738.0	251.00	502.0	1029.0	1330.3	150.64	18.52
744.0	171.00	422.0	1084.9	1451.0	183.05	18.85
750.0	105.00	276.0	1043.2	1360.9	158.86	18.61
756.0	73.00	178.0	972.3	1221.2	124.48	18.19
762.0	54.00	127.0	903.1	1099.3	98.09	17.78
768.0	42.00	96.0	839.1	999.1	79.98	17.41
774.0	36.00	78.0	777.4	917.1	69.85	17.07
780.0	30.00	66.0	710.6	843.4	66.42	16.71
786.0	28.00	58.0	639.5	768.6	64.53	16.32
792.0	25.00	53.0	576.3	692.5	58.11	15.92
798.0	23.00	48.0	545.1	624.3	39.58	15.61
804.0	21.00	44.0	528.5	589.1	30.33	15.45
810.0	20.00	41.0	518.3	569.5	25.59	15.35
816.0	19.00	39.0	512.0	557.3	22.65	15.29
822.0	18.00	37.0	507.7	549.0	20.65	15.25
828.0	17.00	35.0	504.4	542.7	19.13	15.21
834.0	16.00	33.0	501.7	537.4	17.86	15.19
840.0	16.00	32.0	499.8	533.7	16.96	15.17
846.0	15.00	31.0	498.3	530.8	16.26	15.15
852.0	15.00	30.0	497.0	528.3	15.65	15.14
858.0	14.00	29.0	495.8	526.0	15.10	15.13
864.0	13.00	27.0	494.1	522.8	14.33	15.11
870.0	13.00	26.0	492.8	520.1	13.69	15.10
876.0	12.00	25.0	491.5	517.8	13.11	15.09
882.0	12.00	24.0	490.4	515.5	12.58	15.08
888.0	12.00	24.0	489.8	514.4	12.30	15.07
894.0	12.00	24.0	489.5	513.8	12.15	15.07
900.0	12.00	24.0	489.3	513.5	12.08	15.06
906.0	12.00	24.0	489.2	513.3	12.04	15.06
912.0	11.00	23.0	488.7	512.2	11.78	15.06
918.0	11.00	22.0	487.9	510.7	11.40	15.05
924.0	10.00	21.0	486.9	508.9	10.97	15.04

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	485.9	506.9	10.50	15.03
936.0	10.00	20.0	485.4	505.9	10.26	15.03
942.0	10.00	20.0	485.1	505.4	10.13	15.02
948.0	9.00	19.0	484.5	504.1	9.83	15.02
954.0	9.00	18.0	483.6	502.5	9.43	15.01
960.0	9.00	18.0	483.2	501.6	9.22	15.00
966.0	9.00	18.0	483.0	501.2	9.11	15.00
972.0	9.00	18.0	482.8	501.0	9.06	15.00
978.0	8.00	17.0	482.0	499.8	8.91	14.99
984.0	8.00	16.0	480.6	498.0	8.72	14.98
990.0	8.00	16.0	479.4	496.6	8.57	14.97
996.0	8.00	16.0	478.5	495.4	8.45	14.97
1002.0	8.00	16.0	477.8	494.5	8.36	14.96
1008.0	7.00	15.0	476.5	492.8	8.18	14.95
1014.0	7.00	14.0	474.6	490.5	7.93	14.93
1020.0	7.00	14.0	473.1	488.6	7.74	14.92
1026.0	7.00	14.0	471.9	487.1	7.59	14.91
1032.0	7.00	14.0	471.0	485.9	7.46	14.90
1038.0	7.00	14.0	470.3	485.0	7.37	14.90
1044.0	7.00	14.0	469.7	484.3	7.29	14.89
1050.0	7.00	14.0	469.2	483.7	7.23	14.89
1056.0	7.00	14.0	468.9	483.2	7.18	14.89
1062.0	7.00	14.0	468.6	482.9	7.14	14.88
1068.0	7.00	14.0	468.3	482.6	7.11	14.88
1074.0	7.00	14.0	468.2	482.3	7.09	14.88
1080.0	7.00	14.0	468.0	482.2	7.07	14.88
1086.0	7.00	14.0	467.9	482.0	7.06	14.88
1092.0	7.00	14.0	467.8	481.9	7.05	14.88
1098.0	7.00	14.0	467.7	481.8	7.04	14.88
1104.0	7.00	14.0	467.7	481.7	7.03	14.88
1110.0	6.00	13.0	466.8	480.7	6.92	14.87
1116.0	6.00	12.0	465.4	478.8	6.73	14.86
1122.0	6.00	12.0	464.2	477.4	6.58	14.85
1128.0	6.00	12.0	463.3	476.2	6.46	14.84
1134.0	6.00	12.0	462.6	475.3	6.36	14.83
1140.0	6.00	12.0	462.0	474.6	6.29	14.83
1146.0	6.00	12.0	461.6	474.0	6.23	14.82
1152.0	6.00	12.0	461.2	473.6	6.18	14.82
1158.0	6.00	12.0	460.9	473.2	6.14	14.82
1164.0	6.00	12.0	460.7	472.9	6.11	14.82
1170.0	6.00	12.0	460.5	472.7	6.09	14.82
1176.0	5.00	11.0	459.6	471.5	5.97	14.81
1182.0	5.00	10.0	458.1	469.6	5.77	14.80
1188.0	5.00	10.0	456.8	468.1	5.61	14.79
1194.0	5.00	10.0	455.9	466.8	5.48	14.78
1200.0	5.00	10.0	455.1	465.9	5.38	14.77

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	5.00	10.0	454.5	465.1	5.30	14.77
1212.0	5.00	10.0	454.0	464.5	5.24	14.76
1218.0	5.00	10.0	453.7	464.0	5.19	14.76
1224.0	5.00	10.0	453.4	463.7	5.15	14.76
1230.0	5.00	10.0	453.1	463.4	5.12	14.75
1236.0	5.00	10.0	452.9	463.1	5.09	14.75
1242.0	5.00	10.0	452.8	462.9	5.07	14.75
1248.0	5.00	10.0	452.7	462.8	5.06	14.75
1254.0	5.00	10.0	452.6	462.7	5.05	14.75
1260.0	4.00	9.0	451.7	461.6	4.93	14.74
1266.0	4.00	8.0	450.2	459.7	4.74	14.73
1272.0	4.00	8.0	449.1	458.2	4.59	14.72
1278.0	4.00	8.0	448.1	457.1	4.46	14.71
1284.0	4.00	8.0	447.4	456.1	4.37	14.71
1290.0	4.00	8.0	446.8	455.4	4.29	14.70
1296.0	4.00	8.0	446.3	454.8	4.23	14.70
1302.0	4.00	8.0	446.0	454.3	4.18	14.70
1308.0	4.00	8.0	445.7	454.0	4.14	14.69
1314.0	4.00	8.0	445.5	453.7	4.11	14.69
1320.0	4.00	8.0	445.3	453.5	4.09	14.69
1326.0	4.00	8.0	445.1	453.3	4.07	14.69
1332.0	4.00	8.0	445.0	453.1	4.06	14.69
1338.0	4.00	8.0	444.9	453.0	4.05	14.69
1344.0	4.00	8.0	444.9	452.9	4.04	14.69
1350.0	4.00	8.0	444.8	452.9	4.03	14.69
1356.0	3.00	7.0	444.0	451.8	3.92	14.68
1362.0	3.00	6.0	442.5	450.0	3.73	14.67
1368.0	3.00	6.0	441.4	448.5	3.58	14.66
1374.0	3.00	6.0	440.4	447.4	3.46	14.65
1380.0	3.00	6.0	439.7	446.4	3.36	14.64
1386.0	3.00	6.0	439.2	445.7	3.29	14.64
1392.0	3.00	6.0	438.7	445.2	3.23	14.63
1398.0	3.00	6.0	438.3	444.7	3.18	14.63
1404.0	3.00	6.0	438.1	444.3	3.14	14.63
1410.0	2.00	5.0	437.0	443.1	3.01	14.62
1416.0	2.00	4.0	435.4	441.0	2.80	14.61
1422.0	2.00	4.0	434.2	439.4	2.63	14.60
1428.0	2.00	4.0	433.2	438.2	2.50	14.59
1434.0	2.00	4.0	432.4	437.2	2.40	14.58
1440.0	2.00	4.0	431.7	436.4	2.31	14.58
1446.0	2.00	4.0	431.2	435.7	2.25	14.57
1452.0	2.00	4.0	430.8	435.2	2.20	14.57
1458.0	2.00	4.0	430.5	434.8	2.16	14.57
1464.0	2.00	4.0	430.3	434.5	2.12	14.56
1470.0	2.00	4.0	430.1	434.3	2.10	14.56
1476.0	1.00	3.0	429.1	433.1	1.97	14.56

EXECUTED: 04-26-1995 08:40:35 24 HR SCS Return Freq: 100 years

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	427.6	431.1	1.77	14.54
1488.0	1.00	2.0	426.4	429.6	1.61	14.53
1494.0	1.00	2.0	425.4	428.4	1.48	14.52
1500.0	1.00	2.0	424.6	427.4	1.38	14.52
1506.0	1.00	2.0	424.0	426.6	1.30	14.51
1512.0	1.00	2.0	423.6	426.0	1.24	14.51
1518.0	1.00	2.0	423.2	425.6	1.19	14.51
1524.0	1.00	2.0	422.9	425.2	1.15	14.50
1530.0	0.00	1.0	421.7	423.9	1.10	14.49
1536.0	0.00	0.0	419.5	421.7	1.10	14.48
1542.0	0.00	0.0	417.3	419.5	1.09	14.46
1548.0	0.00	0.0	415.1	417.3	1.09	14.44
1554.0	0.00	0.0	413.0	415.1	1.08	14.42

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 251.00 cfs
Peak Outflow = 183.05 cfs
Peak Elevation = 18.85 ft 1885

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	228,239 cu-ft
Total Storage in Pond	=	228,239 cu-ft

Warning: Inflow hydrograph truncated on left side.

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	9.0	1 +2
15.50	32.7	1 +2
16.00	63.0	1 +5
16.50	65.4	1 +5
17.00	67.8	1 +3 +5
17.50	82.6	1 +3 +5
18.00	110.3	1 +3 +5
18.50	148.6	1 +3 +5
19.00	197.3	1 +3 +5
19.50	0.0	

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

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*****************
     JOINT BMP
TUTTERS NECK NORTH
 KINGSMILL VILLAGE
    STRUCTURES
*****************
```

Outlet Structure File: b:BMP23401.STR
Planimeter Input File: b:BMP234 .VOL
Rating Table Output File: b:BMP23401.PND

Min. Elev.(ft) = 8 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *

```
*********************************************
                SYSTEM CONNECTIVITY
*********************************************
```

Structure	No.	Q Table		Q Table
ORIFICE	1		->	1
STAND PIPE	2		->	2
WEIR-XY	3		->	3
CULVERT-CR	5	? 2	->	A

Outflow rating table summary was stored in file:
b:BMP23401.PND

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

STAND PIPE
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	14.671
E2 elev.(ft)?	19.5
Crest elev.(ft)?	14.671
Diameter (ft)?	4
Weir coefficient?	3.33
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	
Transition height (ft)?	

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 3 <<<<<<
(Input Data)

WEIR-XY
Weir - Defined by X, Y Coordinates
E1 (ft) =17.00 E2 (ft) =19.5

X dist.(ft)	Y elev.(ft)
0	19
4	17
14	17
18	19

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 5 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	14.67
E2 elev.(ft)?	19.5
Diam. (ft)?	2.5
Inv. el.(ft)?	8
Slope (ft/ft)?	.01
T1 ratio?	
T2 ratio?	
K Coeff.?	.0098
M Coeff.?	2
c Coeff.?	.0398
Y Coeff.?	.67
Form 1 or 2?	1
Slope factor?	.5

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.33
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.
H (ft) = Table elev. - Datum elev. (8.17 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #2
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < Inv.El.= 14.671
8.50	0.0	E < E1=14.671
9.00	0.0	E < E1=14.671
9.50	0.0	E < E1=14.671
10.00	0.0	E < E1=14.671
10.50	0.0	E < E1=14.671
11.00	0.0	E < E1=14.671
11.50	0.0	E < E1=14.671
12.00	0.0	E < E1=14.671
12.50	0.0	E < E1=14.671
13.00	0.0	E < E1=14.671
13.50	0.0	E < E1=14.671
14.00	0.0	E < E1=14.671
14.50	0.0	E < E1=14.671
15.00	7.9	Weir: H =.329
15.50	31.6	Weir: H =.829
16.00	64.1	Weir: H =1.329
16.50	81.8	Orifice: H =1.829
17.00	92.3	Orifice: H =2.329
17.50	101.8	Orifice: H =2.829
18.00	110.4	Orifice: H =3.329
18.50	118.4	Orifice: H =3.829
19.00	125.9	Orifice: H =4.329
19.50	0.0	E = or > E2=19.5

Weir Cw = 3.33 Weir length = 12.56637 ft
Orifice Co = .6 Orifice area = 12.56637 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev.= 16.11694 ft

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #3
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages	
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < E1=17.00	
15.50	0.0	E < E1=17.00	
16.00	0.0	E < E1=17.00	
16.50	0.0	E < E1=17.00	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #5
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=14.67
8.50	0.0	E < E1=14.67
9.00	0.0	E < E1=14.67
9.50	0.0	E < E1=14.67
10.00	0.0	E < E1=14.67
10.50	0.0	E < E1=14.67
11.00	0.0	E < E1=14.67
11.50	0.0	E < E1=14.67
12.00	0.0	E < E1=14.67
12.50	0.0	E < E1=14.67
13.00	0.0	E < E1=14.67
13.50	0.0	E < E1=14.67
14.00	0.0	E < E1=14.67
14.50	0.0	E < E1=14.67
15.00	56.7	Submerged: HW =7.0
15.50	59.3	Submerged: HW =7.5
16.00	61.8	Submerged: HW =8.0
16.50	64.2	Submerged: HW =8.5
17.00	66.6	Submerged: HW =9.0
17.50	68.8	Submerged: HW =9.5
18.00	71.0	Submerged: HW =10.0
18.50	73.1	Submerged: HW =10.5
19.00	75.1	Submerged: HW =11.0
19.50	0.0	E = or > E2=19.5

Used Unsubmerged Equ. Form (1) for elev. less than 10.91 ft
Used Submerged Equation for elevations greater than 11.28 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=10.91 ft; Q1=27.16 cfs; Dc=1.78 ft; E2=11.28 ft; Q2=31.05 cfs

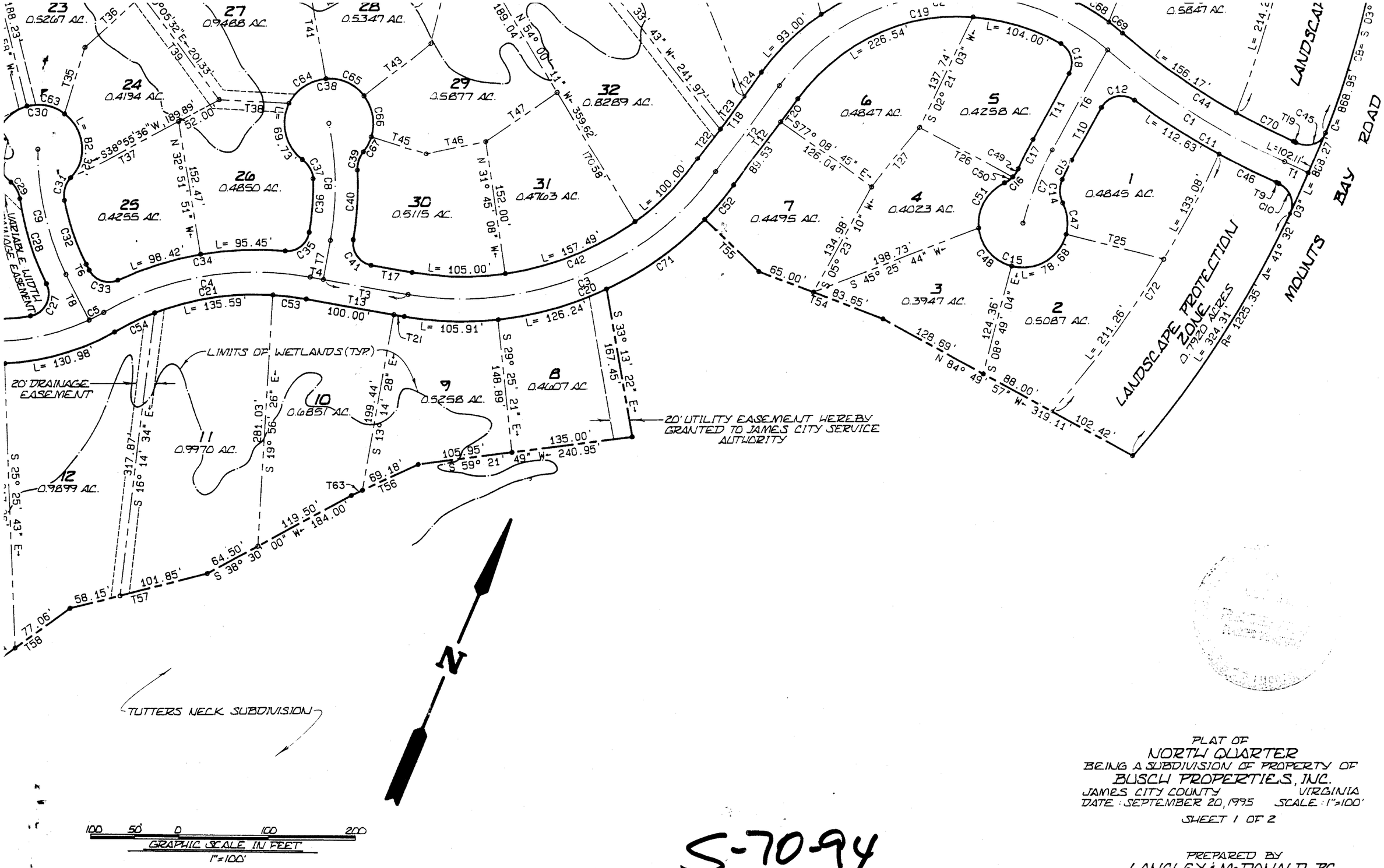
Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table A
Table A = 2 ? 5

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	-
8.50	0.0	-
9.00	0.0	-
9.50	0.0	-
10.00	0.0	-
10.50	0.0	-
11.00	0.0	-
11.50	0.0	-
12.00	0.0	-
12.50	0.0	-
13.00	0.0	-
13.50	0.0	-
14.00	0.0	-
14.50	0.0	-
15.00	7.9	2
15.50	31.6	2
16.00	61.8	5
16.50	64.2	5
17.00	66.6	5
17.50	68.8	5
18.00	71.0	5
18.50	73.1	5
19.00	75.1	5
19.50	0.0	-

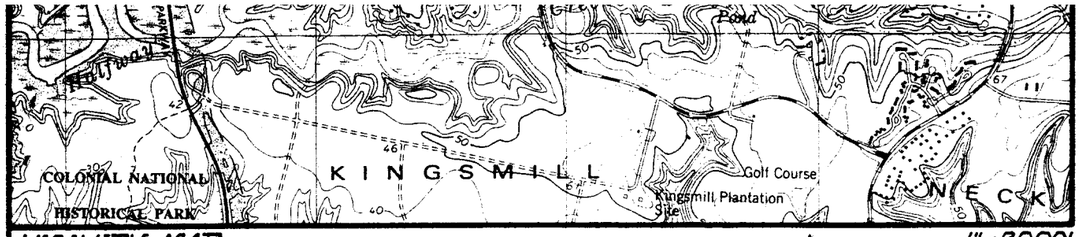


S-7094

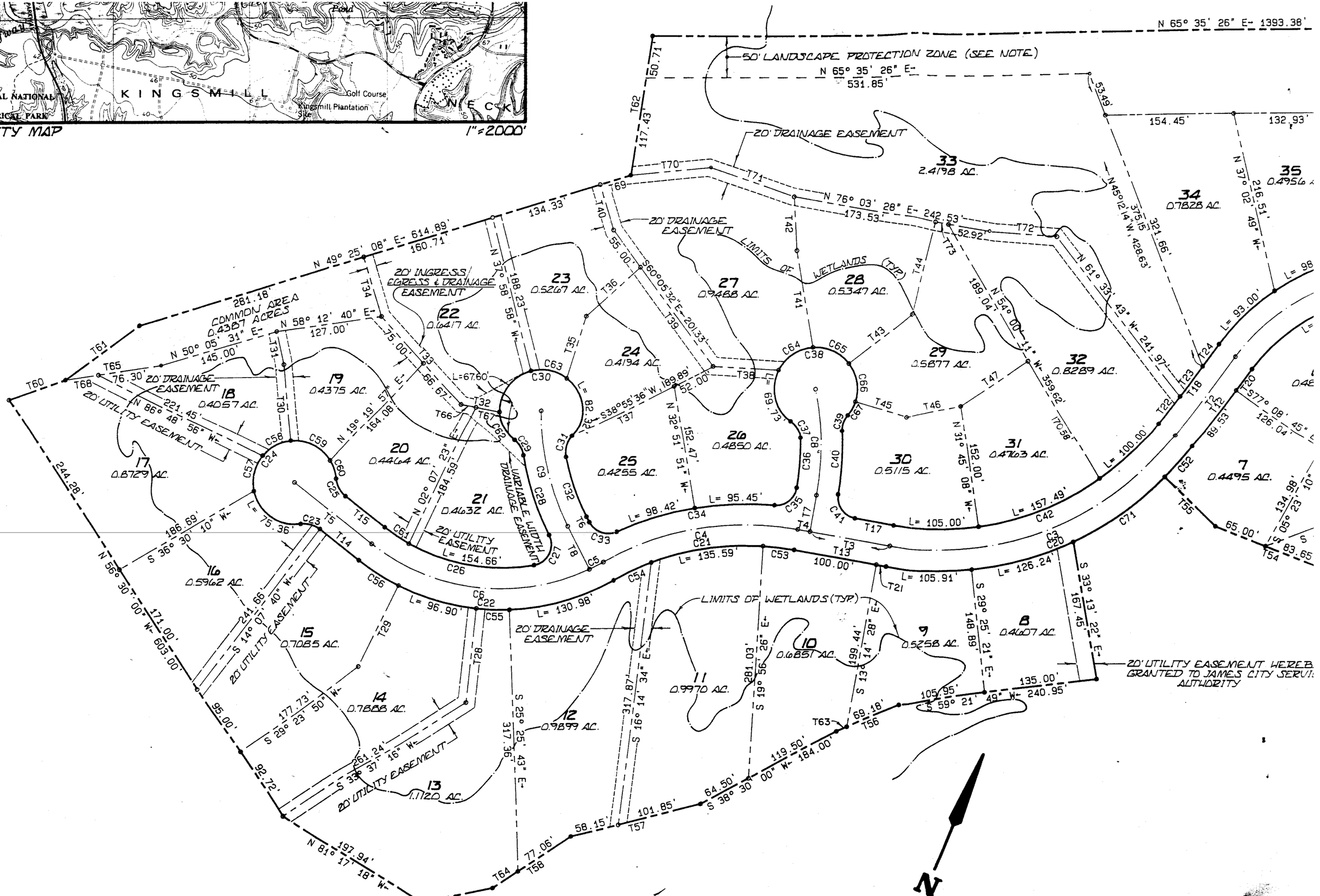
PLAT OF
NORTH QUARTER
BEING A SUBDIVISION OF PROPERTY OF
BUSCH PROPERTIES, INC.
JAMES CITY COUNTY VIRGINIA
DATE: SEPTEMBER 20, 1995 SCALE: 1"=100'
SHEET 1 OF 2

PREPARED BY
LANGLEY & McDONALD, P.C.
ENGINEERS · PLANNERS · SURVEYORS
LANDSCAPE ARCHITECTS & ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH ~ WILLIAMSBURG, VIRGINIA

5797W



VICINITY MAP 1"=2000'



CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 083

GEO DESIGN CONSULTANTS, INC.
204-B GRAYSON RD.
VIRGINIA BEACH, VIRGINIA 23462
Phone: (804) 473-9533
Fax: (804) 473-9534

Project: NORTH QUARTER KINGSMILL VILLAGE
Client: GEORGE NICE & SONS, INC.
General Contractor: GEORGE NICE & SONS, INC.
Grading Contractor: GEORGE NICE & SONS, INC.
Technician: MARK SCHOLEFIELD

Job No.: 95.141T
Client Job No.:
Date: 5/25/95
Weather: SUNNY Temp.(°F): 88
Field Copy Given to Client? X Yes ___ No

Test No.	Moisture (%)	Dry Density (PCF)	Proctor Number	% of Proctor		Pass	Fail	Elevation Below Finish Grade (FT)	Location, Grid, Coordinates, or Roadway Station
				Spec	Actual				
1	24.0	97.6	2	95	100+	X		9.5' BELOW F.G	NORTH QUARTER EARTH DAM
2	24.8	96.3	2	95	100+	X		10.5' BELOW F.G	
3	24.6	96.5	2	95	100+	X		8.5' BELOW F.G	
4	29.9	91.8	2	95	100.6	X		7.0' BELOW F.G	
5	30.2	86.8	2	95	95.1	X		6.0' BELOW F.G	
6	25.8	92.0	2	95	100.8	X		5.0' BELOW F.G	
7	30.8	90.6	2	95	99.3	X		4.0' BELOW F.G	

Compaction Equipment Used:
(1) **Test Location Established By:** ESTIMATION
(2) **Depth of Elev. of Test Established By:** ESTIMATION
(3) **Test Conducted On:** INTERMITTENT BASIS
(4) **Proctor Type:** ASTM D698 (Standard)

Field Rep
Proctor No.: 2
Max. Density (PCF): 91.3
Opt. Moisture (%): 28.0

Remarks:

GEO DESIGN CONSULTANTS, INC.
204-B GRAYSON RD.
VIRGINIA BEACH, VIRGINIA 23462
Phone: (804) 473-9533
Fax: (804) 473-9534

Project: NORTH QUARTER KINGSMILL VILLAGE
Client: GEORGE NICE & SONS, INC.
General Contractor: GEORGE NICE & SONS, INC.
Grading Contractor: GEORGE NICE & SONS, INC.
Technician: MARK SCHOLEFIELD & ROCKY MELLA

Job No.: 95.141T
Client Job No.:
Date: 5/30/95
Weather: PT. CLOUDY Temp.(°F): 78
Field Copy Given to Client? X Yes ___ No

Test No.	Moisture (%)	Dry Density (PCF)	Proctor Number	% of Proctor		Pass	Fail	Elevation Below Finish Grade (FT)	Location, Grid, Coordinates, or Roadway Station
				Spec	Actual				
1	26.6	95.6	2	95	100+	X		4' BELOW F.G.	EARTH DAM @ NORTH QUARTER

Compaction Equipment Used:
(1) **Test Location Established By:** ESTIMATION
(2) **Depth of Elev. of Test Established By:** ESTIMATION
(3) **Test Conducted On:** INTERMITTENT BASIS
(4) **Proctor Type:** ASTM D698 (Standard)

Field Rep
Proctor No.: 2
Max. Density (PCF): 91.3
Opt. Moisture (%): 28.0

Remarks:

CC017

DRAINAGE,

STORMWATER MANAGEMENT,

AND EROSION CONTROL DESIGN CALCULATIONS

FOR

TUTTER'S NECK NORTH

August 31, 1994
Rev. October 21, 1994

Langley and McDonald, P.C.

Engineers
Surveyors
Planners
Landscape Architects
Environmental Consultants

5544 Greenwich Road, Virginia Beach, VA 23462
(804) 473-2000 FAX: (804) 497-7933

201 Packets Court, Williamsburg, VA 23185
(804) 253-2975 FAX: (804) 229-0049

DRAINAGE,

STORMWATER MANAGEMENT,

AND EROSION CONTROL DESIGN CALCULATIONS

FOR

TUTTER'S NECK NORTH

COMMONWEALTH OF VIRGINIA
10/21/94
JOHN L. HUTCHERSON
No.
7753
CERTIFIED PROFESSIONAL ENGINEER

August 31, 1994
Rev. October 21, 1994

TUTTER'S NECK NORTH

DRAINAGE, STORMWATER MANAGEMENT, AND EROSION CONTROL DESIGN

The Drainage, Stormwater Management, and Erosion control facilities for Phase IV, Tutter's Neck North, have been developed in basic conformance with the "Overall Drainage and Stormwater Management Plan for Kingsmill Village." We have designed a 6 point BMP using Extended Detention design 3 from Chesapeake Bay Local Assistant's Manual. The design volume required is as follows:

Required Volume of BMP

On-site Area to BMP

$$V_r = \frac{(R_m)(R_v)}{12} \times Ac.$$

$R_v = (0.05 + 0.009I) = [0.05 + 0.009(20.0)] = 0.230$
(Where I = 20% from CBLAM Sheet C-10 attached, ave. lot size 0.50 Ac.)

R_m = 1.0" for Design 3 Extended Detention 24 hrs.

Ac. = 29.5 Acres

$$V_r = \frac{(1.0)(0.230)}{12} \times 29.5 = 0.565 \text{ ac.-ft.} = 24{,}630 \text{ cu. ft.}$$

Off-site Area to BMP

$$V_r = \frac{(R_m)(R_v)}{12} \times Ac.$$

$R_v = (0.05 + 0.009I) = [0.05 + 0.009(35\%)] = 0.365$
(Where I = 35% from Existing Development History)

R_m = 1.0" for Design 3 Extended Detention 24 hrs.

Ac. = 19.9 Acres TOTAL = 49.4 ac

$$V_r = \frac{(1.0)(0.365)}{12} \times 19.9 = 0.605 \text{ ac.-ft.} = 26.366 \text{ cu. ft.}$$

Total $V_r = 24{,}630 + 26{,}366 = 50{,}996$ cu. ft.

The BMP pond was designed using the TR-55 Tabular Hydrograph Method and run on Haestad Methods Inc.'s Quick TR-55 and Pond-2 software. Total 24-hour rainfall data was provided by Mr. Darryl Cook, based on historical records of the Williamsburg area.

The BMP pond will be used as a sediment basin during construction. The total contributing acreage to the silt basin is 40.95 acres. Thus, the required sediment basin volume is 74,080 cu. ft. for wet storage, and 74,080 cu. ft. for dry storage. A 200' by 30' wide strip will be excavated in the bottom of the basin at a depth of 0.50' in order to facilitate a portion of the wet storage volume requirement for the sediment basin. This area will be allowed to fill sediment during the construction phase of the project. The BMP calculations are based on the volume above this 0.50' of excavation as we anticipate this area being filled with sediment.

The silt basin design will provide 78,990 cu. ft. of wet storage at elevation 14.5. The total storage provided by the silt basin for the 2 year storm is 124,270 cu. ft. or 45,280 cu. ft. for dry storage. The total storage within this basin is over 230,000 cu. ft. at the embankment crest elevation of 19. Given that the natural shape of the basin is long and narrow and that it is 7 feet deep at the wet storage elevation, the basin will act as an extremely efficient sedimentation structure. This combined with the fact that a significant portion of the area will remain undisturbed during construction, 45,280 cu. ft. of dry storage for the 2 year storm should be more than adequate to address the sedimentation concerns for the project.

TABLE 3
TUTTER'S NECK NORTH (PHASE IV)
WORKSHEET FOR BMP POINT SYSTEM
OCT 18, 1992

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
BMP (EXTENDED DETENTION 24 HR)	6 ONSITE	x	$\frac{29.5}{34}$ = .867	=	5.21
	6 OFFSITE	x	$\frac{11.45+8.45}{34}$ = .585	=	3.51
		x		=	
		x		=	

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 8.72

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit		Points for Natural Open Space
$\frac{22.12}{34}$ = 65.1	x	0.1 (0.1 per 1%)	=	6.51

C. TOTAL WEIGHTED POINTS

8.72	+	6.51	=	15.23 > 10	OK
Structural BMP Points		Natural Open Space Points		TOTAL	

TOTAL AREA OF SITE		34.0 Ac
ONSITE AREA TO BMP		29.5 Ac
OFFSITE AREA TO BMP	11.45 Ac in basin + 8.45 piped (FUTURE)	19.9 Ac
TOTAL AREA TO BMP		49.4 Ac

NATURAL OPEN SPACE

ONSITE

BUFFER	1.1 Ac
LPZ	8.7 Ac
	9.8 Ac

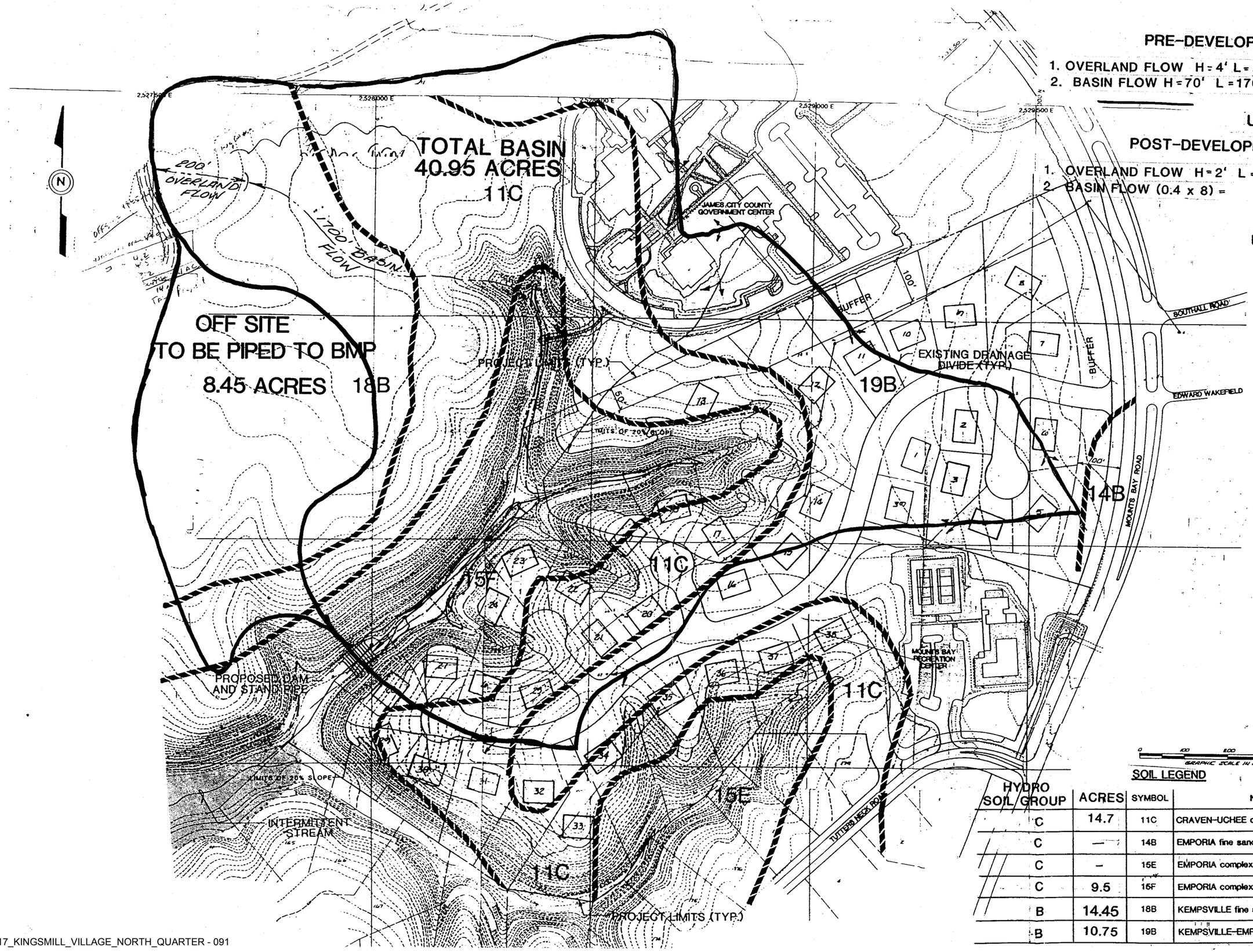
9.8

OFFSITE

DEVELOPED (35%)	7.7 Ac	x .65	=	5.00 Ac
NOT DEVELOPED 40% FUTURE	12.2 Ac	x 0.60	=	7.32
				12.32

12.32

22.12



PRE-DEVELOPMENT

1. OVERLAND FLOW H = 4' L = 200 tc = 17
2. BASIN FLOW H = 70' L = 1700' tc = 8

25 MINUTES

USE 30 MINUTES

POST-DEVELOPMENT

1. OVERLAND FLOW H = 2' L = 100' tc = 13
2. BASIN FLOW (0.4 x 8) = tc = 3.2

16.2 MINUTES

USE 15 MINUTES

SOIL LEGEND

HYDRO SOIL GROUP	ACRES	SYMBOL	NAME
C	14.7	11C	CRAVEN-UCHEE complex, 6-10% slopes
C	—	14B	EMPORIA fine sandy loam, 2-6% slopes
C	–	15E	EMPORIA complex 15-25% slopes
C	9.5	15F	EMPORIA complex, 25-50% slopes
B	14.45	18B	KEMPSVILLE fine sandy loam, 2-6% slopes
B	10.75	19B	KEMPSVILLE-EMPORIA fine sandy loams,

Annual Storm Phosphorous Export

Table 1

For Existing Urban Land Uses
(in pounds/acre/year)

LAND USES	IMPERVIOUS COVER (%)	ANNUAL RAINFALL (in) 40	41	42	43	44	45
	0	0.11	0.11	0.11	0.11	0.12	0.12
5.0 acre residential lots	5	0.20	0.21	0.21	0.22	0.22	0.23
2.0 acre residential lots	10	0.30	0.30	0.31	0.32	0.33	0.33
1.0 acre residential lots	15	0.39	0.40	0.41	0.42	0.43	0.44
	16	0.41	0.42	0.43	0.44	0.45	0.46
	17	0.43	0.44	0.45	0.46	0.47	0.48
	18	0.45	0.46	0.47	0.48	0.49	0.51
	19	0.47	0.48	0.49	0.50	0.52	0.53
0.50 acre residential lots	20	2.03	2.08	2.13	2.18	2.23	2.28
0.33 acre residential lots	25	2.42	2.48	2.54	2.61	2.67	2.72
0.25 acre residential lots	30	2.82	2.89	2.96	3.03	3.10	3.17
Townhouses	35	3.22	3.30	3.38	3.46	3.54	3.62
	40	3.61	3.70	3.79	3.88	3.97	4.06
	45	4.01	4.11	4.21	4.31	4.41	4.51
Garden Apartments	50	4.41	4.52	4.63	4.74	4.85	4.96
	55	4.80	4.92	5.04	5.16	5.28	5.40
	60	5.20	5.33	5.46	5.59	5.72	5.85
Light Commercial/Industrial	65	5.60	5.74	5.88	6.02	6.16	6.30
	70	5.99	6.14	6.29	6.44	6.59	6.74
	75	6.39	6.55	6.71	6.87	7.03	7.19
	80	6.79	6.96	7.13	7.29	7.46	7.63
Heavy Commercial/Industrial	85	7.98	8.17	8.37	8.57	8.77	8.97
	90	7.58	7.77	7.96	8.15	8.34	8.53
	95	7.98	8.17	8.37	8.57	8.77	8.97
Asphalt/Pavement	100	8.37	8.58	8.79	9.00	9.21	9.42

For Non-Urban Land Uses
(in pounds/acre/year)

LAND USE	SILT LOAM SOILS	LOAM SOILS	SANDY LOAM SOILS
Conventional Tillage Cropland	3.71	2.42	0.83
Conservation Tillage Cropland	2.32	1.52	0.52
Pasture Land	0.91	0.59	0.20
Forest Land	0.19	0.12	0.04

Langley and McDonald
A PROFESSIONAL CORPORATION
ENGINEERS • PLANNERS • SURVEYORS
VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

Subject: JUITER'S NECK NORTH

Computed By: JLH Checked By:

Project No. 71069B-234

Client:

Date: 8/31/94 Sheet No. 1

REV 10/20/94

COMPOSITE CN NUMBER FOR SCS METHOD

PRE DEVELOPMENT

				Acreage		
Soil Group	B	CN = 55	x	25.2	=	1386
	C	CN = 70	x	24.20	=	1694
				49.40		3080.

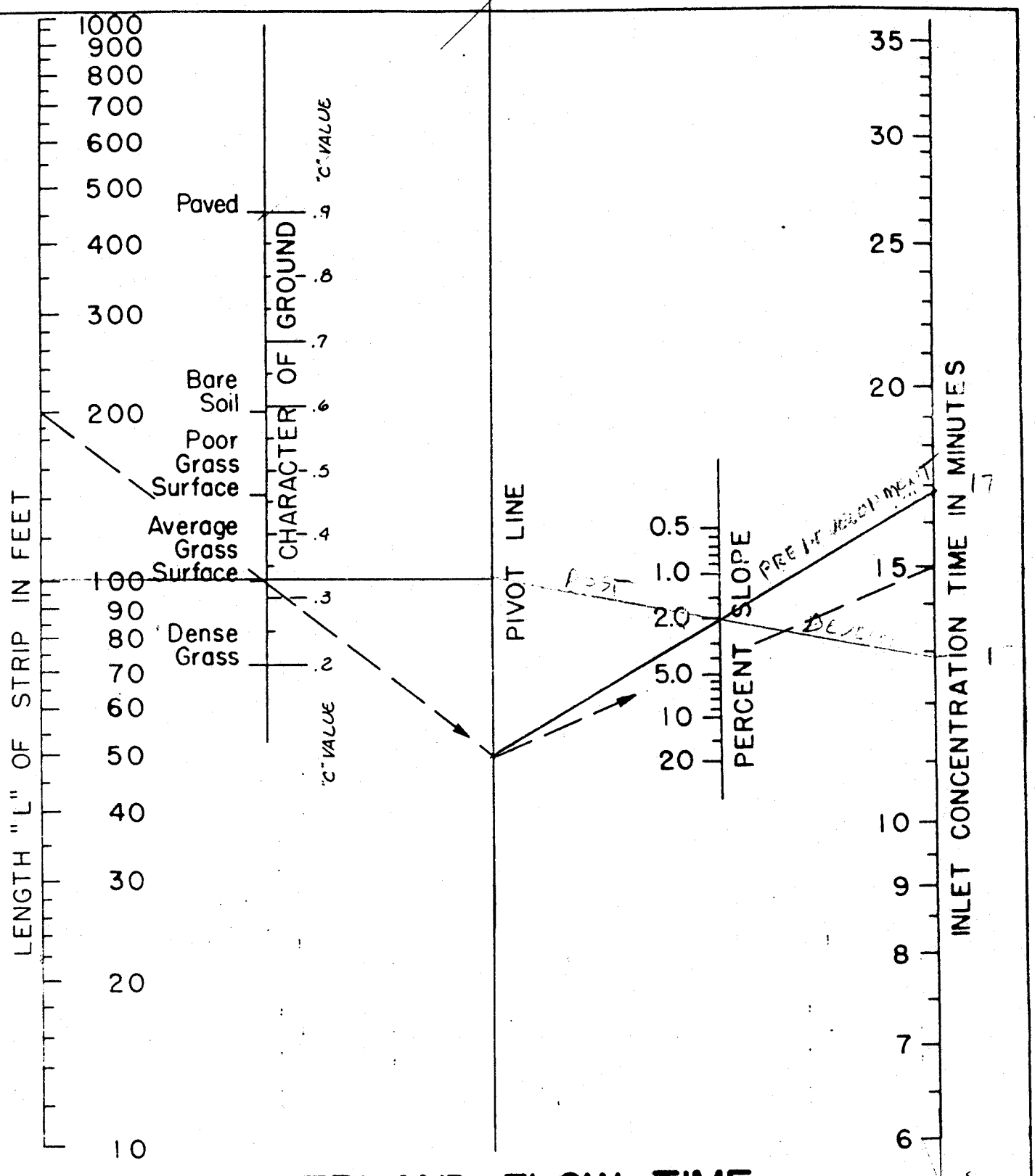
Composit CN = 63

POST DEVELOPMENT

Soil Group	B	CN = 70	x	25.2		1764
	C	CN = 80	x	24.20	=	1936.
				49.40	=	3700

Composit CN = 74.9 ≈ 75

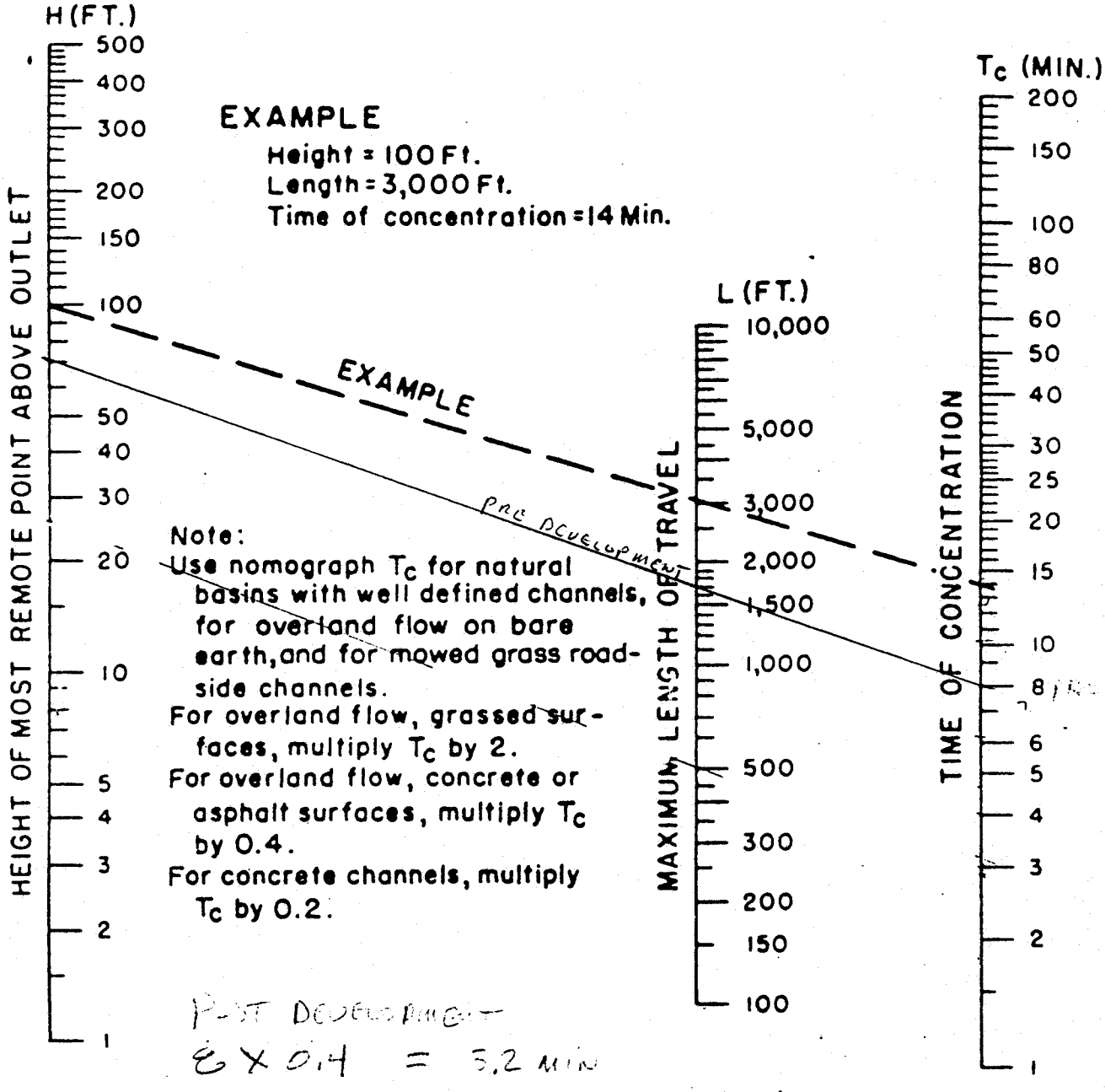
FIG. 1.5.1.1



OVERLAND FLOW TIME

REPRINTED WITH PERMISSION FROM "DATA BOOK FOR CIVIL ENGINEERS" VOL. I - DESIGN
2ND EDITION (1951) BY E. E. SEELYE

TCC



Based on study by P. Z. Kirpich,
Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

TIME OF CONCENTRATION OF SMALL DRAINAGE BASINS

TABULAR HYDROGRAPH METHOD MULTIPLE RUN OPTIONS (.MOP)

234PRE <-- This File .WSD File --> 234PRE

Note: Don't input .WSD file if CN & Tc/Tt files are entered below titles.

Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

<--.RCN File Tc File: . Tt File: .

Specify TCT or TCM extension in the field after the Tc File and in the field after the Tt File.

Return Frequency (years):	2	10	25	100
24-hr Precip. (inches):	3.5	5.80	6.25	7.70
Hydrograph Files (.HYD):	234IN002	234IN010	234IN025	234IN100

SCS Distribution Type? II

Interpolate Ia/P (y/n)? Y

OUTPUT OPTIONS

* Input Data * Peaks * Hydrograph Summary * Hydrographs

<Esc> Exit <F5> Compute

Return Frequency: 2 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used	
1	49.90	63.0	0.50	0.00	3.50	I	0.66	I.34	.34

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 20 cfs

>>>> Computer Modifications of Input Parameters <<<<<

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 2 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	20	12.4
Composite Watershed	20	12.4

Return Frequency: 2 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	0	0	0	0	0	2	7	14	20
Total (cfs)	0	0	0	0	0	2	7	14	20

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	20	18	14	12	8	6	5	4	4
Total (cfs)	20	18	14	12	8	6	5	4	4

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	3	3	3	3	2	2	2	2	2
Total (cfs)	3	3	3	3	2	2	2	2	2

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	2	1	1	1	0
Total (cfs)	2	1	1	1	0

Return Frequency: 2 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	0	14.8	3
11.1	0	14.9	3
11.2	0	15.0	3
11.3	0	15.1	3
11.4	0	15.2	3
11.5	0	15.3	2
11.6	0	15.4	2
11.7	0	15.5	2
11.8	0	15.6	2
11.9	0	15.7	2
12.0	0	15.8	2
12.1	2	15.9	2
12.2	7	16.0	2
12.3	14	16.1	2
12.4	20	16.2	2
12.5	20	16.3	2
12.6	18	16.4	2
12.7	14	16.5	2
12.8	12	16.6	2
12.9	10	16.7	2
13.0	8	16.8	2
13.1	7	16.9	2
13.2	6	17.0	2
13.3	5	17.1	2
13.4	5	17.2	2
13.5	5	17.3	2
13.6	4	17.4	2
13.7	4	17.5	2
13.8	4	17.6	2
13.9	3	17.7	2
14.0	3	17.8	2
14.1	3	17.9	2
14.2	3	18.0	2
14.3	3	18.1	2
14.4	3	18.2	2
14.5	3	18.3	2
14.6	3	18.4	2
14.7	3	18.5	2

Return Frequency: 2 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	1	22.4	1
18.7	1	22.5	1
18.8	1	22.6	1
18.9	1	22.7	1
19.0	1	22.8	1
19.1	1	22.9	1
19.2	1	23.0	1
19.3	1	23.1	1
19.4	1	23.2	1
19.5	1	23.3	1
19.6	1	23.4	1
19.7	1	23.5	1
19.8	1	23.6	1
19.9	1	23.7	1
20.0	1	23.8	1
20.1	1	23.9	1
20.2	1	24.0	1
20.3	1	24.1	0
20.4	1	24.2	0
20.5	1	24.3	0
20.6	1	24.4	0
20.7	1	24.5	0
20.8	1	24.6	0
20.9	1	24.7	0
21.0	1	24.8	0
21.1	1	24.9	0
21.2	1	25.0	0
21.3	1	25.1	0
21.4	1	25.2	0
21.5	1	25.3	0
21.6	1	25.4	0
21.7	1	25.5	0
21.8	1	25.6	0
21.9	1	25.7	0
22.0	1	25.8	0
22.1	1	25.9	0
22.2	1		
22.3	1		

Return Frequency: 10 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used
1	49.90	63.0	0.50	0.00	5.80	I	2.04	I.2 .20

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 77 cfs

>>>> Computer Modifications of Input Parameters <<<<<

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 10 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	77	12.4
Composite Watershed	77	12.4

Return Frequency: 10 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	1	2	3	5	8	18	37	62	77
Total (cfs)	1	2	3	5	8	18	37	62	77

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	75	62	47	37	24	17	13	11	10
Total (cfs)	75	62	47	37	24	17	13	11	10

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	9	8	7	6	6	5	5	4	4
Total (cfs)	9	8	7	6	6	5	5	4	4

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	4	3	3	2	0
Total (cfs)	4	3	3	2	0

Return Frequency: 10 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	6
11.1	1	14.9	6
11.2	2	15.0	6
11.3	2	15.1	6
11.4	2	15.2	6
11.5	3	15.3	6
11.6	3	15.4	6
11.7	4	15.5	6
11.8	4	15.6	6
11.9	5	15.7	6
12.0	8	15.8	5
12.1	18	15.9	5
12.2	37	16.0	5
12.3	62	16.1	5
12.4	77	16.2	5
12.5	75	16.3	5
12.6	62	16.4	5
12.7	47	16.5	5
12.8	37	16.6	5
12.9	30	16.7	5
13.0	24	16.8	4
13.1	20	16.9	4
13.2	17	17.0	4
13.3	15	17.1	4
13.4	13	17.2	4
13.5	12	17.3	4
13.6	11	17.4	4
13.7	10	17.5	4
13.8	10	17.6	4
13.9	9	17.7	4
14.0	9	17.8	4
14.1	9	17.9	4
14.2	8	18.0	4
14.3	8	18.1	4
14.4	8	18.2	4
14.5	7	18.3	4
14.6	7	18.4	4
14.7	7	18.5	4

Return Frequency: 10 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	3	22.4	2
18.7	3	22.5	2
18.8	3	22.6	2
18.9	3	22.7	2
19.0	3	22.8	2
19.1	3	22.9	2
19.2	3	23.0	2
19.3	3	23.1	1
19.4	3	23.2	1
19.5	3	23.3	1
19.6	3	23.4	1
19.7	3	23.5	1
19.8	3	23.6	1
19.9	3	23.7	1
20.0	3	23.8	1
20.1	3	23.9	1
20.2	3	24.0	1
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	2	24.9	1
21.2	2	25.0	1
21.3	2	25.1	0
21.4	2	25.2	0
21.5	2	25.3	0
21.6	2	25.4	0
21.7	2	25.5	0
21.8	2	25.6	0
21.9	2	25.7	0
22.0	2	25.8	0
22.1	2	25.9	0
22.2	2		
22.3	2		

Return Frequency: 25 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used	
1	49.90	63.0	0.50	0.00	6.25	I	2.35	I.19	.19

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 89 cfs

>>>> Computer Modifications of Input Parameters <<<<<

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 25 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	89	12.4
Composite Watershed	89	12.4

Return Frequency: 25 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	2	2	3	6	10	22	44	73	89
Total (cfs)	2	2	3	6	10	22	44	73	89

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	87	72	55	42	27	19	15	13	11
Total (cfs)	87	72	55	42	27	19	15	13	11

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	10	9	8	7	6	6	5	5	4
Total (cfs)	10	9	8	7	6	6	5	5	4

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	4	4	3	3	0
Total (cfs)	4	4	3	3	0

Return Frequency: 25 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	2	14.8	7
11.1	2	14.9	7
11.2	2	15.0	7
11.3	2	15.1	7
11.4	2	15.2	7
11.5	3	15.3	6
11.6	3	15.4	6
11.7	4	15.5	6
11.8	5	15.6	6
11.9	6	15.7	6
12.0	10	15.8	6
12.1	22	15.9	6
12.2	44	16.0	6
12.3	73	16.1	6
12.4	89	16.2	6
12.5	87	16.3	5
12.6	72	16.4	5
12.7	55	16.5	5
12.8	42	16.6	5
12.9	34	16.7	5
13.0	27	16.8	5
13.1	23	16.9	5
13.2	19	17.0	5
13.3	17	17.1	5
13.4	15	17.2	5
13.5	14	17.3	4
13.6	13	17.4	4
13.7	12	17.5	4
13.8	11	17.6	4
13.9	10	17.7	4
14.0	10	17.8	4
14.1	10	17.9	4
14.2	9	18.0	4
14.3	9	18.1	4
14.4	9	18.2	4
14.5	8	18.3	4
14.6	8	18.4	4
14.7	8	18.5	4

Return Frequency: 25 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	3
18.7	4	22.5	3
18.8	4	22.6	3
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	3	23.4	2
19.7	3	23.5	2
19.8	3	23.6	2
19.9	3	23.7	2
20.0	3	23.8	2
20.1	3	23.9	2
20.2	3	24.0	2
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		
22.3	3		

Return Frequency: 100 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used	
1	49.90	63.0	0.50	0.00	7.70	I	3.43	1.15	.15

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 135 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	135	12.4
Composite Watershed	135	12.4

Return Frequency: 100 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	3	5	6	11	19	38	72	115	135
Total (cfs)	3	5	6	11	19	38	72	115	135

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	131	106	80	61	39	27	21	18	15
Total (cfs)	131	106	80	61	39	27	21	18	15

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	14	12	11	9	9	8	7	6	6
Total (cfs)	14	12	11	9	9	8	7	6	6

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	6	5	4	4	0
Total (cfs)	6	5	4	4	0

Return Frequency: 100 years

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	3	14.8	10
11.1	4	14.9	9
11.2	4	15.0	9
11.3	5	15.1	9
11.4	5	15.2	9
11.5	6	15.3	9
11.6	6	15.4	9
11.7	8	15.5	9
11.8	9	15.6	9
11.9	11	15.7	9
12.0	19	15.8	8
12.1	38	15.9	8
12.2	72	16.0	8
12.3	115	16.1	8
12.4	135	16.2	8
12.5	121	16.3	7
12.6	106	16.4	7
12.7	80	16.5	7
12.8	61	16.6	7
12.9	50	16.7	7
13.0	39	16.8	6
13.1	33	16.9	6
13.2	27	17.0	6
13.3	24	17.1	6
13.4	21	17.2	6
13.5	20	17.3	6
13.6	18	17.4	6
13.7	16	17.5	6
13.8	15	17.6	6
13.9	14	17.7	6
14.0	14	17.8	6
14.1	13	17.9	6
14.2	13	18.0	6
14.3	12	18.1	6
14.4	12	18.2	6
14.5	11	18.3	6
14.6	11	18.4	6
14.7	10	18.5	6

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

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MDP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMEMT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	5	22.4	4
18.7	5	22.5	4
18.8	5	22.6	3
18.9	5	22.7	3
19.0	5	22.8	3
19.1	5	22.9	3
19.2	5	23.0	3
19.3	5	23.1	3
19.4	5	23.2	3
19.5	5	23.3	3
19.6	4	23.4	3
19.7	4	23.5	3
19.8	4	23.6	2
19.9	4	23.7	2
20.0	4	23.8	2
20.1	4	23.9	2
20.2	4	24.0	2
20.3	4	24.1	2
20.4	4	24.2	2
20.5	4	24.3	2
20.6	4	24.4	2
20.7	4	24.5	2
20.8	4	24.6	1
20.9	4	24.7	1
21.0	4	24.8	1
21.1	4	24.9	1
21.2	4	25.0	1
21.3	4	25.1	1
21.4	4	25.2	1
21.5	4	25.3	1
21.6	4	25.4	1
21.7	4	25.5	1
21.8	4	25.6	0
21.9	4	25.7	0
22.0	4	25.8	0
22.1	4	25.9	0
22.2	4		
22.3	4		

TABULAR HYDROGRAPH METHOD MULTIPLE RUN OPTIONS (.MOP)

234POST <-- This File .WSD File --> 234POST

Note: Don't input .WSD file if CN & Tc/Tt files are entered below titles.

Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

<--.RCN File Tc File: . Tt File: .

Specify TCT or TCM extension in the field after the Tc File and in the field after the Tt File.

Return Frequency (years):	2	10	25	100
24-hr Precip. (inches):	3.5	5.80	6.25	7.70
Hydrograph Files (.HYD):	POSIN002	POSIN010	POSIN025	POSIN100

SCS Distribution Type? II

Interpolate Ia/P (y/n)? Y

OUTPUT OPTIONS

* Input Data * Peaks * Hydrograph Summary * Hydrographs

<Esc> Exit <F5> Compute

Return Frequency: 2 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used	
1	49.90	75.0	0.30	0.00	3.50	1.30	I.19	.19

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 64 cfs

>>>> Computer Modifications of Input Parameters <<<<<

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.25	0.00	0.30	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 2 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:PDSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	64	12.3
Composite Watershed	64	12.3

Return Frequency: 2 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	1	2	2	7	16	36	62	64	46
Total (cfs)	1	2	2	7	16	36	62	64	46

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	30	21	16	13	9	8	7	6	5
Total (cfs)	30	21	16	13	9	8	7	6	5

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	5	4	4	4	3	3	3	3	2
Total (cfs)	5	4	4	4	3	3	3	3	2

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	2	2	2	2	0
Total (cfs)	2	2	2	2	0

Return Frequency: 2 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	4
11.1	1	14.9	4
11.2	2	15.0	4
11.3	2	15.1	4
11.4	2	15.2	4
11.5	2	15.3	3
11.6	2	15.4	3
11.7	4	15.5	3
11.8	5	15.6	3
11.9	7	15.7	3
12.0	16	15.8	3
12.1	36	15.9	3
12.2	62	16.0	3
12.3	64	16.1	3
12.4	46	16.2	3
12.5	30	16.3	3
12.6	21	16.4	3
12.7	16	16.5	3
12.8	13	16.6	3
12.9	11	16.7	3
13.0	9	16.8	3
13.1	8	16.9	3
13.2	8	17.0	3
13.3	7	17.1	3
13.4	7	17.2	3
13.5	7	17.3	2
13.6	6	17.4	2
13.7	5	17.5	2
13.8	5	17.6	2
13.9	5	17.7	2
14.0	5	17.8	2
14.1	5	17.9	2
14.2	4	18.0	2
14.3	4	18.1	2
14.4	4	18.2	2
14.5	4	18.3	2
14.6	4	18.4	2
14.7	4	18.5	2

Return Frequency: 2 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	2	22.4	2
18.7	2	22.5	2
18.8	2	22.6	2
18.9	2	22.7	2
19.0	2	22.8	2
19.1	2	22.9	2
19.2	2	23.0	2
19.3	2	23.1	1
19.4	2	23.2	1
19.5	2	23.3	1
19.6	2	23.4	1
19.7	2	23.5	1
19.8	2	23.6	1
19.9	2	23.7	1
20.0	2	23.8	1
20.1	2	23.9	1
20.2	2	24.0	1
20.3	2	24.1	1
20.4	2	24.2	1
20.5	2	24.3	1
20.6	2	24.4	1
20.7	2	24.5	1
20.8	2	24.6	1
20.9	2	24.7	1
21.0	2	24.8	1
21.1	2	24.9	1
21.2	2	25.0	1
21.3	2	25.1	0
21.4	2	25.2	0
21.5	2	25.3	0
21.6	2	25.4	0
21.7	2	25.5	0
21.8	2	25.6	0
21.9	2	25.7	0
22.0	2	25.8	0
22.1	2	25.9	0
22.2	2		
22.3	2		

Return Frequency: 10 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used	
1	49.90	75.0	0.30	0.00	5.80	3.11	I.11	.11

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 163 cfs

>>>> Computer Modifications of Input Parameters <<<<<

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.25	0.00	0.30	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 10 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	163	12.3
Composite Watershed	163	12.3

Return Frequency: 10 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	5	6	9	27	55	106	162	168	111
Total (cfs)	5	6	9	27	55	106	162	168	111

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	69	48	36	28	20	16	14	13	11
Total (cfs)	69	48	36	28	20	16	14	13	11

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	10	9	8	8	7	6	5	5	5
Total (cfs)	10	9	8	8	7	6	5	5	5

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	4	4	3	3	0
Total (cfs)	4	4	3	3	0

Return Frequency: 10 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	5	14.8	8
11.1	5	14.9	8
11.2	6	15.0	8
11.3	6	15.1	8
11.4	7	15.2	8
11.5	8	15.3	7
11.6	9	15.4	7
11.7	15	15.5	7
11.8	21	15.6	7
11.9	27	15.7	7
12.0	55	15.8	6
12.1	106	15.9	6
12.2	162	16.0	6
12.3	163	16.1	6
12.4	111	16.2	6
12.5	69	16.3	5
12.6	48	16.4	5
12.7	36	16.5	5
12.8	28	16.6	5
12.9	24	16.7	5
13.0	20	16.8	5
13.1	18	16.9	5
13.2	16	17.0	5
13.3	15	17.1	5
13.4	14	17.2	5
13.5	14	17.3	5
13.6	13	17.4	5
13.7	12	17.5	5
13.8	11	17.6	5
13.9	10	17.7	5
14.0	10	17.8	4
14.1	10	17.9	4
14.2	9	18.0	4
14.3	9	18.1	4
14.4	9	18.2	4
14.5	8	18.3	4
14.6	8	18.4	4
14.7	8	18.5	4

Return Frequency: 10 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	3
18.7	4	22.5	3
18.8	4	22.6	3
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	3	23.4	2
19.7	3	23.5	2
19.8	3	23.6	2
19.9	3	23.7	2
20.0	3	23.8	2
20.1	3	23.9	2
20.2	3	24.0	2
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		
22.3	3		

Return Frequency: 25 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used	
1	49.90	75.0	0.30	0.00	6.25	I	3.50	I.11	.11

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 183 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.25	0.00	0.30	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 25 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	183	12.3
Composite Watershed	183	12.3

Return Frequency: 25 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	5	7	11	31	62	119	182	193	125
Total (cfs)	5	7	11	31	62	119	182	193	125

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	78	54	40	31	22	18	16	14	13
Total (cfs)	78	54	40	31	22	18	16	14	13

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	12	10	9	9	8	7	6	6	5
Total (cfs)	12	10	9	9	8	7	6	6	5

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	5	4	4	3	0
Total (cfs)	5	4	4	3	0

Return Frequency: 25 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	5	14.8	9
11.1	6	14.9	9
11.2	6	15.0	9
11.3	7	15.1	9
11.4	8	15.2	9
11.5	10	15.3	8
11.6	11	15.4	8
11.7	18	15.5	8
11.8	24	15.6	8
11.9	31	15.7	8
12.0	62	15.8	7
12.1	119	15.9	7
12.2	182	16.0	7
12.3	183	16.1	7
12.4	125	16.2	7
12.5	78	16.3	6
12.6	54	16.4	6
12.7	40	16.5	6
12.8	31	16.6	6
12.9	26	16.7	6
13.0	22	16.8	6
13.1	20	16.9	6
13.2	18	17.0	6
13.3	17	17.1	6
13.4	16	17.2	6
13.5	15	17.3	5
13.6	14	17.4	5
13.7	13	17.5	5
13.8	13	17.6	5
13.9	12	17.7	5
14.0	12	17.8	5
14.1	11	17.9	5
14.2	11	18.0	5
14.3	10	18.1	5
14.4	10	18.2	5
14.5	9	18.3	5
14.6	9	18.4	5
14.7	9	18.5	5

Return Frequency: 25 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	3
18.7	4	22.5	3
18.8	4	22.6	3
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	4	23.4	2
19.7	4	23.5	2
19.8	4	23.6	2
19.9	4	23.7	2
20.0	4	23.8	2
20.1	4	23.9	2
20.2	4	24.0	2
20.3	4	24.1	1
20.4	4	24.2	1
20.5	4	24.3	1
20.6	4	24.4	1
20.7	4	24.5	1
20.8	4	24.6	1
20.9	4	24.7	1
21.0	4	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		
22.3	3		

Return Frequency: 100 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	I	Runoff (in)	Ia/p input/used	
1	49.90	75.0	0.30	0.00	7.70	I	4.77	I.09	.10

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 251 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
1	0.25	0.00	0.30	0.00	No	Computed Ia/p < .1

* Travel time from subarea outfall to composite watershed outfall point.

Return Frequency: 100 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	251	12.2
Composite Watershed	251	12.2

Return Frequency: 100 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.2 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	7	10	15	44	87	166	251	251	171
Total (cfs)	7	10	15	44	87	166	251	251	171

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	105	73	54	42	30	25	21	19	17
Total (cfs)	105	73	54	42	30	25	21	19	17

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	16	14	12	12	10	9	8	7	7
Total (cfs)	16	14	12	12	10	9	8	7	7

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	7	6	5	4	0
Total (cfs)	7	6	5	4	0

Return Frequency: 100 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	7	14.8	12
11.1	8	14.9	12
11.2	9	15.0	12
11.3	10	15.1	12
11.4	12	15.2	11
11.5	13	15.3	11
11.6	15	15.4	10
11.7	25	15.5	10
11.8	34	15.6	10
11.9	44	15.7	10
12.0	87	15.8	9
12.1	166	15.9	9
12.2	251	16.0	9
12.3	251	16.1	9
12.4	171	16.2	9
12.5	105	16.3	8
12.6	73	16.4	8
12.7	54	16.5	8
12.8	42	16.6	8
12.9	36	16.7	8
13.0	30	16.8	7
13.1	27	16.9	7
13.2	25	17.0	7
13.3	23	17.1	7
13.4	21	17.2	7
13.5	20	17.3	7
13.6	19	17.4	7
13.7	18	17.5	7
13.8	17	17.6	7
13.9	17	17.7	7
14.0	16	17.8	7
14.1	15	17.9	7
14.2	15	18.0	7
14.3	14	18.1	7
14.4	13	18.2	7
14.5	13	18.3	7
14.6	12	18.4	7
14.7	12	18.5	7

Return Frequency: 100 years

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

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	6	22.4	4
18.7	6	22.5	4
18.8	6	22.6	3
18.9	6	22.7	3
19.0	6	22.8	3
19.1	6	22.9	3
19.2	6	23.0	3
19.3	6	23.1	3
19.4	6	23.2	3
19.5	6	23.3	3
19.6	5	23.4	3
19.7	5	23.5	3
19.8	5	23.6	2
19.9	5	23.7	2
20.0	5	23.8	2
20.1	5	23.9	2
20.2	5	24.0	2
20.3	5	24.1	2
20.4	5	24.2	2
20.5	5	24.3	2
20.6	5	24.4	2
20.7	5	24.5	2
20.8	5	24.6	1
20.9	5	24.7	1
21.0	5	24.8	1
21.1	4	24.9	1
21.2	4	25.0	1
21.3	4	25.1	1
21.4	4	25.2	1
21.5	4	25.3	1
21.6	4	25.4	1
21.7	4	25.5	1
21.8	4	25.6	0
21.9	4	25.7	0
22.0	4	25.8	0
22.1	4	25.9	0
22.2	4		
22.3	4		

MULTIPLE STORM ROUTING FOR PONDS (.MSR)

234BMP <-- This File
Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
ROUTING THRU BMP AS A SILT BASIN

Storm Comments	Return Frequency (years)	Inflow Hydrograph (.HYD)		Pond Rating Table File (.PND)		Starting W.S.Elev. (feet)		Outflow Hydrograph (.HYD)
24 HR SCS	2	POSIN002	-	234BMP	@	8	-	POOUT002
24 HR SCS	10	POSIN010	-	234BMP	@	8	-	POOUT010
24 HR SCS	25	POSIN025	-	234BMP	@	8	-	POOUT025
24 HR SCS	100	POSIN100	-	234BMP	@	8	-	POOUT100
			-		@		-	

OUTPUT OPTIONS

* Input Data * Routing Computations * Routing Summary Plots

NOTE: If you are using 'Outlet Structures(.STR)' for computing your Q vs.E rating table, you must compute a PND file for use with this MSR option. If W.S. Elev. is left blank, the first elevation in PND will be used. If Outflow HYD is left blank, an outflow HYD file will not be stored.

<Esc> Exit <F5> Compute

EXECUTED: 10-20-1994 17:44:23 24 HR SCS Return Freq: 2 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
*  ROUTING THRU BMP AS A SILT BASIN *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN002.HYD
Rating Table file: b:234BMP .PND

-----INITIAL CONDITIONS-----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,564
9.00	0.4	9,222
9.50	0.5	12,831
10.00	0.6	16,698
10.50	0.6	20,887
11.00	0.7	25,465
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,913
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

should be 0.

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.2
169.2	170.0
199.2	200.0
233.5	234.4
274.1	275.0
321.7	322.7
376.8	377.8
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
843.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:44:23 24 HR SCS Return Freq: 2 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	-----	15.3	15.3	0.00	8.00
666.0	1.00	2.0	17.2	17.3	0.02	8.06
672.0	2.00	3.0	20.1	20.2	0.06	8.14
678.0	2.00	4.0	23.9	24.1	0.10	8.25
684.0	2.00	4.0	27.6	27.9	0.14	8.36
690.0	2.00	4.0	31.2	31.6	0.19	8.47
696.0	2.00	4.0	34.8	35.2	0.23	8.57
702.0	4.00	6.0	40.2	40.8	0.28	8.71
708.0	5.00	9.0	48.5	49.2	0.37	8.94
714.0	7.00	12.0	59.6	60.5	0.44	9.22
720.0	16.00	23.0	81.5	82.6	0.55	9.75
726.0	36.00	52.0	132.1	133.5	0.67	10.83
732.0	62.00	98.0	228.4	230.1	0.89	12.44
738.0	64.00	126.0	352.4	354.4	1.00	13.79
744.0	46.00	110.0	459.8	462.4	1.26	14.66
750.0	30.00	76.0	532.3	535.8	1.75	15.18
756.0	21.00	51.0	579.4	583.3	2.00	15.50
762.0	16.00	37.0	612.2	616.4	2.08	15.70
768.0	13.00	29.0	636.9	641.2	2.14	15.85
774.0	11.00	24.0	656.5	660.9	2.19	15.97
780.0	9.00	20.0	668.8	676.5	3.88	16.06
786.0	8.00	17.0	675.3	685.8	5.22	16.10
792.0	8.00	16.0	679.3	691.3	6.03	16.13
798.0	8.00	16.0	682.0	695.3	6.61	16.15
804.0	7.00	15.0	683.3	697.0	6.87	16.15
810.0	7.00	14.0	683.5	697.3	6.91	16.16
816.0	6.00	13.0	682.9	696.5	6.79	16.15
822.0	6.00	12.0	681.8	694.9	6.56	16.14
828.0	5.00	11.0	680.3	692.8	6.25	16.13
834.0	5.00	10.0	678.5	690.3	5.89	16.12
840.0	5.00	10.0	677.3	688.5	5.63	16.11
846.0	5.00	10.0	676.4	687.3	5.45	16.11
852.0	4.00	9.0	675.1	685.4	5.17	16.10
858.0	4.00	8.0	673.4	683.1	4.83	16.09
864.0	4.00	8.0	672.2	681.4	4.59	16.08
870.0	4.00	8.0	671.4	680.2	4.42	16.07
876.0	4.00	8.0	670.8	679.4	4.30	16.07
882.0	4.00	8.0	670.4	678.8	4.21	16.07
888.0	4.00	8.0	670.1	678.4	4.15	16.06
894.0	4.00	8.0	669.9	678.1	4.11	16.06
900.0	4.00	8.0	669.7	677.9	4.07	16.06
906.0	4.00	8.0	669.6	677.7	4.05	16.06
912.0	4.00	8.0	669.5	677.6	4.04	16.06
918.0	3.00	7.0	668.8	676.5	3.88	16.06
924.0	3.00	6.0	667.5	674.8	3.62	16.05

EXECUTED: 10-20-1994 17:44:23 24 HR SCS Return Freq: 2 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	666.6	673.5	3.44	16.04
936.0	3.00	6.0	666.0	672.6	3.31	16.04
942.0	3.00	6.0	665.6	672.0	3.22	16.03
948.0	3.00	6.0	665.3	671.6	3.16	16.03
954.0	3.00	6.0	665.0	671.3	3.11	16.03
960.0	3.00	6.0	664.9	671.0	3.08	16.03
966.0	3.00	6.0	664.8	670.9	3.06	16.03
972.0	3.00	6.0	664.7	670.8	3.04	16.03
978.0	3.00	6.0	664.6	670.7	3.03	16.03
984.0	3.00	6.0	664.6	670.6	3.02	16.03
990.0	3.00	6.0	664.6	670.6	3.01	16.03
996.0	3.00	6.0	664.5	670.6	3.01	16.03
1002.0	3.00	6.0	664.5	670.5	3.01	16.03
1008.0	3.00	6.0	664.5	670.5	3.01	16.03
1014.0	3.00	6.0	664.5	670.5	3.00	16.03
1020.0	3.00	6.0	664.5	670.5	3.00	16.03
1026.0	3.00	6.0	664.5	670.5	3.00	16.03
1032.0	3.00	6.0	664.5	670.5	3.00	16.03
1038.0	2.00	5.0	663.8	669.5	2.86	16.02
1044.0	2.00	4.0	662.6	667.8	2.61	16.01
1050.0	2.00	4.0	661.7	666.6	2.43	16.01
1056.0	2.00	4.0	661.1	665.7	2.30	16.00
1062.0	2.00	4.0	660.7	665.1	2.22	16.00
1068.0	2.00	4.0	660.3	664.7	2.20	16.00
1074.0	2.00	4.0	659.9	664.3	2.20	16.00
1080.0	2.00	4.0	659.5	663.9	2.20	15.99
1086.0	2.00	4.0	659.1	663.5	2.20	15.99
1092.0	2.00	4.0	658.7	663.1	2.20	15.99
1098.0	2.00	4.0	658.3	662.7	2.19	15.99
1104.0	2.00	4.0	657.9	662.3	2.19	15.98
1110.0	2.00	4.0	657.5	661.9	2.19	15.98
1116.0	2.00	4.0	657.2	661.5	2.19	15.98
1122.0	2.00	4.0	656.8	661.2	2.19	15.98
1128.0	2.00	4.0	656.4	660.8	2.19	15.97
1134.0	2.00	4.0	656.0	660.4	2.19	15.97
1140.0	2.00	4.0	655.6	660.0	2.19	15.97
1146.0	2.00	4.0	655.3	659.6	2.19	15.97
1152.0	2.00	4.0	654.9	659.3	2.19	15.96
1158.0	2.00	4.0	654.5	658.9	2.19	15.96
1164.0	2.00	4.0	654.2	658.5	2.18	15.96
1170.0	2.00	4.0	653.8	658.2	2.18	15.96
1176.0	2.00	4.0	653.4	657.8	2.18	15.96
1182.0	2.00	4.0	653.1	657.4	2.18	15.95
1188.0	2.00	4.0	652.7	657.1	2.18	15.95
1194.0	2.00	4.0	652.3	656.7	2.18	15.95
1200.0	2.00	4.0	652.0	656.3	2.18	15.95

EXECUTED: 10-20-1994 17:44:23 24 HR SCS Return Freq: 2 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	651.6	656.0	2.18	15.94
1212.0	2.00	4.0	651.3	655.6	2.18	15.94
1218.0	2.00	4.0	650.9	655.3	2.18	15.94
1224.0	2.00	4.0	650.6	654.9	2.18	15.94
1230.0	2.00	4.0	650.2	654.6	2.17	15.94
1236.0	2.00	4.0	649.9	654.2	2.17	15.93
1242.0	2.00	4.0	649.5	653.9	2.17	15.93
1248.0	2.00	4.0	649.2	653.5	2.17	15.93
1254.0	2.00	4.0	648.8	653.2	2.17	15.93
1260.0	2.00	4.0	648.5	652.8	2.17	15.93
1266.0	2.00	4.0	648.2	652.5	2.17	15.92
1272.0	2.00	4.0	647.8	652.2	2.17	15.92
1278.0	2.00	4.0	647.5	651.8	2.17	15.92
1284.0	2.00	4.0	647.2	651.5	2.17	15.92
1290.0	2.00	4.0	646.8	651.2	2.17	15.92
1296.0	2.00	4.0	646.5	650.8	2.17	15.91
1302.0	2.00	4.0	646.2	650.5	2.16	15.91
1308.0	2.00	4.0	645.8	650.2	2.16	15.91
1314.0	2.00	4.0	645.5	649.8	2.16	15.91
1320.0	2.00	4.0	645.2	649.5	2.16	15.91
1326.0	2.00	4.0	644.9	649.2	2.16	15.90
1332.0	2.00	4.0	644.5	648.9	2.16	15.90
1338.0	2.00	4.0	644.2	648.5	2.16	15.90
1344.0	2.00	4.0	643.9	648.2	2.16	15.90
1350.0	2.00	4.0	643.6	647.9	2.16	15.90
1356.0	2.00	4.0	643.3	647.6	2.16	15.89
1362.0	2.00	4.0	643.0	647.3	2.16	15.89
1368.0	2.00	4.0	642.7	647.0	2.16	15.89
1374.0	2.00	4.0	642.3	646.7	2.15	15.89
1380.0	2.00	4.0	642.0	646.3	2.15	15.89
1386.0	1.00	3.0	640.7	645.0	2.15	15.88
1392.0	1.00	2.0	638.4	642.7	2.15	15.86
1398.0	1.00	2.0	636.2	640.4	2.14	15.85
1404.0	1.00	2.0	633.9	638.2	2.13	15.84
1410.0	1.00	2.0	631.6	635.9	2.13	15.82
1416.0	1.00	2.0	629.4	633.6	2.12	15.81
1422.0	1.00	2.0	627.2	631.4	2.12	15.79
1428.0	1.00	2.0	624.9	629.2	2.11	15.78
1434.0	1.00	2.0	622.7	626.9	2.11	15.77
1440.0	1.00	2.0	620.5	624.7	2.10	15.75
1446.0	1.00	2.0	618.3	622.5	2.10	15.74
1452.0	1.00	2.0	616.1	620.3	2.09	15.73
1458.0	1.00	2.0	614.0	618.1	2.09	15.71
1464.0	1.00	2.0	611.8	616.0	2.08	15.70
1470.0	1.00	2.0	609.7	613.8	2.07	15.69
1476.0	1.00	2.0	607.5	611.7	2.07	15.67

EXECUTED: 10-20-1994 17:44:23 24 HR SCS Return Freq: 2 years

Pond File: b:E84BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	605.4	609.5	2.06	15.66
1488.0	1.00	2.0	603.3	607.4	2.06	15.65
1494.0	1.00	2.0	601.2	605.3	2.05	15.63
1500.0	0.00	1.0	598.1	602.2	2.05	15.61
1506.0	0.00	0.0	594.0	598.1	2.04	15.59
1512.0	0.00	0.0	590.0	594.0	2.03	15.56
1518.0	0.00	0.0	585.9	590.0	2.02	15.54
1524.0	0.00	0.0	581.9	585.9	2.01	15.51
1530.0	0.00	0.0	577.9	581.9	1.99	15.49
1536.0	0.00	0.0	574.0	577.9	1.97	15.46
1542.0	0.00	0.0	570.1	574.0	1.95	15.44
1548.0	0.00	0.0	566.2	570.1	1.93	15.41
1554.0	0.00	0.0	562.4	566.2	1.91	15.38

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 64.00 cfs
Peak Outflow = 6.91 cfs
Peak Elevation = 16.16 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 121,526 cu-ft

Total Storage in Pond = 124,272 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:46:35 24 HR SCS Return Freq: 10 years

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*************************************
*                                   *
*              JOINT BMP            *
*        TUTTERS NECK NORTH         *
*         KINGSMILL VILLAGE         *
*  ROUTING THRU BMP AS A SILT BASIN *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN010.HYD
Rating Table file: b:234BMP .PND

-----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,864
9.00	0.4	9,222
9.50	0.5	12,831
10.00	0.6	16,695
10.50	0.6	20,887
11.00	0.7	25,465
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,913
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.2
169.2	170.0
199.2	200.0
233.5	234.4
274.1	275.0
321.7	322.7
376.8	377.8
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
848.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:46:35 24 HR SCS Return Freq: 10 years

Pond File: b:2348MP .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:POOUT010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	------	15.3	15.3	0.00	8.00
666.0	5.00	10.0	25.0	25.3	0.11	8.29
672.0	6.00	11.0	35.6	36.0	0.23	8.59
678.0	6.00	12.0	46.8	47.6	0.36	8.89
684.0	7.00	13.0	59.0	59.8	0.44	9.20
690.0	8.00	15.0	72.9	74.0	0.51	9.55
696.0	9.00	17.0	88.8	89.9	0.58	9.92
702.0	15.00	24.0	111.6	112.8	0.60	10.42
708.0	21.00	36.0	146.1	147.6	0.72	11.10
714.0	27.00	48.0	192.5	194.1	0.80	11.90
720.0	55.00	82.0	272.7	274.5	0.90	12.99
726.0	106.00	161.0	431.6	433.7	1.09	14.45
732.0	162.00	268.0	685.1	699.6	7.23	16.17
738.0	163.00	325.0	850.4	1010.1	79.85	17.39
744.0	111.00	274.0	905.0	1124.4	109.71	17.77
750.0	69.00	180.0	884.9	1085.0	100.03	17.64
756.0	48.00	117.0	847.1	1001.9	77.39	17.36
762.0	36.00	84.0	818.9	931.1	56.11	17.13
768.0	28.00	64.0	798.1	882.9	42.39	16.96
774.0	24.00	52.0	779.7	850.1	35.19	16.83
780.0	20.00	44.0	764.9	823.7	29.39	16.72
786.0	18.00	38.0	753.3	802.9	24.83	16.64
792.0	16.00	34.0	744.5	787.3	21.39	16.58
798.0	15.00	31.0	737.9	775.5	18.80	16.53
804.0	14.00	29.0	732.8	766.9	17.04	16.49
810.0	14.00	28.0	728.5	760.8	16.16	16.46
816.0	13.00	27.0	724.8	755.5	15.38	16.44
822.0	12.00	25.0	720.7	749.8	14.54	16.41
828.0	11.00	23.0	716.4	743.7	13.66	16.38
834.0	10.00	21.0	711.9	737.4	12.74	16.35
840.0	10.00	20.0	708.0	731.9	11.94	16.32
846.0	10.00	20.0	705.3	728.0	11.38	16.30
852.0	9.00	19.0	702.6	724.3	10.83	16.29
858.0	9.00	18.0	700.0	720.6	10.30	16.27
864.0	9.00	18.0	698.2	718.0	9.92	16.26
870.0	8.00	17.0	696.2	715.2	9.51	16.24
876.0	8.00	16.0	694.0	712.2	9.07	16.23
882.0	8.00	16.0	692.5	710.0	8.76	16.22
888.0	8.00	16.0	691.4	708.5	8.54	16.21
894.0	8.00	16.0	690.7	707.4	8.38	16.20
900.0	8.00	16.0	690.1	706.7	8.27	16.20
906.0	8.00	16.0	689.8	706.1	8.19	16.20
912.0	8.00	16.0	689.5	705.8	8.14	16.20
918.0	7.00	15.0	688.6	704.5	7.95	16.19
924.0	7.00	14.0	687.2	702.6	7.67	16.18

EXECUTED: 10-20-1994 17:46:35 24 HR SCS Return Freq: 10 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:POOUT010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	686.3	701.2	7.48	16.17
936.0	7.00	14.0	685.6	700.3	7.34	16.17
942.0	7.00	14.0	685.1	699.6	7.24	16.17
948.0	6.00	13.0	684.1	698.1	7.02	16.16
954.0	6.00	12.0	682.6	696.1	6.73	16.15
960.0	6.00	12.0	681.6	694.6	6.51	16.14
966.0	6.00	12.0	680.9	693.6	6.36	16.14
972.0	6.00	12.0	680.3	692.9	6.26	16.13
978.0	5.00	11.0	679.3	691.3	6.04	16.13
984.0	5.00	10.0	677.8	689.3	5.74	16.12
990.0	5.00	10.0	676.8	687.8	5.52	16.11
996.0	5.00	10.0	676.0	686.8	5.37	16.10
1002.0	5.00	10.0	675.5	686.0	5.26	16.10
1008.0	5.00	10.0	675.1	685.5	5.19	16.10
1014.0	5.00	10.0	674.9	685.1	5.13	16.10
1020.0	5.00	10.0	674.7	684.9	5.09	16.10
1026.0	5.00	10.0	674.5	684.7	5.07	16.09
1032.0	5.00	10.0	674.5	684.5	5.05	16.09
1038.0	5.00	10.0	674.4	684.5	5.03	16.09
1044.0	5.00	10.0	674.3	684.4	5.02	16.09
1050.0	5.00	10.0	674.3	684.3	5.02	16.09
1056.0	5.00	10.0	674.3	684.3	5.01	16.09
1062.0	5.00	10.0	674.3	684.3	5.01	16.09
1068.0	4.00	9.0	673.5	683.3	4.86	16.09
1074.0	4.00	8.0	672.3	681.5	4.61	16.08
1080.0	4.00	8.0	671.5	680.3	4.43	16.07
1086.0	4.00	8.0	670.8	679.5	4.31	16.07
1092.0	4.00	8.0	670.4	678.8	4.22	16.07
1098.0	4.00	8.0	670.1	678.4	4.15	16.06
1104.0	4.00	8.0	669.9	678.1	4.11	16.06
1110.0	4.00	8.0	669.7	677.9	4.08	16.06
1116.0	4.00	8.0	669.6	677.7	4.05	16.06
1122.0	4.00	8.0	669.5	677.6	4.04	16.06
1128.0	4.00	8.0	669.5	677.5	4.03	16.06
1134.0	4.00	8.0	669.5	677.5	4.02	16.06
1140.0	4.00	8.0	669.4	677.5	4.01	16.06
1146.0	4.00	8.0	669.4	677.4	4.01	16.06
1152.0	4.00	8.0	669.4	677.4	4.01	16.06
1158.0	4.00	8.0	669.4	677.4	4.00	16.06
1164.0	4.00	8.0	669.4	677.4	4.00	16.06
1170.0	4.00	8.0	669.4	677.4	4.00	16.06
1176.0	3.00	7.0	668.7	676.4	3.86	16.05
1182.0	3.00	6.0	667.4	674.7	3.61	16.05
1188.0	3.00	6.0	666.6	673.4	3.43	16.04
1194.0	3.00	6.0	666.0	672.6	3.30	16.04
1200.0	3.00	6.0	665.5	672.0	3.22	16.03

EXECUTED: 10-20-1994 17:46:35 24 HR SCS Return Freq: 10 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:POOUT010.HYD

INFLOW HYDROGRAPH — ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	665.2	671.5	3.15	16.03
1212.0	3.00	6.0	665.0	671.2	3.11	16.03
1218.0	3.00	6.0	664.9	671.0	3.08	16.03
1224.0	3.00	6.0	664.8	670.9	3.05	16.03
1230.0	3.00	6.0	664.7	670.8	3.04	16.03
1236.0	3.00	6.0	664.6	670.7	3.03	16.03
1242.0	3.00	6.0	664.6	670.6	3.02	16.03
1248.0	3.00	6.0	664.6	670.6	3.01	16.03
1254.0	3.00	6.0	664.5	670.6	3.01	16.03
1260.0	3.00	6.0	664.5	670.5	3.01	16.03
1266.0	3.00	6.0	664.5	670.5	3.00	16.03
1272.0	3.00	6.0	664.5	670.5	3.00	16.03
1278.0	3.00	6.0	664.5	670.5	3.00	16.03
1284.0	3.00	6.0	664.5	670.5	3.00	16.03
1290.0	3.00	6.0	664.5	670.5	3.00	16.03
1296.0	3.00	6.0	664.5	670.5	3.00	16.03
1302.0	3.00	6.0	664.5	670.5	3.00	16.03
1308.0	3.00	6.0	664.5	670.5	3.00	16.03
1314.0	3.00	6.0	664.5	670.5	3.00	16.03
1320.0	3.00	6.0	664.5	670.5	3.00	16.03
1326.0	3.00	6.0	664.5	670.5	3.00	16.03
1332.0	3.00	6.0	664.5	670.5	3.00	16.03
1338.0	3.00	6.0	664.5	670.5	3.00	16.03
1344.0	3.00	6.0	664.5	670.5	3.00	16.03
1350.0	3.00	6.0	664.5	670.5	3.00	16.03
1356.0	3.00	6.0	664.5	670.5	3.00	16.03
1362.0	2.00	5.0	663.8	669.5	2.85	16.02
1368.0	2.00	4.0	662.6	667.8	2.61	16.01
1374.0	2.00	4.0	661.7	666.6	2.43	16.01
1380.0	2.00	4.0	661.1	665.7	2.30	16.00
1386.0	2.00	4.0	660.7	665.1	2.22	16.00
1392.0	2.00	4.0	660.3	664.7	2.20	16.00
1398.0	2.00	4.0	659.9	664.3	2.20	16.00
1404.0	2.00	4.0	659.5	663.9	2.20	15.99
1410.0	2.00	4.0	659.1	663.5	2.20	15.99
1416.0	2.00	4.0	658.7	663.1	2.20	15.99
1422.0	2.00	4.0	658.3	662.7	2.19	15.99
1428.0	2.00	4.0	657.9	662.3	2.19	15.98
1434.0	2.00	4.0	657.5	661.9	2.19	15.98
1440.0	2.00	4.0	657.2	661.5	2.19	15.98
1446.0	1.00	3.0	655.8	660.2	2.19	15.97
1452.0	1.00	2.0	653.4	657.8	2.18	15.96
1458.0	1.00	2.0	651.1	655.4	2.18	15.94
1464.0	1.00	2.0	648.7	653.1	2.17	15.93
1470.0	1.00	2.0	646.4	650.7	2.16	15.91
1476.0	1.00	2.0	644.1	648.4	2.16	15.90

EXECUTED: 10-20-1994 17:46:35 24 HR SCS Return Freq: 10 years

Pond File: b:2348MP .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:POOUT010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	641.8	646.1	2.15	15.88
1488.0	1.00	2.0	639.5	643.8	2.15	15.87
1494.0	1.00	2.0	637.2	641.5	2.14	15.86
1500.0	1.00	2.0	634.9	639.2	2.14	15.84
1506.0	1.00	2.0	632.6	636.9	2.13	15.83
1512.0	1.00	2.0	630.4	634.6	2.13	15.81
1518.0	1.00	2.0	628.2	632.4	2.12	15.80
1524.0	0.00	1.0	624.9	629.2	2.11	15.78
1530.0	0.00	0.0	620.7	624.9	2.10	15.75
1536.0	0.00	0.0	616.5	620.7	2.09	15.73
1542.0	0.00	0.0	612.4	616.5	2.08	15.70
1548.0	0.00	0.0	608.2	612.4	2.07	15.68
1554.0	0.00	0.0	604.1	608.2	2.06	15.65

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:POOUT010.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 163.00 cfs
Peak Outflow = 109.71 cfs
Peak Elevation = 17.77 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 179,894 cu-ft

Total Storage in Pond = 182,640 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:49:22 24 HR SCS Return Freq: 25 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
*  ROUTING THRU BMP AS A SILT BASIN *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN025.HYD
Rating Table file: b:234BMP .PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,864
9.00	0.4	9,222
9.50	0.5	12,831
10.00	0.6	16,698
10.50	0.6	20,887
11.00	0.7	25,465
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,913
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.2
169.8	170.0
199.2	200.0
233.5	234.4
274.1	275.0
321.7	322.7
376.8	377.9
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
848.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:49:22 24 HR SCS Return Freq: 25 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	------	15.3	15.31	0.00	8.00
666.0	6.00	11.0	26.0	26.31	0.13	8.31
672.0	6.00	12.0	37.5	38.01	0.26	8.64
678.0	7.00	13.0	49.7	50.51	0.39	8.97
684.0	8.00	15.0	63.8	64.71	0.46	9.32
690.0	10.00	18.0	80.7	81.81	0.55	9.73
696.0	11.00	21.0	100.5	101.71	0.60	10.18
702.0	18.00	29.0	128.2	129.51	0.65	10.75
708.0	24.00	42.0	168.6	170.21	0.80	11.50
714.0	31.00	55.0	221.9	223.61	0.87	12.34
720.0	62.00	93.0	312.9	314.91	0.98	13.42
726.0	119.00	181.0	490.9	493.91	1.49	14.89
732.0	182.00	301.0	747.1	791.91	22.40	16.59
738.0	183.00	365.0	898.7	1112.11	106.70	17.73
744.0	125.00	308.0	946.1	1206.71	130.33	18.04
750.0	78.00	203.0	917.5	1149.11	115.78	17.85
756.0	54.00	132.0	866.9	1049.51	91.32	17.52
762.0	40.00	94.0	830.8	960.91	65.06	17.23
768.0	31.00	71.0	807.2	901.81	47.29	17.03
774.0	26.00	57.0	787.6	864.21	38.29	16.89
780.0	22.00	48.0	771.6	835.61	32.00	16.77
786.0	20.00	42.0	759.3	813.61	27.17	16.68
792.0	18.00	38.0	750.1	797.31	23.58	16.62
798.0	17.00	35.0	743.3	785.11	20.91	16.57
804.0	16.00	33.0	738.4	776.31	18.97	16.53
810.0	15.00	31.0	734.5	769.41	17.45	16.50
816.0	14.00	29.0	730.4	763.51	16.54	16.47
822.0	14.00	28.0	726.8	758.41	15.80	16.45
828.0	13.00	27.0	723.5	753.81	15.13	16.43
834.0	12.00	25.0	719.8	748.51	14.36	16.40
840.0	12.00	24.0	716.5	743.81	13.68	16.38
846.0	11.00	23.0	713.4	739.51	13.04	16.36
852.0	11.00	22.0	710.5	735.41	12.45	16.34
858.0	10.00	21.0	707.7	731.51	11.88	16.32
864.0	10.00	20.0	705.0	727.71	11.33	16.30
870.0	9.00	19.0	702.5	724.01	10.80	16.28
876.0	9.00	18.0	699.9	720.51	10.28	16.27
882.0	9.00	18.0	698.1	717.91	9.90	16.26
888.0	9.00	18.0	696.8	716.11	9.64	16.25
894.0	9.00	18.0	695.9	714.81	9.45	16.24
900.0	9.00	18.0	695.3	713.91	9.32	16.24
906.0	9.00	18.0	694.8	713.31	9.23	16.23
912.0	9.00	18.0	694.5	712.81	9.16	16.23
918.0	8.00	17.0	693.5	711.51	8.97	16.22
924.0	8.00	16.0	692.2	709.51	8.69	16.21

EXECUTED: 10-20-1994 17:49:22 24 HR SCS Return Freq: 25 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	691.2	708.2	8.49	16.21
936.0	8.00	16.0	690.5	707.2	8.35	16.20
942.0	8.00	16.0	690.0	706.5	8.24	16.20
948.0	7.00	15.0	689.0	705.0	8.03	16.19
954.0	7.00	14.0	687.5	703.0	7.73	16.18
960.0	7.00	14.0	686.5	701.5	7.52	16.18
966.0	7.00	14.0	685.7	700.5	7.37	16.17
972.0	7.00	14.0	685.2	699.7	7.26	16.17
978.0	6.00	13.0	684.1	698.2	7.04	16.16
984.0	6.00	12.0	682.7	696.1	6.74	16.15
990.0	6.00	12.0	681.6	694.7	6.52	16.14
996.0	6.00	12.0	680.9	693.6	6.37	16.14
1002.0	6.00	12.0	680.4	692.9	6.26	16.13
1008.0	6.00	12.0	680.0	692.4	6.19	16.13
1014.0	6.00	12.0	679.7	692.0	6.13	16.13
1020.0	6.00	12.0	679.5	691.7	6.09	16.13
1026.0	6.00	12.0	679.4	691.5	6.07	16.13
1032.0	6.00	12.0	679.3	691.4	6.05	16.13
1038.0	5.00	11.0	678.5	690.3	5.89	16.12
1044.0	5.00	10.0	677.3	688.5	5.63	16.11
1050.0	5.00	10.0	676.4	687.3	5.45	16.11
1056.0	5.00	10.0	675.8	686.4	5.32	16.10
1062.0	5.00	10.0	675.3	685.8	5.22	16.10
1068.0	5.00	10.0	675.0	685.3	5.16	16.10
1074.0	5.00	10.0	674.8	685.0	5.11	16.10
1080.0	5.00	10.0	674.6	684.8	5.08	16.10
1086.0	5.00	10.0	674.5	684.6	5.06	16.09
1092.0	5.00	10.0	674.4	684.5	5.04	16.09
1098.0	5.00	10.0	674.4	684.4	5.03	16.09
1104.0	5.00	10.0	674.3	684.4	5.02	16.09
1110.0	4.00	9.0	673.6	683.3	4.87	16.09
1116.0	4.00	8.0	672.4	681.6	4.62	16.08
1122.0	4.00	8.0	671.5	680.4	4.44	16.07
1128.0	4.00	8.0	670.9	679.5	4.31	16.07
1134.0	4.00	8.0	670.4	678.9	4.22	16.07
1140.0	4.00	8.0	670.1	678.4	4.16	16.06
1146.0	4.00	8.0	669.9	678.1	4.11	16.06
1152.0	4.00	8.0	669.7	677.9	4.08	16.06
1158.0	4.00	8.0	669.6	677.7	4.06	16.06
1164.0	4.00	8.0	669.5	677.6	4.04	16.06
1170.0	4.00	8.0	669.5	677.5	4.03	16.06
1176.0	4.00	8.0	669.5	677.5	4.02	16.06
1182.0	4.00	8.0	669.4	677.5	4.01	16.06
1188.0	4.00	8.0	669.4	677.4	4.01	16.06
1194.0	4.00	8.0	669.4	677.4	4.01	16.06
1200.0	4.00	8.0	669.4	677.4	4.00	16.06

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 17:49:22 24 HR SCS Return Freq: 25 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	669.4	677.4	4.00	16.06
1212.0	4.00	8.0	669.4	677.4	4.00	16.06
1218.0	4.00	8.0	669.4	677.4	4.00	16.06
1224.0	4.00	8.0	669.4	677.4	4.00	16.06
1230.0	4.00	8.0	669.4	677.4	4.00	16.06
1236.0	4.00	8.0	669.4	677.4	4.00	16.06
1242.0	4.00	8.0	669.4	677.4	4.00	16.06
1248.0	4.00	8.0	669.4	677.4	4.00	16.06
1254.0	4.00	8.0	669.4	677.4	4.00	16.06
1260.0	4.00	8.0	669.4	677.4	4.00	16.06
1266.0	3.00	7.0	668.6	676.4	3.85	16.05
1272.0	3.00	6.0	667.4	674.6	3.61	16.05
1278.0	3.00	6.0	666.6	673.4	3.43	16.04
1284.0	3.00	6.0	666.0	672.6	3.30	16.04
1290.0	3.00	6.0	665.5	672.0	3.22	16.03
1296.0	3.00	6.0	665.2	671.5	3.15	16.03
1302.0	3.00	6.0	665.0	671.2	3.11	16.03
1308.0	3.00	6.0	664.9	671.0	3.08	16.03
1314.0	3.00	6.0	664.8	670.9	3.05	16.03
1320.0	3.00	6.0	664.7	670.8	3.04	16.03
1326.0	3.00	6.0	664.6	670.7	3.03	16.03
1332.0	3.00	6.0	664.6	670.6	3.02	16.03
1338.0	3.00	6.0	664.6	670.6	3.01	16.03
1344.0	3.00	6.0	664.5	670.6	3.01	16.03
1350.0	3.00	6.0	664.5	670.5	3.01	16.03
1356.0	3.00	6.0	664.5	670.5	3.00	16.03
1362.0	2.00	5.0	663.8	669.5	2.86	16.02
1368.0	2.00	4.0	662.6	667.8	2.61	16.01
1374.0	2.00	4.0	661.7	666.6	2.43	16.01
1380.0	2.00	4.0	661.1	665.7	2.31	16.00
1386.0	2.00	4.0	660.7	665.1	2.22	16.00
1392.0	2.00	4.0	660.3	664.7	2.20	16.00
1398.0	2.00	4.0	659.9	664.3	2.20	16.00
1404.0	2.00	4.0	659.5	663.9	2.20	15.99
1410.0	2.00	4.0	659.1	663.5	2.20	15.99
1416.0	2.00	4.0	658.7	663.1	2.20	15.99
1422.0	2.00	4.0	658.3	662.7	2.19	15.99
1428.0	2.00	4.0	657.9	662.3	2.19	15.98
1434.0	2.00	4.0	657.5	661.9	2.19	15.98
1440.0	2.00	4.0	657.2	661.5	2.19	15.98
1446.0	1.00	3.0	655.8	660.2	2.19	15.97
1452.0	1.00	2.0	653.4	657.8	2.18	15.96
1458.0	1.00	2.0	651.1	655.4	2.18	15.94
1464.0	1.00	2.0	648.7	653.1	2.17	15.93
1470.0	1.00	2.0	646.4	650.7	2.16	15.91
1476.0	1.00	2.0	644.1	648.4	2.16	15.90

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 17:49:22 24 HR SCS Return Freq: 25 years

Pond File: b:2348MP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	641.8	646.1	2.15	15.88
1488.0	1.00	2.0	639.5	643.8	2.15	15.87
1494.0	1.00	2.0	637.2	641.5	2.14	15.86
1500.0	1.00	2.0	634.9	639.2	2.14	15.84
1506.0	1.00	2.0	632.7	636.9	2.13	15.83
1512.0	1.00	2.0	630.4	634.7	2.13	15.81
1518.0	1.00	2.0	628.2	632.4	2.12	15.80
1524.0	0.00	1.0	624.9	629.2	2.11	15.78
1530.0	0.00	0.0	620.7	624.9	2.10	15.75
1536.0	0.00	0.0	616.6	620.7	2.09	15.73
1542.0	0.00	0.0	612.4	616.6	2.08	15.70
1548.0	0.00	0.0	608.2	612.4	2.07	15.68
1554.0	0.00	0.0	604.1	608.2	2.06	15.65

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 183.00 cfs
Peak Outflow = 130.33 cfs
Peak Elevation = 18.04 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	2,746 cu-ft
Peak Storage From Storm	=	191,003 cu-ft
Total Storage in Pond	=	193,749 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:52:09 24 HR SCS Return Freq: 100 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
*  ROUTING THRU BMP AS A SILT BASIN *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN100.HYD
Rating Table file: b:234BMP .PND

-----INITIAL CONDITIONS-----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,864
9.00	0.4	9,222
9.50	0.5	12,831
10.00	0.6	16,698
10.50	0.6	20,887
11.00	0.7	25,465
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,913
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.3
169.2	170.0
199.2	200.0
232.5	234.4
274.1	275.0
321.7	322.7
376.8	377.8
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
848.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:52:09 24 HR SCS Return Freq: 100 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:POOUT100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	-----	15.3	15.3	0.00	8.00
666.0	8.00	15.0	29.9	30.3	0.17	8.43
672.0	9.00	17.0	46.2	46.9	0.35	8.87
678.0	10.00	19.0	64.3	65.2	0.47	9.34
684.0	12.00	22.0	85.1	86.3	0.57	9.84
690.0	13.00	25.0	108.9	110.1	0.60	10.36
696.0	15.00	28.0	135.6	136.9	0.68	10.90
702.0	25.00	40.0	174.0	175.6	0.80	11.59
708.0	24.00	59.0	231.2	233.0	0.90	12.48
714.0	44.00	78.0	307.3	309.2	0.97	13.36
720.0	87.00	131.0	436.1	438.3	1.10	14.49
726.0	166.00	253.0	677.6	689.1	5.70	16.12
732.0	251.00	417.0	889.6	1094.6	102.41	17.67
738.0	251.00	502.0	1028.3	1391.8	181.74	18.58
744.0	171.00	422.0	1052.1	1450.3	199.11	18.73
750.0	105.00	276.0	1000.9	1328.1	163.62	18.40
756.0	73.00	178.0	932.7	1178.9	123.11	17.95
762.0	54.00	127.0	872.0	1059.7	93.82	17.56
768.0	42.00	96.0	832.6	968.0	67.21	17.25
774.0	36.00	78.0	811.1	911.6	50.25	17.06
780.0	30.00	66.0	794.9	877.1	41.12	16.94
786.0	28.00	58.0	781.3	852.9	35.80	16.84
792.0	25.00	53.0	770.9	834.3	31.71	16.76
798.0	23.00	48.0	762.2	818.9	28.32	16.70
804.0	21.00	44.0	755.1	806.2	25.54	16.65
810.0	20.00	41.0	749.5	796.1	23.33	16.61
816.0	19.00	39.0	745.2	788.5	21.65	16.58
822.0	18.00	37.0	741.7	782.2	20.26	16.55
828.0	17.00	35.0	738.6	776.7	19.05	16.53
834.0	16.00	33.0	735.7	771.6	17.93	16.51
840.0	16.00	32.0	733.4	767.7	17.15	16.50
846.0	15.00	31.0	731.0	764.4	16.67	16.48
852.0	15.00	30.0	728.7	761.0	16.19	16.46
858.0	14.00	29.0	726.3	757.7	15.69	16.45
864.0	13.00	27.0	723.2	753.3	15.06	16.43
870.0	13.00	26.0	720.3	749.2	14.46	16.41
876.0	12.00	25.0	717.5	745.3	13.89	16.39
882.0	12.00	24.0	714.8	741.5	13.34	16.37
888.0	12.00	24.0	712.9	738.8	12.95	16.36
894.0	12.00	24.0	711.6	736.9	12.67	16.35
900.0	12.00	24.0	710.6	735.6	12.48	16.34
906.0	12.00	24.0	709.9	734.6	12.34	16.34
912.0	11.00	23.0	708.8	732.9	12.09	16.33
918.0	11.00	22.0	707.2	730.8	11.78	16.32
924.0	10.00	21.0	705.4	728.2	11.40	16.30

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:POOUT100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	703.4	725.4	10.99	16.29
936.0	10.00	20.0	702.0	723.4	10.71	16.28
942.0	10.00	20.0	701.0	722.0	10.50	16.27
948.0	9.00	19.0	699.6	720.0	10.21	16.27
954.0	9.00	18.0	697.9	717.6	9.86	16.25
960.0	9.00	18.0	696.6	715.9	9.61	16.25
966.0	9.00	18.0	695.8	714.6	9.43	16.24
972.0	9.00	18.0	695.2	713.8	9.31	16.24
978.0	8.00	17.0	694.0	712.2	9.07	16.23
984.0	8.00	16.0	692.5	710.0	8.76	16.22
990.0	8.00	16.0	691.4	708.5	8.54	16.21
996.0	8.00	16.0	690.7	707.4	8.38	16.20
1002.0	8.00	16.0	690.1	706.7	8.27	16.20
1008.0	7.00	15.0	689.1	705.1	8.05	16.19
1014.0	7.00	14.0	687.6	703.1	7.74	16.18
1020.0	7.00	14.0	686.5	701.6	7.53	16.18
1026.0	7.00	14.0	685.8	700.5	7.37	16.17
1032.0	7.00	14.0	685.2	699.8	7.26	16.17
1038.0	7.00	14.0	684.9	699.2	7.19	16.17
1044.0	7.00	14.0	684.6	698.9	7.13	16.16
1050.0	7.00	14.0	684.4	698.6	7.09	16.16
1056.0	7.00	14.0	684.3	698.4	7.07	16.16
1062.0	7.00	14.0	684.2	698.3	7.05	16.16
1068.0	7.00	14.0	684.1	698.2	7.03	16.16
1074.0	7.00	14.0	684.1	698.1	7.02	16.16
1080.0	7.00	14.0	684.0	698.1	7.02	16.16
1086.0	7.00	14.0	684.0	698.0	7.01	16.16
1092.0	7.00	14.0	684.0	698.0	7.01	16.16
1098.0	7.00	14.0	684.0	698.0	7.01	16.16
1104.0	7.00	14.0	684.0	698.0	7.00	16.16
1110.0	6.00	13.0	683.3	697.0	6.86	16.15
1116.0	6.00	12.0	682.0	695.3	6.61	16.15
1122.0	6.00	12.0	681.2	694.0	6.43	16.14
1128.0	6.00	12.0	680.6	693.2	6.31	16.14
1134.0	6.00	12.0	680.1	692.6	6.22	16.13
1140.0	6.00	12.0	679.8	692.1	6.15	16.13
1146.0	6.00	12.0	679.6	691.8	6.11	16.13
1152.0	6.00	12.0	679.5	691.6	6.08	16.13
1158.0	6.00	12.0	679.4	691.5	6.05	16.13
1164.0	6.00	12.0	679.3	691.4	6.04	16.13
1170.0	6.00	12.0	679.2	691.3	6.03	16.13
1176.0	5.00	11.0	678.5	690.2	5.87	16.12
1182.0	5.00	10.0	677.2	688.5	5.62	16.11
1188.0	5.00	10.0	676.4	687.2	5.44	16.11
1194.0	5.00	10.0	675.7	686.4	5.31	16.10
1200.0	5.00	10.0	675.3	685.7	5.22	16.10

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 17:52:09 24 HR SCS Return Freq: 100 years

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:POOUT100.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
1206.0	5.00
1212.0	5.00
1218.0	5.00
1224.0	5.00
1230.0	5.00
1236.0	5.00
1242.0	5.00
1248.0	5.00
1254.0	5.00
1260.0	4.00
1266.0	4.00
1272.0	4.00
1278.0	4.00
1284.0	4.00
1290.0	4.00
1296.0	4.00
1302.0	4.00
1308.0	4.00
1314.0	4.00
1320.0	4.00
1326.0	4.00
1332.0	4.00
1338.0	4.00
1344.0	4.00
1350.0	4.00
1356.0	3.00
1362.0	3.00
1368.0	3.00
1374.0	3.00
1380.0	3.00
1386.0	3.00
1392.0	3.00
1398.0	3.00
1404.0	3.00
1410.0	2.00
1416.0	2.00
1422.0	2.00
1428.0	2.00
1434.0	2.00
1440.0	2.00
1446.0	2.00
1452.0	2.00
1458.0	2.00
1464.0	2.00
1470.0	2.00
1476.0	1.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
10.0	675.0	685.3	5.16	16.10
10.0	674.8	685.0	5.11	16.10
10.0	674.6	684.8	5.08	16.10
10.0	674.5	684.6	5.06	16.09
10.0	674.4	684.5	5.04	16.09
10.0	674.4	684.4	5.03	16.09
10.0	674.3	684.4	5.02	16.09
10.0	674.3	684.3	5.01	16.09
10.0	674.3	684.3	5.01	16.09
9.0	673.5	683.3	4.86	16.09
8.0	672.3	681.5	4.61	16.08
8.0	671.5	680.3	4.43	16.07
8.0	670.8	679.5	4.31	16.07
8.0	670.4	678.8	4.22	16.07
8.0	670.1	678.4	4.15	16.06
8.0	669.9	678.1	4.11	16.06
8.0	669.7	677.9	4.08	16.06
8.0	669.6	677.7	4.05	16.06
8.0	669.5	677.6	4.04	16.06
8.0	669.5	677.5	4.03	16.06
8.0	669.5	677.5	4.02	16.06
8.0	669.4	677.5	4.01	16.06
8.0	669.4	677.4	4.01	16.06
8.0	669.4	677.4	4.01	16.06
8.0	669.4	677.4	4.00	16.06
7.0	668.7	676.4	3.86	16.05
6.0	667.4	674.7	3.61	16.05
6.0	666.6	673.4	3.43	16.04
6.0	666.0	672.6	3.31	16.04
6.0	665.5	672.0	3.22	16.03
6.0	665.2	671.5	3.15	16.03
6.0	665.0	671.2	3.11	16.03
6.0	664.9	671.0	3.08	16.03
6.0	664.8	670.9	3.05	16.03
5.0	664.0	669.8	2.89	16.02
4.0	662.7	668.0	2.63	16.01
4.0	661.8	666.7	2.45	16.01
4.0	661.2	665.8	2.32	16.00
4.0	660.7	665.2	2.23	16.00
4.0	660.3	664.7	2.20	16.00
4.0	659.9	664.3	2.20	16.00
4.0	659.5	663.9	2.20	15.99
4.0	659.1	663.5	2.20	15.99
4.0	658.7	663.1	2.20	15.99
4.0	658.4	662.7	2.19	15.99
3.0	657.0	661.4	2.19	15.98

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:POOUT100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	654.6	659.0	2.19	15.96
1488.0	1.00	2.0	652.2	656.6	2.18	15.95
1494.0	1.00	2.0	649.9	654.2	2.17	15.93
1500.0	1.00	2.0	647.6	651.9	2.17	15.92
1506.0	1.00	2.0	645.2	649.6	2.16	15.91
1512.0	1.00	2.0	642.9	647.2	2.16	15.89
1518.0	1.00	2.0	640.6	644.9	2.15	15.88
1524.0	1.00	2.0	638.3	642.6	2.15	15.86
1530.0	0.00	1.0	635.1	639.3	2.14	15.84
1536.0	0.00	0.0	630.5	635.1	2.13	15.82
1542.0	0.00	0.0	626.6	630.5	2.12	15.79
1548.0	0.00	0.0	622.4	626.6	2.11	15.76
1554.0	0.00	0.0	618.2	622.4	2.10	15.74

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:POOUT100.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 251.00 cfs
Peak Outflow = 199.11 cfs
Peak Elevation = 18.73 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 222,477 cu-ft

Total Storage in Pond = 225,223 cu-ft

Warning: Inflow hydrograph truncated on left side.

POND-2 Version: 5.17
S/N: 1295130250

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
BMP VOLUMNS

CALCULATED 10-20-1994 18:09:40
DISK FILE: b:234BMP .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
7.50	2.00	5,000	0	0	0
8.00	2.40	6,000	16,477	2,746	2,746
10.00	3.20	8,000	20,928	13,952	16,698
12.00	4.50	11,250	28,737	19,158	35,856
14.00	8.50	21,250	47,962	31,974	67,831
16.00	12.20	30,500	77,208	51,472	119,303
18.00	17.00	42,500	109,003	72,669	191,972
20.00	22.90	57,250	149,077	99,384	291,356
Elevations With Areas Interpolated From The Closest Two Planimeter Readings					
11.40	------	10,217	27,258	12,720	29,419
13.00	------	15,856	40,462	13,487	49,343
14.50	------	23,406	66,958	11,160	78,990
15.00	------	25,667	70,271	23,424	91,254
17.00	------	36,252	100,003	33,334	152,637
19.00	------	49,601	138,014	46,005	237,977

IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
7.50	0.0	
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	1.6	1 +2
15.50	2.0	1 +2
16.00	2.2	1 +2 +3
16.50	17.3	1 +2 +3
17.00	44.5	1 +2 +3 +4
17.50	89.6	1 +2 +3 +4
18.00	126.6	1 +2 +3 +4
18.50	173.0	1 +2 +3 +4
19.00	229.0	1 +2 +3 +4
19.50	0.0	

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outlet Structure File: b:234BMP .STR
Planimeter Input File: b:234BMP .VOL
Rating Table Output File: b:234BMP .PND

Min. Elev.(ft) = 7.5 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
ORIFICE	1		->	1
ORIFICE	2		->	2
STAND PIPE	3		->	3
WEIR-XY	4		->	4

Outflow rating table summary was stored in file:
b:234BMP .PND

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873 ✓ -4"ϕ

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	14.501
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	14.501
Datum elev.(ft) ?	14.75
Orifice area (sq ft)?	.1963 6"φ

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 3 <<<<<<
(Input Data)

STAND PIPE
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	16.0
E2 elev.(ft)?	19.5
Crest elev.(ft)?	16.0
Diameter (ft)?	4
Weir coefficient?	3.33
Orifice coefficient?	.6
Start transition elev.(ft) 0 ?	
Transition height (ft)?	

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 4 <<<<<<
(Input Data)

WEIR-XY
Weir - Defined by X, Y Coordinates
E1 (ft) =17.0 E2 (ft) =19.5

X dist.(ft)	Y elev.(ft)
0	19
4	17
14	17
18	19

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
7.50	0.0	E < E1=8.001
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.32
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.
H (ft) = Table elev. - Datum elev. (8.17 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #2
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
7.50	0.0	E < E1=14.501
8.00	0.0	E < E1=14.501
8.50	0.0	E < E1=14.501
9.00	0.0	E < E1=14.501
9.50	0.0	E < E1=14.501
10.00	0.0	E < E1=14.501
10.50	0.0	E < E1=14.501
11.00	0.0	E < E1=14.501
11.50	0.0	E < E1=14.501
12.00	0.0	E < E1=14.501
12.50	0.0	E < E1=14.501
13.00	0.0	E < E1=14.501
13.50	0.0	E < E1=14.501
14.00	0.0	E < E1=14.501
14.50	0.0	E < E1=14.501
15.00	0.5	H =.25
15.50	0.8	H =.750
16.00	1.1	H =1.25
16.50	1.3	H =1.75
17.00	1.4	H =2.25
17.50	1.6	H =2.75
18.00	1.7	H =3.25
18.50	1.8	H =3.75
19.00	1.9	H =4.25
19.50	0.0	E = or > E2=19.5

C = .6 A = .1963 sq.ft.
H (ft) = Table elev. - Datum elev. (14.75 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #3
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
7.50	0.0	E < Inv.El.= 16
8.00	0.0	E < El=16.0
8.50	0.0	E < El=16.0
9.00	0.0	E < El=16.0
9.50	0.0	E < El=16.0
10.00	0.0	E < El=16.0
10.50	0.0	E < El=16.0
11.00	0.0	E < El=16.0
11.50	0.0	E < El=16.0
12.00	0.0	E < El=16.0
12.50	0.0	E < El=16.0
13.00	0.0	E < El=16.0
13.50	0.0	E < El=16.0
14.00	0.0	E < El=16.0
14.50	0.0	E < El=16.0
15.00	0.0	E < El=16.0
15.50	0.0	E < El=16.0
16.00	0.0	Weir: H =0.0
16.50	14.8	Weir: H =.5
17.00	41.8	Weir: H =1.0
17.50	74.1	Orifice: H =1.5
18.00	85.6	Orifice: H =2.0
18.50	95.7	Orifice: H =2.5
19.00	104.8	Orifice: H =3.0
19.50	0.0	E = or > E2=19.5

Weir Cw = 3.33 Weir length = 12.56637 ft
Orifice Co = .6 Orifice area = 12.56637 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev.= 17.44594 ft

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #4
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages	
7.50	0.0	E < Y min= 17	
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < Y min= 17	
15.50	0.0	E < Y min= 17	
16.00	0.0	E < E1=17.0	
16.50	0.0	E < E1=17.0	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

```
*************************************
*                                   *
*              JOINT BMP            *
*        TUTTERS NECK NORTH         *
*         KINGSMILL VILLAGE         *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN002.HYD
Rating Table file: b:BMP234 .PND

-----INITIAL CONDITIONS-----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
8.00	0.0	0	0.0	0.0
8.50	0.2	3,118	17.3	17.5
9.00	0.4	6,476	36.0	36.4
9.50	0.5	10,085	56.0	56.5
10.00	0.6	13,952	77.5	78.1
10.50	0.6	18,141	100.8	101.4
11.00	0.7	22,719	126.2	126.9
11.50	0.8	27,702	153.9	154.7
12.00	0.8	33,110	183.9	184.7
12.50	0.9	39,278	218.2	219.1
13.00	0.9	46,597	258.9	259.8
13.50	1.0	55,167	306.5	307.5
14.00	1.0	65,084	361.6	362.6
14.50	1.1	76,244	423.6	424.7
15.00	9.0	88,508	491.7	500.7
15.50	32.7	101,928	566.3	599.0
16.00	65.3	116,557	647.5	712.8
16.50	83.0	132,505	736.1	819.1
17.00	93.6	149,891	832.7	926.3
17.50	115.7	168,778	937.7	1053.4
18.00	149.7	189,226	1051.3	1201.0
18.50	193.9	211,340	1174.1	1368.0
19.00	248.1	235,231	1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:44:39 24 HR SCS Return Freq: 2 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	-----	0.0	0.0	0.00	8.00
666.0	1.00	2.0	2.0	2.0	0.02	8.06
672.0	2.00	3.0	4.8	5.0	0.06	8.14
678.0	2.00	4.0	8.6	8.8	0.10	8.25
684.0	2.00	4.0	12.4	12.6	0.14	8.36
690.0	2.00	4.0	16.0	16.4	0.19	8.47
696.0	2.00	4.0	19.5	20.0	0.23	8.57
702.0	4.00	6.0	25.0	25.5	0.28	8.71
708.0	5.00	9.0	33.2	34.0	0.37	8.94
714.0	7.00	12.0	44.3	45.2	0.44	9.22
720.0	16.00	23.0	66.2	67.3	0.55	9.75
726.0	36.00	52.0	116.9	118.2	0.67	10.83
732.0	62.00	98.0	213.1	214.9	0.89	12.44
738.0	64.00	126.0	337.1	339.1	1.00	13.79
744.0	46.00	110.0	440.3	447.1	3.43	14.65
750.0	30.00	76.0	490.8	516.3	12.75	15.03
756.0	21.00	51.0	504.0	541.8	18.90	15.21
762.0	16.00	37.0	503.5	541.0	18.71	15.20
768.0	12.00	29.0	499.2	532.5	16.68	15.16
774.0	11.00	24.0	494.3	523.2	14.42	15.11
780.0	9.00	20.0	489.8	514.3	12.29	15.07
786.0	8.00	17.0	485.8	506.8	10.46	15.03
792.0	8.00	16.0	483.3	501.8	9.27	15.01
798.0	8.00	16.0	481.6	499.3	8.85	14.99
804.0	7.00	15.0	479.4	496.6	8.57	14.97
810.0	7.00	14.0	477.0	493.4	8.25	14.95
816.0	6.00	13.0	474.2	490.0	7.88	14.93
822.0	6.00	12.0	471.2	486.2	7.49	14.90
828.0	5.00	11.0	468.1	482.2	7.08	14.88
834.0	5.00	10.0	464.8	478.1	6.65	14.85
840.0	5.00	10.0	462.2	474.8	6.30	14.83
846.0	5.00	10.0	460.1	472.2	6.03	14.81
852.0	4.00	9.0	457.7	469.1	5.71	14.79
858.0	4.00	8.0	454.9	465.7	5.36	14.77
864.0	4.00	8.0	452.8	462.9	5.08	14.75
870.0	4.00	8.0	451.1	460.8	4.85	14.74
876.0	4.00	8.0	449.7	459.1	4.68	14.73
882.0	4.00	8.0	448.7	457.7	4.53	14.72
888.0	4.00	8.0	447.8	456.7	4.42	14.71
894.0	4.00	8.0	447.1	455.8	4.34	14.70
900.0	4.00	8.0	446.6	455.1	4.27	14.70
906.0	4.00	8.0	446.2	454.6	4.21	14.70
912.0	4.00	8.0	445.9	454.2	4.17	14.69
918.0	3.00	7.0	444.8	452.9	4.03	14.69
924.0	3.00	6.0	443.2	450.8	3.81	14.67

EXECUTED: 10-20-1994 14:44:39 24 HR SCS Return Freq: 2 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	441.9	449.2	3.65	14.66
936.0	3.00	6.0	440.9	447.9	3.51	14.65
942.0	3.00	6.0	440.1	446.9	3.40	14.65
948.0	3.00	6.0	439.4	446.1	3.32	14.64
954.0	3.00	6.0	438.9	445.4	3.25	14.64
960.0	3.00	6.0	438.5	444.9	3.20	14.63
966.0	3.00	6.0	438.2	444.5	3.16	14.63
972.0	3.00	6.0	437.9	444.2	3.13	14.63
978.0	3.00	6.0	437.7	443.9	3.10	14.63
984.0	3.00	6.0	437.6	443.7	3.08	14.63
990.0	3.00	6.0	437.4	443.6	3.06	14.62
996.0	3.00	6.0	437.3	443.4	3.05	14.62
1002.0	3.00	6.0	437.3	443.3	3.04	14.62
1008.0	3.00	6.0	437.2	443.3	3.03	14.62
1014.0	3.00	6.0	437.2	443.2	3.02	14.62
1020.0	3.00	6.0	437.1	443.2	3.02	14.62
1026.0	3.00	6.0	437.1	443.1	3.02	14.62
1032.0	3.00	6.0	437.1	443.1	3.01	14.62
1038.0	3.00	5.0	436.2	442.1	2.91	14.61
1044.0	3.00	4.0	434.8	440.2	2.72	14.60
1050.0	2.00	4.0	433.7	438.8	2.57	14.59
1056.0	2.00	4.0	432.8	437.7	2.45	14.59
1062.0	2.00	4.0	432.1	436.8	2.36	14.58
1068.0	2.00	4.0	431.5	436.1	2.28	14.57
1074.0	2.00	4.0	431.0	435.5	2.22	14.57
1080.0	2.00	4.0	430.7	435.0	2.18	14.57
1086.0	2.00	4.0	430.4	434.7	2.14	14.57
1092.0	2.00	4.0	430.2	434.4	2.11	14.56
1098.0	2.00	4.0	430.0	434.2	2.09	14.56
1104.0	2.00	4.0	429.9	434.0	2.07	14.56
1110.0	2.00	4.0	429.8	433.9	2.06	14.56
1116.0	2.00	4.0	429.7	433.8	2.04	14.56
1122.0	2.00	4.0	429.6	433.7	2.03	14.56
1128.0	2.00	4.0	429.6	433.6	2.03	14.56
1134.0	2.00	4.0	429.5	433.6	2.02	14.56
1140.0	2.00	4.0	429.5	433.5	2.02	14.56
1146.0	2.00	4.0	429.4	433.5	2.01	14.56
1152.0	2.00	4.0	429.4	433.4	2.01	14.56
1158.0	2.00	4.0	429.4	433.4	2.01	14.56
1164.0	2.00	4.0	429.4	433.4	2.01	14.56
1170.0	2.00	4.0	429.4	433.4	2.01	14.56
1176.0	2.00	4.0	429.4	433.4	2.00	14.56
1182.0	2.00	4.0	429.4	433.4	2.00	14.56
1188.0	2.00	4.0	429.4	433.4	2.00	14.56
1194.0	2.00	4.0	429.4	433.4	2.00	14.56
1200.0	2.00	4.0	429.4	433.4	2.00	14.56

EXECUTED: 10-20-1994 14:44:39 24 HR SCS Return Freq: 2 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	429.4	433.4	2.00	14.56
1212.0	2.00	4.0	429.3	433.4	2.00	14.56
1218.0	2.00	4.0	429.3	433.3	2.00	14.56
1224.0	2.00	4.0	429.3	433.3	2.00	14.56
1230.0	2.00	4.0	429.3	433.3	2.00	14.56
1236.0	2.00	4.0	429.3	433.3	2.00	14.56
1242.0	2.00	4.0	429.3	433.3	2.00	14.56
1248.0	2.00	4.0	429.3	433.3	2.00	14.56
1254.0	2.00	4.0	429.3	433.3	2.00	14.56
1260.0	2.00	4.0	429.3	433.3	2.00	14.56
1266.0	2.00	4.0	429.3	433.3	2.00	14.56
1272.0	2.00	4.0	429.3	433.3	2.00	14.56
1278.0	2.00	4.0	429.3	433.3	2.00	14.56
1284.0	2.00	4.0	429.3	433.3	2.00	14.56
1290.0	2.00	4.0	429.3	433.3	2.00	14.56
1296.0	2.00	4.0	429.3	433.3	2.00	14.56
1302.0	2.00	4.0	429.3	433.3	2.00	14.56
1308.0	2.00	4.0	429.3	433.3	2.00	14.56
1314.0	2.00	4.0	429.3	433.3	2.00	14.56
1320.0	2.00	4.0	429.3	433.3	2.00	14.56
1326.0	2.00	4.0	429.3	433.3	2.00	14.56
1332.0	2.00	4.0	429.3	433.3	2.00	14.56
1338.0	2.00	4.0	429.3	433.3	2.00	14.56
1344.0	2.00	4.0	429.3	433.3	2.00	14.56
1350.0	2.00	4.0	429.3	433.3	2.00	14.56
1356.0	2.00	4.0	429.3	433.3	2.00	14.56
1362.0	2.00	4.0	429.3	433.3	2.00	14.56
1368.0	2.00	4.0	429.3	433.3	2.00	14.56
1374.0	2.00	4.0	429.3	433.3	2.00	14.56
1380.0	2.00	4.0	429.3	433.3	2.00	14.56
1386.0	1.00	3.0	428.5	432.3	1.90	14.55
1392.0	1.00	2.0	427.1	430.5	1.71	14.54
1398.0	1.00	2.0	426.0	429.1	1.56	14.53
1404.0	1.00	2.0	425.1	428.0	1.45	14.52
1410.0	1.00	2.0	424.4	427.1	1.35	14.52
1416.0	1.00	2.0	423.8	426.4	1.28	14.51
1422.0	1.00	2.0	423.4	425.8	1.22	14.51
1428.0	1.00	2.0	423.1	425.4	1.18	14.50
1434.0	1.00	2.0	422.8	425.1	1.14	14.50
1440.0	1.00	2.0	422.6	424.8	1.11	14.50
1446.0	1.00	2.0	422.4	424.6	1.10	14.50
1452.0	1.00	2.0	422.2	424.4	1.10	14.50
1458.0	1.00	2.0	422.0	424.2	1.10	14.50
1464.0	1.00	2.0	421.8	424.0	1.10	14.49
1470.0	1.00	2.0	421.6	423.8	1.10	14.49
1476.0	1.00	2.0	421.4	423.6	1.10	14.49

EXECUTED: 10-20-1994 14:44:39 24 HR SCS Return Freq: 2 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
1482.0	1.00
1488.0	1.00
1494.0	1.00
1500.0	0.00
1506.0	0.00
1512.0	0.00
1518.0	0.00
1524.0	0.00
1530.0	0.00
1536.0	0.00
1542.0	0.00
1548.0	0.00
1554.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
2.0	421.2	423.4	1.10	14.49
2.0	421.0	423.2	1.10	14.49
2.0	420.8	423.0	1.10	14.49
1.0	419.6	421.8	1.10	14.48
0.0	417.4	419.6	1.09	14.46
0.0	415.2	417.4	1.09	14.44
0.0	413.1	415.2	1.08	14.42
0.0	410.9	413.1	1.08	14.41
0.0	408.7	410.9	1.08	14.39
0.0	406.6	408.7	1.07	14.37
0.0	404.5	406.6	1.07	14.35
0.0	402.3	404.5	1.07	14.34
0.0	400.2	402.3	1.06	14.32

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow	=	64.00 cfs
Peak Outflow	=	18.90 cfs
Peak Elevation	=	15.21 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	94,114 cu-ft
Total Storage in Pond	=	94,114 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:46:50 24 HR SCS Return Freq: 10 years

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*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN010.HYD
Rating Table file: b:BMP234 .PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.3	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:46:50 24 HR SCS Return Freq: 10 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	0.0	0.0	0.00	8.00
666.0	5.00	10.0	9.8	10.0	0.11	8.29
672.0	6.00	11.0	20.3	20.8	0.23	8.59
678.0	6.00	12.0	31.6	32.3	0.36	8.89
684.0	7.00	13.0	43.7	44.6	0.44	9.20
690.0	8.00	15.0	57.7	58.7	0.51	9.55
696.0	9.00	17.0	73.5	74.7	0.58	9.92
702.0	15.00	24.0	96.3	97.5	0.60	10.42
708.0	21.00	36.0	130.9	132.3	0.72	11.10
714.0	27.00	48.0	177.3	178.9	0.80	11.90
720.0	55.00	82.0	257.5	259.3	0.90	12.99
726.0	106.00	161.0	416.3	418.5	1.09	14.45
732.0	162.00	268.0	570.0	684.3	57.13	15.87
738.0	163.00	325.0	714.0	895.0	90.51	16.85
744.0	111.00	274.0	779.4	988.0	104.33	17.24
750.0	69.00	180.0	760.7	959.4	99.35	17.13
756.0	48.00	117.0	700.1	877.7	88.79	16.77
762.0	36.00	84.0	629.8	784.1	77.16	16.34
768.0	28.00	64.0	574.1	693.8	59.84	15.92
774.0	24.00	52.0	545.2	626.1	40.46	15.62
780.0	20.00	44.0	528.5	589.2	30.33	15.45
786.0	18.00	38.0	516.8	566.5	24.87	15.33
792.0	16.00	34.0	508.6	550.8	21.07	15.25
798.0	15.00	31.0	502.8	539.6	18.38	15.20
804.0	14.00	29.0	498.8	531.8	16.51	15.16
810.0	14.00	28.0	496.2	526.8	15.30	15.13
816.0	13.00	27.0	494.4	523.2	14.43	15.11
822.0	12.00	25.0	492.4	519.4	13.50	15.09
828.0	11.00	23.0	490.3	515.4	12.53	15.07
834.0	10.00	21.0	488.2	511.3	11.55	15.05
840.0	10.00	20.0	486.6	508.2	10.80	15.04
846.0	10.00	20.0	485.8	506.6	10.42	15.03
852.0	9.00	19.0	484.8	504.8	9.97	15.02
858.0	9.00	18.0	483.8	502.8	9.50	15.01
864.0	9.00	18.0	483.3	501.8	9.26	15.01
870.0	8.00	17.0	482.4	500.3	8.95	15.00
876.0	8.00	16.0	480.9	498.4	8.76	14.98
882.0	8.00	16.0	479.7	496.9	8.60	14.97
888.0	8.00	16.0	478.7	495.7	8.47	14.97
894.0	8.00	16.0	478.0	494.7	8.38	14.96
900.0	8.00	16.0	477.4	494.0	8.30	14.96
906.0	8.00	16.0	476.9	493.4	8.24	14.95
912.0	8.00	16.0	476.5	492.9	8.19	14.95
918.0	7.00	15.0	475.4	491.5	8.04	14.94
924.0	7.00	14.0	473.8	489.4	7.83	14.93

EXECUTED: 10-20-1994 14:46:50 24 HR SCS Return Freq: 10 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH — ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	472.5	487.8	7.66	14.91
936.0	7.00	14.0	471.4	486.5	7.52	14.91
942.0	7.00	14.0	470.6	485.4	7.41	14.90
948.0	6.00	13.0	469.2	483.6	7.22	14.89
954.0	6.00	12.0	467.2	481.2	6.97	14.87
960.0	6.00	12.0	465.7	479.2	6.77	14.86
966.0	6.00	12.0	464.5	477.7	6.61	14.85
972.0	6.00	12.0	463.5	476.5	6.48	14.84
978.0	5.00	11.0	462.0	474.5	6.28	14.82
984.0	5.00	10.0	459.9	472.0	6.01	14.81
990.0	5.00	10.0	458.3	469.9	5.80	14.80
996.0	5.00	10.0	457.1	468.3	5.64	14.79
1002.0	5.00	10.0	456.1	467.1	5.50	14.78
1008.0	5.00	10.0	455.3	466.1	5.40	14.77
1014.0	5.00	10.0	454.6	465.3	5.32	14.77
1020.0	5.00	10.0	454.1	464.6	5.25	14.76
1026.0	5.00	10.0	453.7	464.1	5.20	14.76
1032.0	5.00	10.0	453.4	463.7	5.16	14.76
1038.0	5.00	10.0	453.2	463.4	5.12	14.75
1044.0	5.00	10.0	453.0	463.2	5.10	14.75
1050.0	5.00	10.0	452.8	463.0	5.08	14.75
1056.0	5.00	10.0	452.7	462.8	5.06	14.75
1062.0	5.00	10.0	452.6	462.7	5.05	14.75
1068.0	4.00	9.0	451.7	461.6	4.93	14.74
1074.0	4.00	8.0	450.2	459.7	4.74	14.73
1080.0	4.00	8.0	449.1	458.2	4.59	14.72
1086.0	4.00	8.0	448.1	457.1	4.46	14.71
1092.0	4.00	8.0	447.4	456.1	4.37	14.71
1098.0	4.00	8.0	446.8	455.4	4.29	14.70
1104.0	4.00	8.0	446.4	454.8	4.23	14.70
1110.0	4.00	8.0	446.0	454.4	4.18	14.70
1116.0	4.00	8.0	445.7	454.0	4.15	14.69
1122.0	4.00	8.0	445.5	453.7	4.11	14.69
1128.0	4.00	8.0	445.3	453.5	4.09	14.69
1134.0	4.00	8.0	445.1	453.3	4.07	14.69
1140.0	4.00	8.0	445.0	453.1	4.06	14.69
1146.0	4.00	8.0	444.9	453.0	4.05	14.69
1152.0	4.00	8.0	444.9	452.9	4.04	14.69
1158.0	4.00	8.0	444.8	452.9	4.03	14.69
1164.0	4.00	8.0	444.8	452.8	4.02	14.68
1170.0	4.00	8.0	444.7	452.8	4.02	14.68
1176.0	3.00	7.0	443.9	451.7	3.91	14.68
1182.0	3.00	6.0	442.5	449.9	3.72	14.67
1188.0	3.00	6.0	441.3	448.5	3.57	14.66
1194.0	3.00	6.0	440.4	447.3	3.45	14.65
1200.0	3.00	6.0	439.7	446.4	3.36	14.64

EXECUTED: 10-20-1994 14:46:50 24 HR SCS Return Freq: 10 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	439.1	445.7	3.28	14.64
1212.0	3.00	6.0	438.7	445.1	3.22	14.63
1218.0	3.00	6.0	438.3	444.7	3.18	14.63
1224.0	3.00	6.0	438.0	444.3	3.14	14.63
1230.0	3.00	6.0	437.8	444.0	3.11	14.63
1236.0	3.00	6.0	437.6	443.8	3.09	14.63
1242.0	3.00	6.0	437.5	443.6	3.07	14.62
1248.0	3.00	6.0	437.4	443.5	3.06	14.62
1254.0	3.00	6.0	437.3	443.4	3.04	14.62
1260.0	3.00	6.0	437.2	443.3	3.03	14.62
1266.0	3.00	6.0	437.2	443.2	3.03	14.62
1272.0	3.00	6.0	437.1	443.2	3.02	14.62
1278.0	3.00	6.0	437.1	443.1	3.02	14.62
1284.0	3.00	6.0	437.1	443.1	3.01	14.62
1290.0	3.00	6.0	437.0	443.1	3.01	14.62
1296.0	3.00	6.0	437.0	443.0	3.01	14.62
1302.0	3.00	6.0	437.0	443.0	3.01	14.62
1308.0	3.00	6.0	437.0	443.0	3.01	14.62
1314.0	3.00	6.0	437.0	443.0	3.00	14.62
1320.0	3.00	6.0	437.0	443.0	3.00	14.62
1326.0	3.00	6.0	437.0	443.0	3.00	14.62
1332.0	3.00	6.0	437.0	443.0	3.00	14.62
1338.0	3.00	6.0	437.0	443.0	3.00	14.62
1344.0	3.00	6.0	437.0	443.0	3.00	14.62
1350.0	3.00	6.0	437.0	443.0	3.00	14.62
1356.0	3.00	6.0	437.0	443.0	3.00	14.62
1362.0	2.00	5.0	436.2	442.0	2.90	14.61
1368.0	2.00	4.0	434.2	440.2	2.71	14.60
1374.0	2.00	4.0	433.6	438.8	2.56	14.59
1380.0	2.00	4.0	432.7	437.6	2.45	14.59
1386.0	2.00	4.0	432.0	436.7	2.35	14.58
1392.0	2.00	4.0	431.5	436.0	2.28	14.57
1398.0	2.00	4.0	431.0	435.5	2.22	14.57
1404.0	2.00	4.0	430.7	435.0	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.05	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.3	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

EXECUTED: 10-20-1994 14:46:50 24 HR SCS Return Freq: 10 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
1482.0	1.00
1488.0	1.00
1494.0	1.00
1500.0	1.00
1506.0	1.00
1512.0	1.00
1518.0	1.00
1524.0	0.00
1530.0	0.00
1536.0	0.00
1542.0	0.00
1548.0	0.00
1554.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
2.0	423.5	425.9	1.23	14.51
2.0	423.1	425.5	1.19	14.51
2.0	422.8	425.1	1.14	14.50
2.0	422.6	424.8	1.11	14.50
2.0	422.4	424.6	1.10	14.50
2.0	422.2	424.4	1.10	14.50
2.0	422.0	424.2	1.10	14.50
1.0	420.8	422.0	1.10	14.49
0.0	418.6	420.8	1.09	14.47
0.0	416.4	418.6	1.09	14.45
0.0	414.3	416.4	1.09	14.43
0.0	412.1	414.3	1.08	14.42
0.0	409.9	412.1	1.08	14.40

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN010.HYD
Outflow Hydrograph: b:OUTBM010.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 163.00 cfs
Peak Outflow = 104.33 cfs
Peak Elevation = 17.24 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 159,065 cu-ft

Total Storage in Pond = 159,065 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:49:37 24 HR SCS Return Freq: 25 years

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*************************************
*                                   *
*              JOINT BMP            *
*        TUTTERS NECK NORTH         *
*         KINGSMILL VILLAGE         *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN025.HYD
Rating Table file: b:BMP234 .PND

-----INITIAL CONDITIONS-----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
8.00	0.0	0	0.0	0.0
8.50	0.2	3,118	17.3	17.5
9.00	0.4	6,476	36.0	36.4
9.50	0.5	10,085	56.0	56.5
10.00	0.6	13,952	77.5	78.1
10.50	0.6	18,141	100.8	101.4
11.00	0.7	22,719	126.2	126.9
11.50	0.8	27,702	153.9	154.7
12.00	0.8	33,110	183.9	184.7
12.50	0.9	39,278	218.2	219.1
13.00	0.9	46,597	258.9	259.8
13.50	1.0	55,167	306.5	307.5
14.00	1.0	65,084	361.6	362.6
14.50	1.1	76,244	423.6	424.7
15.00	9.0	88,508	491.7	500.7
15.50	32.7	101,928	566.3	599.0
16.00	65.3	116,557	647.5	712.8
16.50	83.0	132,505	736.1	819.1
17.00	93.6	149,891	832.7	926.3
17.50	115.7	168,778	937.7	1053.4
18.00	149.7	189,226	1051.3	1201.0
18.50	193.9	211,340	1174.1	1368.0
19.00	248.1	235,231	1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:49:37 24 HR SCS Return Freq: 25 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	0.0	0.0	0.00	8.00
666.0	6.00	11.0	10.7	11.0	0.13	8.31
672.0	6.00	12.0	22.2	22.7	0.26	8.64
678.0	7.00	13.0	34.5	35.2	0.39	8.97
684.0	8.00	15.0	48.5	49.5	0.46	9.32
690.0	10.00	18.0	65.4	66.5	0.55	9.73
696.0	11.00	21.0	85.2	86.4	0.60	10.18
702.0	18.00	29.0	112.9	114.2	0.65	10.75
708.0	24.00	42.0	153.3	154.9	0.80	11.50
714.0	31.00	55.0	206.6	208.3	0.87	12.34
720.0	62.00	93.0	297.6	299.6	0.98	13.42
726.0	119.00	181.0	465.2	478.6	6.71	14.85
732.0	182.00	301.0	617.8	766.2	74.19	16.25
738.0	183.00	365.0	776.0	982.8	103.43	17.22
744.0	125.00	308.0	838.5	1084.0	122.75	17.60
750.0	78.00	203.0	814.2	1041.5	113.63	17.45
756.0	54.00	132.0	752.1	946.2	97.06	17.08
762.0	40.00	94.0	674.8	846.1	85.67	16.63
768.0	31.00	71.0	604.2	745.8	70.78	16.15
774.0	26.00	57.0	560.2	661.2	50.52	15.77
780.0	22.00	48.0	537.5	608.2	35.33	15.54
786.0	20.00	42.0	523.5	579.5	28.00	15.40
792.0	18.00	38.0	514.2	561.5	23.66	15.31
798.0	17.00	35.0	507.8	549.2	20.69	15.25
804.0	16.00	33.0	503.5	540.8	18.67	15.20
810.0	15.00	31.0	500.2	534.5	17.14	15.17
816.0	14.00	29.0	497.4	529.2	15.87	15.14
822.0	14.00	28.0	495.5	525.4	14.97	15.13
828.0	13.00	27.0	494.0	522.5	14.26	15.11
834.0	12.00	25.0	492.2	519.0	13.41	15.09
840.0	12.00	24.0	490.7	516.2	12.73	15.08
846.0	11.00	23.0	489.4	513.7	12.14	15.07
852.0	11.00	22.0	488.3	511.4	11.59	15.05
858.0	10.00	21.0	487.1	509.3	11.06	15.04
864.0	10.00	20.0	486.0	507.1	10.55	15.03
870.0	9.00	19.0	485.0	505.0	10.04	15.02
876.0	9.00	18.0	483.9	503.0	9.54	15.01
882.0	9.00	18.0	483.3	501.9	9.28	15.01
888.0	9.00	18.0	483.0	501.3	9.14	15.00
894.0	9.00	18.0	482.9	501.0	9.07	15.00
900.0	9.00	18.0	482.8	500.9	9.04	15.00
906.0	9.00	18.0	482.8	500.8	9.02	15.00
912.0	9.00	18.0	482.7	500.8	9.01	15.00
918.0	8.00	17.0	481.9	499.7	8.90	14.99
924.0	8.00	16.0	480.5	497.9	8.71	14.98

EXECUTED: 10-20-1994 14:49:37 24 HR SCS Return Freq: 25 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	479.4	496.5	8.56	14.97
936.0	8.00	16.0	478.5	495.4	8.45	14.96
942.0	8.00	16.0	477.8	494.5	8.35	14.96
948.0	7.00	15.0	476.4	492.8	8.18	14.95
954.0	7.00	14.0	474.6	490.4	7.93	14.93
960.0	7.00	14.0	473.1	488.6	7.74	14.92
966.0	7.00	14.0	471.9	487.1	7.58	14.91
972.0	7.00	14.0	471.0	485.9	7.46	14.90
978.0	6.00	13.0	469.5	484.0	7.26	14.89
984.0	6.00	12.0	467.5	481.5	7.00	14.87
990.0	6.00	12.0	465.9	479.5	6.79	14.86
996.0	6.00	12.0	464.6	477.9	6.63	14.85
1002.0	6.00	12.0	463.6	476.6	6.50	14.84
1008.0	6.00	12.0	462.8	475.6	6.39	14.84
1014.0	6.00	12.0	462.2	474.8	6.31	14.83
1020.0	6.00	12.0	461.7	474.2	6.25	14.83
1026.0	6.00	12.0	461.3	473.7	6.20	14.82
1032.0	6.00	12.0	461.0	473.3	6.16	14.82
1038.0	5.00	11.0	460.0	472.0	6.02	14.81
1044.0	5.00	10.0	458.4	470.0	5.81	14.80
1050.0	5.00	10.0	457.1	468.4	5.64	14.79
1056.0	5.00	10.0	456.1	467.1	5.51	14.78
1062.0	5.00	10.0	455.3	466.1	5.40	14.77
1068.0	5.00	10.0	454.6	465.3	5.32	14.77
1074.0	5.00	10.0	454.1	464.6	5.25	14.76
1080.0	5.00	10.0	453.7	464.1	5.20	14.76
1086.0	5.00	10.0	453.4	463.7	5.16	14.76
1092.0	5.00	10.0	453.2	463.4	5.13	14.75
1098.0	5.00	10.0	453.0	463.2	5.10	14.75
1104.0	5.00	10.0	452.8	463.0	5.08	14.75
1110.0	4.00	9.0	451.9	461.8	4.96	14.74
1116.0	4.00	8.0	450.4	459.9	4.76	14.73
1122.0	4.00	8.0	449.2	458.4	4.60	14.72
1128.0	4.00	8.0	448.2	457.2	4.48	14.71
1134.0	4.00	8.0	447.5	456.2	4.38	14.71
1140.0	4.00	8.0	446.9	455.5	4.30	14.70
1146.0	4.00	8.0	446.4	454.9	4.24	14.70
1152.0	4.00	8.0	446.0	454.4	4.19	14.70
1158.0	4.00	8.0	445.7	454.0	4.15	14.69
1164.0	4.00	8.0	445.5	453.7	4.12	14.69
1170.0	4.00	8.0	445.3	453.5	4.09	14.69
1176.0	4.00	8.0	445.2	453.3	4.07	14.69
1182.0	4.00	8.0	445.0	453.2	4.06	14.69
1188.0	4.00	8.0	444.9	453.0	4.05	14.69
1194.0	4.00	8.0	444.9	452.9	4.04	14.69
1200.0	4.00	8.0	444.8	452.9	4.03	14.69

EXECUTED: 10-20-1994 14:49:37 24 HR SCS Return Freq: 25 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH — ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	444.8	452.8	4.02	14.69
1212.0	4.00	8.0	444.7	452.8	4.02	14.68
1218.0	4.00	8.0	444.7	452.7	4.01	14.68
1224.0	4.00	8.0	444.7	452.7	4.01	14.68
1230.0	4.00	8.0	444.7	452.7	4.01	14.69
1236.0	4.00	8.0	444.6	452.7	4.01	14.68
1242.0	4.00	8.0	444.6	452.6	4.01	14.68
1248.0	4.00	8.0	444.6	452.6	4.00	14.69
1254.0	4.00	8.0	444.6	452.6	4.00	14.68
1260.0	4.00	8.0	444.6	452.6	4.00	14.68
1266.0	3.00	7.0	443.8	451.6	3.90	14.68
1272.0	3.00	6.0	442.4	449.8	3.71	14.67
1278.0	3.00	6.0	441.3	448.4	3.56	14.66
1284.0	3.00	6.0	440.4	447.3	3.45	14.65
1290.0	3.00	6.0	439.7	446.4	3.35	14.64
1296.0	3.00	6.0	439.1	445.7	3.29	14.64
1302.0	3.00	6.0	438.7	445.1	3.22	14.63
1308.0	3.00	6.0	438.3	444.7	3.18	14.63
1314.0	3.00	6.0	438.0	444.3	3.14	14.63
1320.0	3.00	6.0	437.8	444.0	3.11	14.63
1326.0	3.00	6.0	437.6	443.8	3.09	14.63
1332.0	3.00	6.0	437.5	443.6	3.07	14.62
1338.0	3.00	6.0	437.4	443.5	3.05	14.62
1344.0	3.00	6.0	437.3	443.4	3.04	14.62
1350.0	3.00	6.0	437.2	443.3	3.03	14.62
1356.0	3.00	6.0	437.2	443.2	3.03	14.62
1362.0	2.00	5.0	436.3	442.2	2.92	14.62
1368.0	2.00	4.0	434.9	440.3	2.73	14.60
1374.0	2.00	4.0	433.7	438.9	2.58	14.59
1380.0	2.00	4.0	432.8	437.7	2.46	14.59
1386.0	2.00	4.0	432.1	436.8	2.36	14.58
1392.0	2.00	4.0	431.5	436.1	2.29	14.58
1398.0	2.00	4.0	431.1	435.5	2.23	14.57
1404.0	2.00	4.0	430.7	435.1	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.06	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

EXECUTED: 10-20-1994 14:49:37 24 HR SCS Return Freq: 25 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.05	14.43
1548.0	0.00	0.0	412.1	414.3	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:OUTBM025.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 123.00 cfs
Peak Outflow = 122.75 cfs
Peak Elevation = 17.60 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 173,020 cu-ft

Total Storage in Pond = 173,020 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:52:23 24 HR SCS Return Freq: 100 years

```
*************************************
*                                   *
*              JOINT BMP            *
*         TUTTERS NECK NORTH        *
*          KINGSMILL VILLAGE        *
* BMP AFTER SILT BASIN IS REMOVED   *
*                                   *
*************************************
```

Inflow Hydrograph: b:POSIN100.HYD
Rating Table file: b:BMP234 .PND

----INITIAL CONDITIONS----
Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.3	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:52:23 24 HR SCS Return Freq: 100 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	------	0.0	0.0	0.00	8.00
666.0	8.00	15.0	14.7	15.0	0.17	8.43
672.0	9.00	17.0	31.0	31.7	0.35	8.87
678.0	10.00	19.0	49.0	50.0	0.47	9.34
684.0	12.00	22.0	69.9	71.0	0.57	9.84
690.0	13.00	25.0	93.7	94.9	0.60	10.36
696.0	15.00	28.0	120.3	121.7	0.68	10.90
702.0	25.00	40.0	158.7	160.3	0.80	11.59
708.0	34.00	59.0	215.9	217.7	0.90	12.48
714.0	44.00	78.0	292.0	293.9	0.97	13.36
720.0	87.00	131.0	420.9	423.0	1.10	14.49
726.0	166.00	253.0	565.6	673.8	54.12	15.63
732.0	251.00	417.0	775.8	982.6	103.38	17.22
738.0	251.00	502.0	937.7	1277.8	170.03	18.23
744.0	171.00	422.0	976.3	1359.7	191.71	18.48
750.0	105.00	276.0	925.7	1252.3	163.29	18.15
756.0	73.00	178.0	849.1	1103.7	127.31	17.67
762.0	54.00	127.0	771.6	976.1	102.26	17.20
768.0	42.00	96.0	692.0	867.6	87.79	16.73
774.0	36.00	78.0	620.4	770.0	74.82	16.27
780.0	30.00	66.0	570.9	686.4	57.72	15.83
786.0	28.00	58.0	546.4	628.9	41.28	15.63
792.0	25.00	53.0	533.7	599.4	32.82	15.50
798.0	23.00	48.0	524.7	581.7	28.54	15.41
804.0	21.00	44.0	517.9	568.7	25.39	15.35
810.0	20.00	41.0	512.8	558.9	23.03	15.30
816.0	19.00	39.0	509.2	551.8	21.33	15.26
822.0	18.00	37.0	506.2	546.2	19.96	15.23
828.0	17.00	35.0	503.7	541.2	18.77	15.21
834.0	16.00	33.0	501.3	536.7	17.68	15.18
840.0	16.00	32.0	499.6	533.3	16.87	15.17
846.0	15.00	31.0	498.2	530.6	16.21	15.15
852.0	15.00	30.0	496.9	528.2	15.63	15.14
858.0	14.00	29.0	495.8	525.9	15.08	15.13
864.0	13.00	27.0	494.1	522.8	14.32	15.11
870.0	13.00	26.0	492.8	520.1	13.68	15.10
876.0	12.00	25.0	491.5	517.8	13.11	15.09
882.0	12.00	24.0	490.4	515.5	12.58	15.08
888.0	12.00	24.0	489.8	514.4	12.30	15.07
894.0	12.00	24.0	489.5	513.8	12.15	15.07
900.0	12.00	24.0	489.3	513.5	12.08	15.06
906.0	12.00	24.0	489.2	513.3	12.04	15.06
912.0	11.00	23.0	488.7	512.2	11.78	15.06
918.0	11.00	22.0	487.9	510.7	11.40	15.05
924.0	10.00	21.0	486.9	508.9	10.97	15.04

POND-2 Version: 5.17 S/N: 1295130250 Page 3
EXECUTED: 10-20-1994 14:52:23 24 HR SCS Return Freq: 100 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	485.9	506.9	10.50	15.03
936.0	10.00	20.0	485.4	505.9	10.26	15.03
942.0	10.00	20.0	485.1	505.4	10.13	15.02
948.0	9.00	19.0	484.5	504.1	9.83	15.02
954.0	9.00	18.0	483.6	502.5	9.43	15.01
960.0	9.00	18.0	483.2	501.6	9.22	15.00
966.0	9.00	18.0	483.0	501.2	9.11	15.00
972.0	9.00	18.0	482.8	501.0	9.06	15.00
978.0	8.00	17.0	482.0	499.8	8.91	14.99
984.0	8.00	16.0	480.6	498.0	8.72	14.98
990.0	8.00	16.0	479.4	496.6	8.57	14.97
996.0	8.00	16.0	478.5	495.4	8.45	14.97
1002.0	8.00	16.0	477.8	494.5	8.36	14.96
1008.0	7.00	15.0	476.5	492.8	8.18	14.95
1014.0	7.00	14.0	474.6	490.5	7.93	14.93
1020.0	7.00	14.0	473.1	488.6	7.74	14.92
1026.0	7.00	14.0	471.9	487.1	7.59	14.91
1032.0	7.00	14.0	471.0	485.9	7.46	14.90
1038.0	7.00	14.0	470.3	485.0	7.37	14.90
1044.0	7.00	14.0	469.7	484.3	7.29	14.89
1050.0	7.00	14.0	469.2	483.7	7.23	14.89
1056.0	7.00	14.0	468.9	483.2	7.18	14.89
1062.0	7.00	14.0	468.6	482.9	7.14	14.88
1068.0	7.00	14.0	468.3	482.6	7.11	14.88
1074.0	7.00	14.0	468.2	482.3	7.09	14.88
1080.0	7.00	14.0	468.0	482.2	7.07	14.88
1086.0	7.00	14.0	467.9	482.0	7.06	14.88
1092.0	7.00	14.0	467.8	481.9	7.05	14.88
1098.0	7.00	14.0	467.7	481.8	7.04	14.88
1104.0	7.00	14.0	467.7	481.7	7.03	14.88
1110.0	6.00	13.0	466.8	480.7	6.92	14.87
1116.0	6.00	12.0	465.4	478.8	6.73	14.86
1122.0	6.00	12.0	464.2	477.4	6.58	14.85
1128.0	6.00	12.0	463.3	476.2	6.46	14.84
1134.0	6.00	12.0	462.6	475.3	6.36	14.83
1140.0	6.00	12.0	462.0	474.6	6.29	14.83
1146.0	6.00	12.0	461.6	474.0	6.23	14.82
1152.0	6.00	12.0	461.2	473.6	6.18	14.82
1158.0	6.00	12.0	460.9	473.2	6.14	14.82
1164.0	6.00	12.0	460.7	472.9	6.11	14.82
1170.0	6.00	12.0	460.5	472.7	6.09	14.82
1176.0	5.00	11.0	459.6	471.5	5.97	14.81
1182.0	5.00	10.0	458.1	469.6	5.77	14.80
1188.0	5.00	10.0	456.8	468.1	5.61	14.79
1194.0	5.00	10.0	455.9	466.8	5.48	14.78
1200.0	5.00	10.0	455.1	465.9	5.38	14.77

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 14:52:23 24 HR SCS Return Freq: 100 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	5.00	10.0	454.5	465.1	5.30	14.77
1212.0	5.00	10.0	454.0	464.5	5.24	14.76
1218.0	5.00	10.0	453.7	464.0	5.19	14.76
1224.0	5.00	10.0	453.4	463.7	5.15	14.76
1230.0	5.00	10.0	453.1	463.4	5.12	14.75
1236.0	5.00	10.0	452.9	463.1	5.09	14.75
1242.0	5.00	10.0	452.8	462.9	5.07	14.75
1248.0	5.00	10.0	452.7	462.8	5.06	14.75
1254.0	5.00	10.0	452.6	462.7	5.05	14.75
1260.0	4.00	9.0	451.7	461.6	4.93	14.74
1266.0	4.00	8.0	450.2	459.7	4.74	14.73
1272.0	4.00	8.0	449.1	458.2	4.59	14.72
1278.0	4.00	8.0	448.1	457.1	4.46	14.71
1284.0	4.00	8.0	447.4	456.1	4.37	14.71
1290.0	4.00	8.0	446.8	455.4	4.29	14.70
1296.0	4.00	8.0	446.3	454.8	4.23	14.70
1302.0	4.00	8.0	446.0	454.3	4.18	14.70
1308.0	4.00	8.0	445.7	454.0	4.14	14.69
1314.0	4.00	8.0	445.5	453.7	4.11	14.69
1320.0	4.00	8.0	445.3	453.5	4.09	14.69
1326.0	4.00	8.0	445.1	453.3	4.07	14.69
1332.0	4.00	8.0	445.0	453.1	4.06	14.69
1338.0	4.00	8.0	444.9	453.0	4.05	14.69
1344.0	4.00	8.0	444.9	452.9	4.04	14.69
1350.0	4.00	8.0	444.8	452.9	4.03	14.69
1356.0	3.00	7.0	444.0	451.8	3.92	14.68
1362.0	3.00	6.0	442.5	450.0	3.73	14.67
1368.0	3.00	6.0	441.4	448.5	3.58	14.66
1374.0	3.00	6.0	440.4	447.4	3.46	14.65
1380.0	3.00	6.0	439.7	446.4	3.36	14.64
1386.0	3.00	6.0	439.2	445.7	3.29	14.64
1392.0	3.00	6.0	438.7	445.2	3.23	14.63
1398.0	3.00	6.0	438.3	444.7	3.18	14.63
1404.0	3.00	6.0	438.1	444.3	3.14	14.63
1410.0	2.00	5.0	437.0	443.1	3.01	14.62
1416.0	2.00	4.0	435.4	441.0	2.80	14.61
1422.0	2.00	4.0	434.2	439.4	2.63	14.60
1428.0	2.00	4.0	433.2	438.2	2.50	14.59
1434.0	2.00	4.0	432.4	437.2	2.40	14.58
1440.0	2.00	4.0	431.7	436.4	2.31	14.58
1446.0	2.00	4.0	431.2	435.7	2.25	14.57
1452.0	2.00	4.0	430.8	435.2	2.20	14.57
1458.0	2.00	4.0	430.5	434.8	2.16	14.57
1464.0	2.00	4.0	430.3	434.5	2.12	14.56
1470.0	2.00	4.0	430.1	434.3	2.10	14.56
1476.0	1.00	3.0	429.1	433.1	1.97	14.56

EXECUTED: 10-20-1994 14:52:23 24 HR SCS Return Freq: 100 years

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	427.6	431.1	1.77	14.54
1488.0	1.00	2.0	426.4	429.6	1.61	14.53
1494.0	1.00	2.0	425.4	428.4	1.48	14.52
1500.0	1.00	2.0	424.6	427.4	1.38	14.52
1506.0	1.00	2.0	424.0	426.6	1.30	14.51
1512.0	1.00	2.0	423.6	426.0	1.24	14.51
1518.0	1.00	2.0	423.2	425.6	1.19	14.51
1524.0	1.00	2.0	422.9	425.2	1.15	14.50
1530.0	0.00	1.0	421.7	423.9	1.10	14.49
1536.0	0.00	0.0	419.5	421.7	1.10	14.48
1542.0	0.00	0.0	417.3	419.5	1.09	14.46
1548.0	0.00	0.0	415.1	417.3	1.09	14.44
1554.0	0.00	0.0	413.0	415.1	1.08	14.42

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

Starting Pond W.S. Elevation = 8.00 ft

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

Peak Inflow = 251.00 cfs
Peak Outflow = 191.71 cfs
Peak Elevation = 18.48 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	210,244 cu-ft
Total Storage in Pond	=	210,244 cu-ft

Warning: Inflow hydrograph truncated on left side.

MULTIPLE STORM ROUTING FOR PONDS (.MSR)

BMP234 <-- This File
Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
BMP AFTER SILT BASIN IS REMOVED

Storm Comments	Return Frequency (years)	Inflow Hydrograph (.HYD)		Pond Rating Table File (.PND)		Starting W.S.Elev. (feet)		Outflow Hydrograph (.HYD)
24 HR SCS	2	POSIN002	–	BMP234	@	8	–	OUTBM002
24 HR SCS	10	POSIN010	–	BMP234	@	8	–	OUTBM010
24 HR SCS	25	POSIN025	–	BMP234	@	8	–	OUTBM025
24 HR SCS	100	POSIN100	–	BMP234	@	8	–	OUTBM100
			–		@		–	

OUTPUT OPTIONS

* Input Data * Routing Computations * Routing Summary Plots

NOTE: If you are using 'Outlet Structures(.STR)' for computing your Q vs.E rating table, you must compute a PND file for use with this MSR option. If W.S. Elev. is left blank, the first elevation in PND will be used. If Outflow HYD is left blank, an outflow HYD file will not be stored.

<Esc> Exit <F5> Compute

POND-2 Version: 5.17
S/N: 1295130250

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
BMP VOLUMNS AFTER SILT BASIN IS REMOVED

CALCULATED 10-20-1994 18:08:34
DISK FILE: b:BMP234 .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
8.00	2.40	6,000	0	0	0
10.00	3.20	8,000	20,928	13,952	13,952
12.00	4.50	11,250	28,737	19,158	33,110
14.00	8.50	21,250	47,962	31,974	65,084
16.00	12.20	30,500	77,208	51,472	116,557
18.00	17.00	42,500	109,003	72,669	189,226
20.00	22.90	57,250	149,077	99,384	288,610

Elevations With Areas Interpolated From
The Closest Two Planimeter Readings

13.00	------	15,856	40,462	13,487	46,597
14.50	------	23,406	66,958	11,160	76,244
15.00	------	25,667	70,271	23,424	88,508
17.00	------	36,252	100,003	33,334	149,891
19.00	------	49,601	138,014	46,005	235,230

IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	9.0	1 +2
15.50	32.7	1 +2
16.00	65.3	1 +2
16.50	83.0	1 +2
17.00	93.6	1 +2 +3
17.50	115.7	1 +2 +3
18.00	149.7	1 +2 +3
18.50	193.9	1 +2 +3
19.00	248.1	1 +2 +3
19.50	0.0	

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outlet Structure File: b:BMP234 .STR
Planimeter Input File: b:BMP234 .VOL
Rating Table Output File: b:BMP234 .PND

Min. Elev.(ft) = 8 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
ORIFICE	1		->	1
STAND PIPE	2		->	2
WEIR-XY	3		->	3

Outflow rating table summary was stored in file:
b:BMP234 .PND

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>> Structure No. 2 <<<<<<
(Input Data)

STAND PIPE
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	14.671
E2 elev.(ft)?	19.5
Crest elev.(ft)?	14.671
Diameter (ft)?	4
Weir coefficient?	3.33
Orifice coefficient?	.6
Start transition elev.(ft) 0 ?	
Transition height (ft)?	

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

>>>>>> Structure No. 3 <<<<<<
(Input Data)

WEIR-XY
Weir - Defined by X, Y Coordinates
E1 (ft) =17.00 E2 (ft) =19.5

X dist.(ft)	Y elev.(ft)
0	19
4	17
14	17
18	19

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.33
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.
H (ft) = Table elev. - Datum elev. (8.17 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #2
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < Inv.El.= 14.671
8.50	0.0	E < El=14.671
9.00	0.0	E < El=14.671
9.50	0.0	E < El=14.671
10.00	0.0	E < El=14.671
10.50	0.0	E < El=14.671
11.00	0.0	E < El=14.671
11.50	0.0	E < El=14.671
12.00	0.0	E < El=14.671
12.50	0.0	E < El=14.671
13.00	0.0	E < El=14.671
13.50	0.0	E < El=14.671
14.00	0.0	E < El=14.671
14.50	0.0	E < El=14.671
15.00	7.9	Weir: H =.329
15.50	31.6	Weir: H =.829
16.00	64.1	Weir: H =1.329
16.50	81.8	Orifice: H =1.829
17.00	92.3	Orifice: H =2.329
17.50	101.8	Orifice: H =2.829
18.00	110.4	Orifice: H =3.329
18.50	118.4	Orifice: H =3.829
19.00	125.9	Orifice: H =4.329
19.50	0.0	E = or > E2=19.5

Weir Cw = 3.33 Weir length = 12.56637 ft
Orifice Co = .6 Orifice area = 12.56637 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev.= 16.11694 ft

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES
****

Outflow Rating Table for Structure #3
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages	
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < E1=17.00	
15.50	0.0	E < E1=17.00	
16.00	0.0	E < E1=17.00	
16.50	0.0	E < E1=17.00	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project TUTTERS NECK NORTH - KINGSMILL VILLAGE

Basin # 1 Location SEE PLANS

Total area draining to basin: 40.95 acres.

Basin Volume Design

Wet Storage:

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

   67 cu. yds. x 40.95 acres = 2744 cu. yds.

2. Available basin volume = 2925 cu. yds. at elevation 14.50. (From storage - elevation curve)

3. Excavate 93 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 40.95 acres = 1351 cu. yds.

5. Elevation corresponding to cleanout level = 12.1 ±.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 2.4 ft. (Min. = 1.0 ft.)

Dry Storage:

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

   67 cu. yds. x 40.95 acres = 2744 cu. yds.

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 208

8. Total available basin volume at crest of riser* = 4419* cu. yds. at elevation 16.0. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.
PROVIDED 108 cy/AC.

9. Diameter of dewatering orifice = 6 in.

10. Diameter of flexible tubing = 8" in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 16.0

Top of Dam = 19.0

Design High Water = 16.16 (2 YEAR)

Upstream Toe of Dam = 8±

Basin Shape

12. Length of Flow / Effective Width — L / We = 500 / 50

If > 2, baffles are not required 10

If < 2, baffles are required _____

Runoff

13. Q_2 = 64.0 cfs (From Chapter 5) INFLOW

14. Q_{25} = 183.00 cfs (From Chapter 5) INFLOW

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = 64.00 cfs. OK (riser and barrel)

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

16. With emergency spillway:

Assumed available head (h) = 17.00-14.75=2.5 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) = 48 in. Actual head (h) = 0.16 ft. FOR 2 YEAR STORM

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 80'± ft.

16.16-7

Head (H) on barrel through embankment = 9.2 ft. 2 YEAR

11.7 ft 100 YEAR

(From Plate 3.14-7).

19. Barrel diameter = 36 in. 132 > 122.5 OK

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

20. Trash rack and anti-vortex device

Diameter = 80.5 inches.

Height = 24 inches.

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity Q_e = ~~Q_{25}~~ 100 - Q_p = 199-132=77 cfs.

22. Bottom width (b) = 10 ft.; the slope of the exit channel (s) = 2 ft./foot; and the minimum length of the exit channel (x) = 40 ft.
(From Table 3.14-C). * CONCRETE CHANNEL

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 9.7 ft. 16.7 - 7 = 9.7

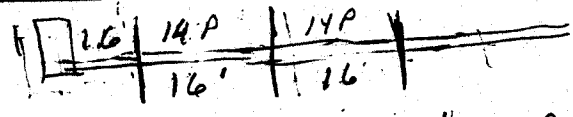
Slope of upstream face of embankment (Z) = 3 :1.

Slope of principal spillway barrel (S_b) = 1 %

Length of barrel in saturated zone (L_s) = 68 ft. Ls = 9.7(7)(1+.04) = 68'

24. Number of collars required = 3 dimensions = 5.25 x 5.25

(from Plate 3.14-12).



P = .8', 2P = 1.6', 14P = 11.2
use 16" (@ Joints)

Final Design Elevations

25. Top of Dam = 19.0

Design High Water = 16.16 2year

Emergency Spillway Crest = 17.0

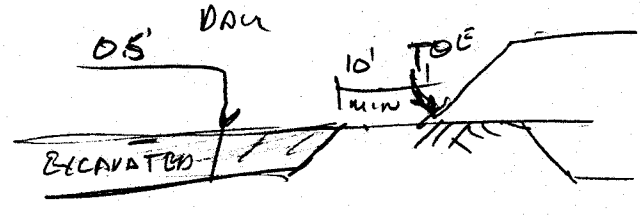
Principal Spillway Crest = 16.0

Dewatering Orifice Invert = 14.5

Cleanout Elevation = 12.2

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 8 ±

BOTTOM of EXCAVATED AREA = 6 BUT IS NOT AT TOE OF DAM



18.73 − 17.00 = 1.73' IN EMERGENCY SPILLWAY FOR 100 yr STORM
$Q = 3.367\,bh^{1.5} = 3.367(10)(1.73)^{1.5} = 76.6$ CFS

100 YEAR − 199.11 CFS TOTAL − 76.6 CFS = 122.5 CFS THRU BARREL

TABLE 3.14-B
PIPE FLOW CHART, n = 0.013

FOR REINFORCED CONCRETE PIPE INLET $K_m = K_e + K_b = 0.65$ AND 70 FEET OF REINFORCED CONCRETE PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

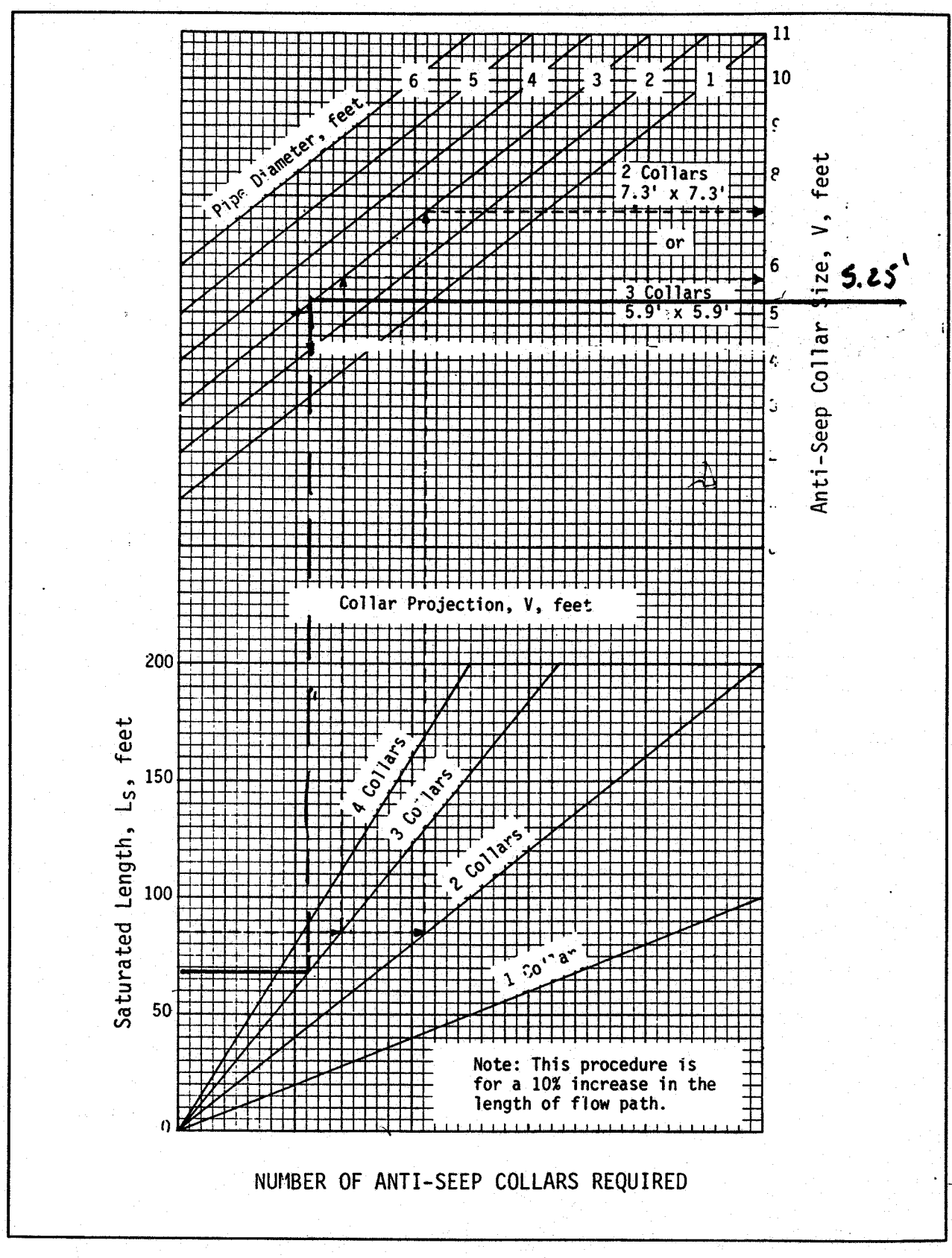
diameter of pipe in inches

H, in feet	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	3.22	5.44	8.29	11.8	15.9	26.0	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76.0	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45.0	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52.0	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42.0	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.10	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78.0	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18.0	27.5	39.0	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55.0	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12.0	20.4	31.0	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14.0	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71.0	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38.0	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60.0	81.0	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17.0	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87.0	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871
L, in feet	**Correction Factors For Other Pipe Lengths**																	
20	1.30	1.24	1.21	1.18	1.15	1.12	1.10	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.10	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.96	.97	.97	.97	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
90	.93	.94	.94	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.99	.99	.99	.99	.99
100	.90	.91	.92	.93	.93	.95	.95	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99
120	.84	.86	.87	.89	.90	.91	.93	.94	.94	.95	.96	.96	.96	.97	.97	.97	.97	.98
140	.80	.82	.83	.85	.86	.88	.90	.91	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97
160	.76	.78	.80	.82	.83	.86	.88	.89	.90	.91	.92	.93	.94	.94	.95	.95	.95	.96

11.7 → 122.5 OK

CHECK BARREL CAPACITY

Source: USDA-SCS

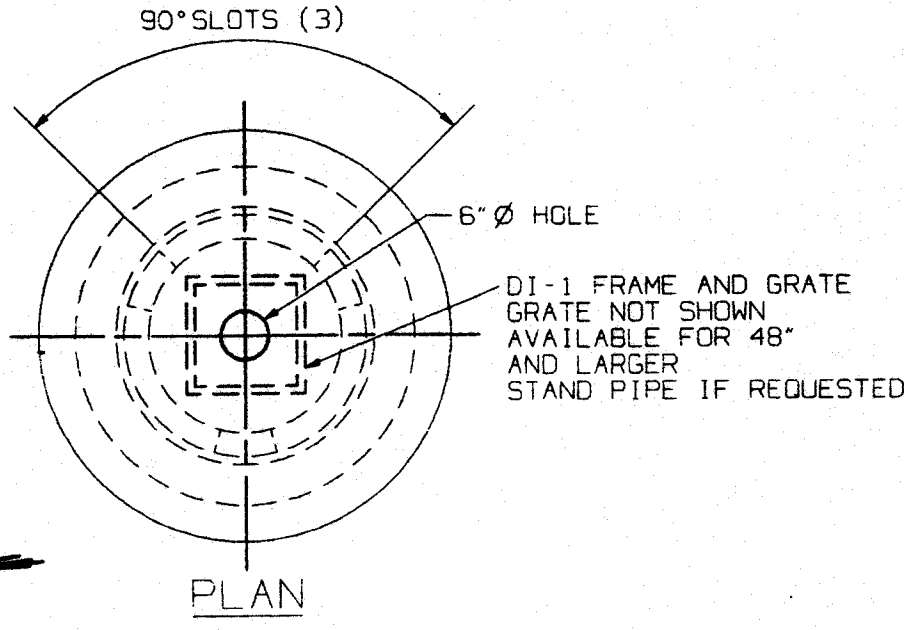


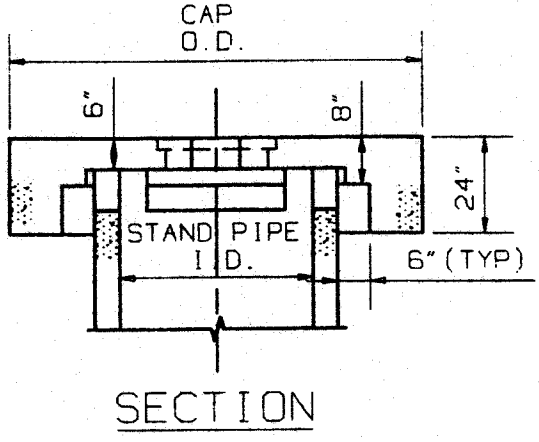
Source: USDA-SCS

Plate 3.14-12

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 213

STAND-PIPE ID	CAP OD	APPROX. CAP WEIGHT
24"	51"	.214t
27"	58"	1.527t
30"	58"	1.329t
36"	66½"	1.753t
42"	73½"	2.053t
48"	80½"	2.373t
54"	87½"	2.572t
60"	94½"	2.919t
66"	101½"	3.286t
72"	107"	3.409t
78"	114"	3.799t
84"	124"	4.809t
96"	133"	5.506t
108"	147"	5.822t





ANTI-VORTEX DEVICE

CRP

CONCRETE PIPE & PRODUCTS CO.,INC.

DATE 01-24-93

PAGE 14.1

GEORGE NICE & SONS, INC.
• Road & Utility Construction
• Site Development

4:00pm

OCT 1995
RECEIVED
CODE COMPLIANCE
OFFICE

October 13, 1995

George Mathews
BUSCH PROPERTIES, INC.
485 McLaws Circle, Suite 2
Williamsburg, Virginia 23185

Re: NORTH QUARTER (KINGSMILL VILLAGE)
Kingsmill on the James
James City County, Virginia

George:

We hereby certify that all work associated with the construction of the above mentioned subdivision has been performed in accordance with the approved plans and applicable Virginia Department of Transportation standards. Specific items of importance and associated documentation is as follows:

BMP

Dam construction was performed in accordance with the approved plans with the following exceptions. All modifications to the approved construction were directed by the design engineer.

- Outlet pipe size reduced from 36" to 30".
- Inlet elevation of outlet structure installed at elevation 14.67 for "BMP" operation in lieu of elevation specified for "silt basin" operation.
- Corrugated metal trash rack/anti-vortex device installed in lieu of precast concrete specified.
- VDOT standard EW-12 endwall for pipe underdrain installed in lieu of EW-11 specified.

Compaction of clay core and shell fills was performed in accordance with specification requirements, see attachment #1 for test results. It should be noted that materials utilized for core and shell construction were obtained from roadway cuts of North Quarter between stations 25+00 and 30+00. Material taken from this area is as indicated by CBR4 and CBR5 from Geo Design Consultants report (attachment #2).

143 Skimino Road • Williamsburg, Virginia 23188
(804) 565-2885 • (800) 300-2885 • FAX (804) 565-1526

ROADWAYS: North Quarter, George Perry, Mathew Brown, Andrews Circle

CBR samples were taken at locations indicated on the project drawings (attachment #3). It should be noted that results were reported by Schnabel Engineering Associates (attachment #4) prior to commencement of construction. All locations with the exception of 3, 4, and 5 are indicative of actual conditions. Cut depths in these areas exceeded sample depths and necessitated additional testing (attachment #2).

Roadway stone subbase depth for all roadways was increased from the plan specified depth of 6" to 8" at recommendation of soils engineer (attachment #2).

Depth of subbase and asphalt base courses were checked and verified, under your presence, to meet specification requirements.

If you should have any questions concerning this matter, please do not hesitate to call me at 565-2885.

Sincerely,

GEORGE NICE & SONS, INC.

S. Ray Nice, P.E. (#18664)
Vice President

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"ATTACHMENT #1"

GEO DESIGN CONSULTANTS, INC.

June 16, 1995

TO: **George Nice & Sons, Inc.**
143 Skimino Road
Williamsburg, Virginia 23188

Attn: Mr. Ray Nice, P.E.

RE: Compaction Test Results
North Quarter Kingsmill Quarter
Williamsburg, Virginia
Project No: 95.141T

Dear Mr. Nice:

Please find attached the results of the compaction tests performed at the above referenced project site dated May 25, 1995 and May 30, 1995. It should be noted that all tests met project specifications on this date.

We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this report, please do not hesitate to call this office at (804) 473-9533.

Respectfully Submitted,
Geo Design Consultants, Inc.

Walter L. Weeks, EIT
Staff Engineer

GEOTECHNICAL, MATERIALS, & ENVIRONMENTAL ENGINEERING

204 GRAYSON ROAD, SUITE B • VIRGINIA BEACH, VA. 23462 • PHONE: 804/473-9533 • FAX: 804/473-9534

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 259-4116

August 24, 2001

Reinspect performed 11/2/01 SJT, MDW OK for Bond Release SJT 11-2-01

Busch Properties Inc.
100 Kingsmill Road
Williamsburg, Va. 23185

Attn: Mr. Thomas E. Dunn,
Director, Construction

Re: Kingsmill North Quarter (formerly Tutters Neck North)
County Plan No. S-70-94
Stormwater Management Facility
County BMP ID Code: CC 017

Dear Mr. Dunn:

The Environmental Division has reviewed a record drawing and other certification information as provided for the above referenced project. The record drawing provides as-built information for a dry detention basin located behind Lot 18 (168 North Quarter). Also, as a note, this facility was retrofitted with an 8-inch reverse slope water quality pipe and micropool around 1997-98.

Based on our review of record information and a concurrent field observation as performed on August 24th 2001, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Record Drawing:

1. The record drawings dated November 19th 1996 (Sheets 2 and 5 of 15) are **satisfactory** for the facility.

Construction Certification:

2. The construction certification as provided for dam construction dated October 13th 1995 is **satisfactory**.

Construction-Related Items:

3. ✓ The top of dam and downstream embankment is covered with small to medium sized trees and pines. Remove all trees and woody vegetation from along the top of the dam (crest) and the upstream and downslope embankment. Seed and mulch disturbed areas associated with any tree clearing and removal operations.

All trees cut.

4. The facility is intended to be a dry-type detention practice. Based on our field observations, standing water 2 to 4 inch in depth was present in the bottom of the facility. This is indicative of sediment or debris accumulations around the water quality control orifice and its supporting appurtenances. The water quality (or BMP) control orifice for this structure consists of a dual drain system. A lower primary 8-inch ductile iron drain is present which extends out at an angle southwest from the riser and a secondary higher 4-inch drain extends out perpendicular (south) from the riser. The natural stream through the BMP area mainly follows a path to the 8-inch drain since it is lower in elevation than the 4-inch drain. Clean and remove accumulated sediment, trash and debris from the upstream inverts of both water quality control orifices, but especially the primary 8-inch orifice which has a micropool with riprap. The micropool area has excessive accumulations of leaves, sediment and debris. MICROPOOL & 4" DRIP CLEAN-

5. Remove trees and woody vegetation within 15 feet of the pond's corrugated riser structure. OK

6. Sweep and clean the concrete-lined emergency spillway of all leaves and woody debris. Also clear and remove the tree branch which has fallen across the emergency spillway.

7. Provide a hinged access hatch with lock on the riser's corrugated metal trash cap for future inspection and maintenance purposes. Furnish a key to Environmental Division. WAIVED BY SJT CAN SEE INSIDE W/O PHONE CALL FROM DRAN.

8. Remove entrench silt fence from the natural area downstream of the pond embankment.

It is highly recommended that the activities as outlined above be performed while it is still feasible to accomplish these routine mannered tasks with limited personnel and hand equipment/tools. If delayed and access with heavier equipment is necessary, considerable disruption to the steep slopes and tree vegetation in the area may result.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

Scott J. Thomas

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

G:\SWMProg\AsBuilts\S7094.cc017

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

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August 24, 2001

Busch Properties Inc.
100 Kingsmill Road
Williamsburg, Va. 23185

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Director, Construction

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7. Provide a hinged access hatch with lock on the riser's corrugated metal trash cap for future inspection and maintenance purposes. Furnish a key to Environmental Division.

8. Remove entrench silt fence from the natural area downstream of the pond embankment.

It is highly recommended that the activities as outlined above be performed while it is still feasible to accomplish these routine mannered tasks with limited personnel and hand equipment/tools. If delayed and access with heavier equipment is necessary, considerable disruption to the steep slopes and tree vegetation in the area may result.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

Scott J. Thomas

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

G:\SWMProg\AsBuilts\S7094.cc017

C.C.

August 31, 1994

Mr. Bernard M. Farmer
Director of Code Compliance
James City County
P.O. Box 8784
Williamsburg VA 23187-8784

Re: Tutter's Neck North,
Kingsmill on the James

Dear Mr. Farmer:

Pursuant to recent discussions, we hereby request an exception to the James City County Chesapeake Bay Ordinance. Specifically, the exception is necessary to allow construction activities in the areas of 25% or greater slopes. The accompanying drawing outlines the area needing exception

The purpose of this exception request is to allow construction of a proposed BMP on the northern limits of this project, and construction of stormwater outfalls.

We trust that this provides the information needed to act upon our request for this exception. If you have any questions or need further information, please do not hesitate to call.

Sincerely,

LANGLEY AND McDONALD

Ronnie Orsborne
Vice President

CRO/mjb
cc: John Hagee
Joseph M. Cross, Jr.

North Quarter BMP Included Storage for up to 6.0 acres of new impervious cover. SP-68-01, Building I, caused 2.07 acres of new impervious area. DEC 2/11/02

HighMark™

DEVELOPMENT MANAGEMENT

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Fax: (757) 253-6850

Code Compliance (757) 253-6626
County Engineer (757) 253-6678
Integrated Pest Management (757) 253-2620
Planning (757) 253-6685

E-mail: codecomp@james-city.va.us
E-mail: planning@james-city.va.us

May 8, 1997

Mr. Joseph Cross
Busch Properties, Inc.
100 Kingsmill Road
Williamsburg, VA 23185

RE: Busch - North Quarter

Dear Mr. Cross:

I feel the need to followup on our field meeting of May 5, 1997, regarding the North Quarter BMP. The meeting was called because the pond's low release orifice had become clogged and the dry pond was filled to the riser elevation. You were concerned that the outlet protection device was not properly designed and would require extensive maintenance to allow for it to function. We were concerned that unless the water was drained from the pool area immediately, the inundated trees would die.

As you acknowledged, the reason the orifice became clogged was that the gabion structure that served as the trash protection device was removed. The protection was removed to determine if the reason for ponding of water about one foot deep around the outlet structure was caused by the outlet structure design or the fact that the orifice was constructed six inches too high as indicated by the as-built drawings. Based on observations made after removal of the gabion, it was determined that even though the orifice was too high, the small area of ponding created around the orifice would be acceptable as the area is already a wetland and there is little vegetation that would be negatively impacted.

It was decided at the meeting to revise the orifice release structure by extending a horizontal perforated pipe out into the bottom of the pond to increase the surface area for the trash protection device. The pipe then should be covered with VDOT #1 stone. After reflecting on the situation further, I would also recommend either increasing the size of the orifice pipe diameter or installing another four-inch orifice pipe. This will help account for reduced capacity available for drawdown due to the baseflow conditions that were not accounted for in the original design. I also want to emphasize that these recommendations need to be concurrred with by your design engineers who prepared and signed the plans and were in attendance at the meeting.

I would remind you of the urgency to remove the water that has flooded the bottom as it could quickly kill all the trees. The saving of those trees was the main reason that this structure was designed as a dry rather than a wet pond. If you wish to discuss this matter further, I can be reached at 253-6673.

Sincerely,

Darryl E. Cook

Darryl E. Cook
Environmental Director

FILE:

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
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INTEGRATED PEST MANAGEMENT (757) 253-2620

PLANNING (757) 253-6685
E-MAIL: planning@james-city.va.us

December 6, 1996

Mr. Joseph M. Cross
Busch Properties Inc.
100 Kingsmill Road
Williamsburg, VA 23185

Re: North Quarter BMP

Dear Mr. Cross;

This letter is to follow up with our recent phone conversation concerning the water being impounded within the BMP at Kingsmill's North Quarter subdivision.

As you know this BMP was originally designed by Langley & McDonald to serve as a wet pond, which would have impounded water. Subsequent to our review, the design for this BMP was changed to a dry basin because of concerns for the preservation of the existing trees and understory vegetation.

Langley and McDonald have, as is required, furnished this office with as-built drawings for this BMP. Those as-built drawings depict discrepancies from the design elevations for the inlet and outfall pipes. We believe these variances from the design may be causing the present impoundment of water within the BMP. This condition if uncorrected, may result in the death of the trees and create a mosquito breeding area.

Please contact our office with your recommendations for correcting this matter. If I may be of help, feel free to contact me at 253-6675.

Sincerely,

Patrick T. Menichino

Patrick T. Menichino
Engineering Inspector

CODE COMPLIANCE REVIEW COMMENTS
BUSCH - TUTTER'S NECK NORTH
PLAN NO. S-70-94 DEC
September 14, 1994

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.

2. A Subdivision Agreement, with surety, shall be executed with the County prior to recordation of lots.

3. Water and sewer inspection fees must be paid prior to the issuance of a Land Disturbing Permit.

4. An Inspection/Maintenance Agreement shall be executed with the county for the BMP facility for this project.

5. As-built drawings must be provided for the detention basin on completion.

6. The earlier submission for this parcel of property called Kingsmill East had a BMP facility that included control of the offsite county property in its design. The outlet structures and dam embankment were designed so that they could be easily modified by the county to include control of increased runoff from the government center. This BMP needs to be designed accordingly. The drainage area for the current submission does not match the earlier submission, 40.95 vs 54.85 acres. Also, the drainage area of the county complex controlled has dropped from 23.5 to 11.45 acres. This maybe due to the relocation of the BMP a short distance upstream from the previous design. Please locate the dam in the same place as before and incorporate the county runoff. The design assumption was that 6.0 acres of impervious area would be created on the county property.

Bldg J - SP-68-01
2.07 ac of imp.
area added - 2/02

7. Provide silt fence on the north side of the sewer extension from lot 8 to the existing manhole near Tutters Neck Road.

8. Extend the riprap outlet protection for all pipe systems and Road D to the bottom of the slopes. For the first outfall, structure 3, the riprap needs to extend to the 20 contour line. Specify the amount of stone to be used in accordance with Spec 3.19 of the third edition of the Virginia Erosion Control Handbook (VESCH).

9. The detention basin is proposed to be used as a sediment basin during the construction phase of the project. As the excavation of 2 feet would eliminate a wetland area and numerous trees and as sediment traps and silt fence are provided upstream of this basin location, it will not be necessary to utilize the basin for sediment control. Please revise the plans as necessary.

10. Provide conservation easements for all natural open space areas claimed for BMP points. Offsite open space areas cannot be counted as natural open space credit. However, there are sufficient credits available onsite to total 10 points so additional onsite credits are not needed. The point count will need to be revised to account for the additional drainage as discussed in item 6.

11. Replace the Erosion Control Notes on sheet 9 with the attached set of JCC standard Erosion Control Notes.

12. Provide silt fence at the following locations:
a. around the cul-de-sac for Road A from the lot line 19/20 continuing to the sediment trap following the edge of clearing.
b. on the left side of Road A from lot line 10/11 down to the corner of lot 8 and the sewer

extension.
c. on the right side of Road A from station 13+00 to 16+00.
d. around the Road B cul-de-sac from lot line 2/3 to 4/5.
e. around the Road C cul-se-sac from lot line 28/29 to the clearing for the storm drain outfall.

13. Provide drainage calculations for all roadside ditches to verify that the appropriate liner is being used.

14. Either the slope of Road B needs to be increased to 0.75% or all the ditches need to be paved to meet the subdivision ordinance requirements.

15. Provide finished contours on the plans or show the limits of cut and fill slopes.

16. Label the limits of clearing.

17. Provide the design information for all sediment traps and provide all dimensions for the traps including the stone outlets on the plans. Also provide a means to lower the water from the storm drain system into the traps without eroding if necessary.

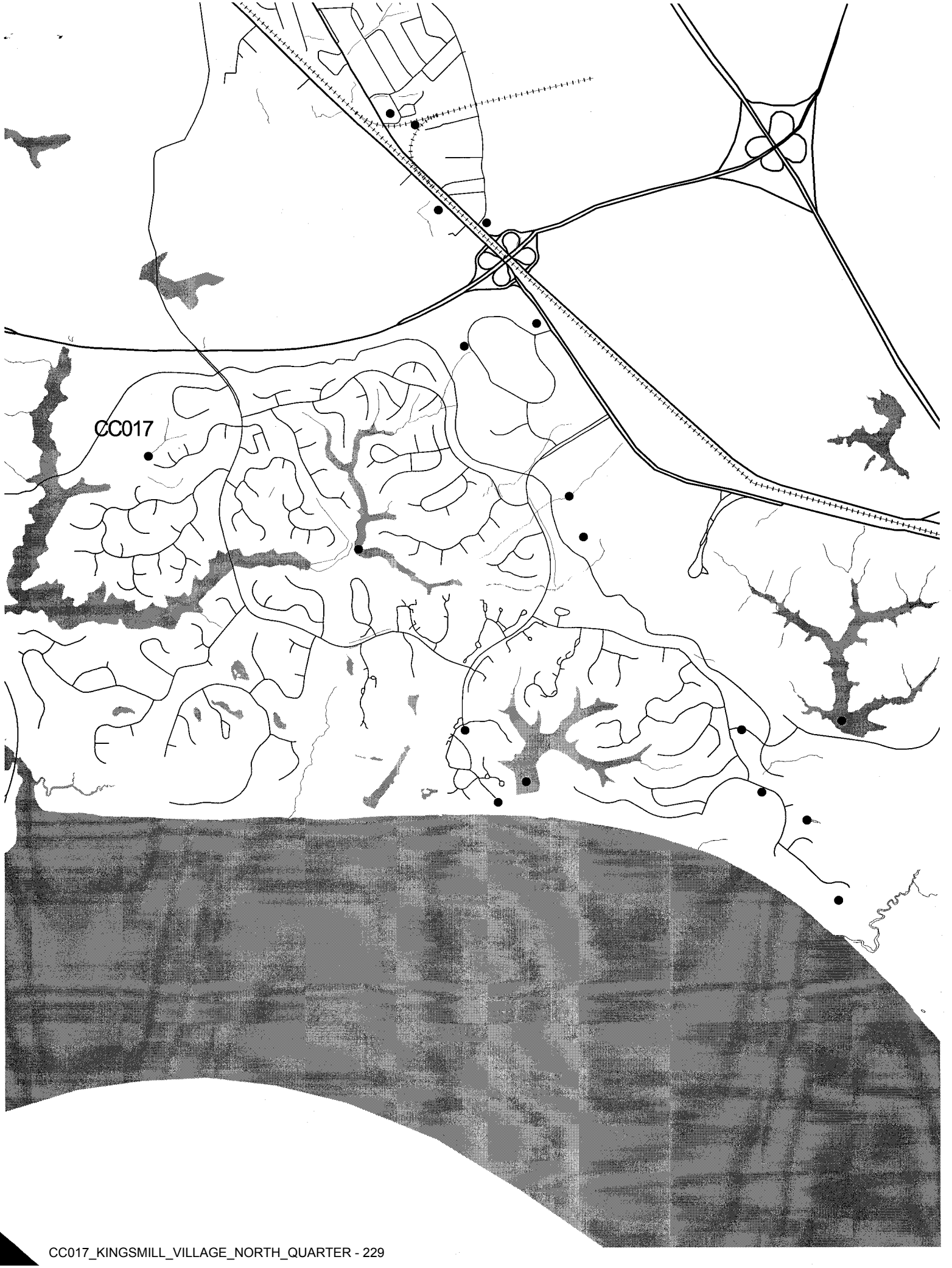
18. The following comments refer to the detention basin design:
a. As stated in item 6, the design for quantity and quality of flow needs to include provision for the offsite county drainage.
b. Specify the configuration of the riprap outfall apron on the plan view, sheet 2. Also, specify the depth of riprap on sheet 5 as 18 inches and provide filter fabric under it.
c. Show the location of the emergency spillway on the basin plan view. If the spillway is not located on natural ground, then it must be concrete lined.
d. Provide a 20-foot wide access easement to the basin from a public right-of-way with a 10-foot wide gravel road provided within the easement for maintenance purposes. Depending on the grade of the access road, portions may need to be paved. Also, a 15-foot wide drainage and maintenance easement must be provided around the pond above the 100-year design high water elevation. Finally, the basin embankment must be located in common area and not be situated on private property on an individual lot.
e. Provide silt fence below the basin to protect downstream areas during construction.
f. Provide a core trench for the basin in accordance with the Virginia Erosion & Sediment Control Handbook (VESCH).
g. Revise the outlet structure. Replace the PVC pipe with ductile iron or metal and replace the gabion basket with an EW-11 structure.
h. Provide dimensions for the riser base.
i. There are two materials specified for the barrel. Please clarify. If the metal pipe is chosen, specify asphalt coated pipe on the plan, ACCMP.
j. Increase the dam height to provide 1 foot of freeboard above the 100-year storm.

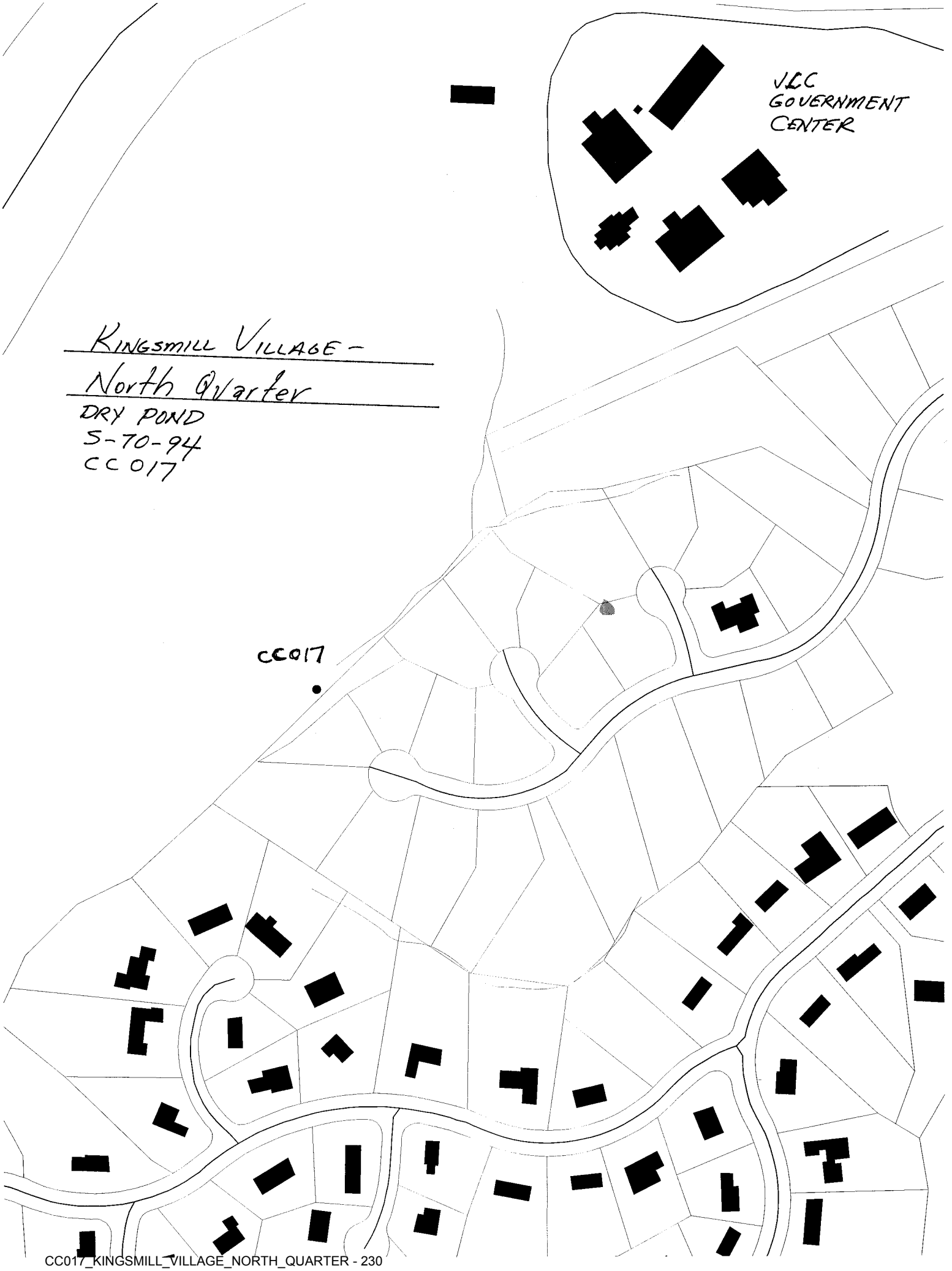
19. An exception to disturb slopes 25% and greater must be submitted to the Director of Code Compliance.

WATERSHED	CC	MAINTENANCE PLAN	No	CTRL STRUC DESC	CMP Riser
BMP ID NO	017	SITE AREA acre	34	CTRL STRUC SIZE inches	48
PLAN NO	S-70-94	LAND USE	Resid Plann Comm	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(50-01)(01-09)	old BMP TYP	Dry Detention	OTLT BARRL SIZE inch	30
PIN NO	5010100009	JCC BMP CODE			
CONSTRUCTION DATE	7/1/1995	POINT VALUE	6	EMERG SPILLWAY	Yes
PROJECT NAME	Kingsmill Village-North Quarter			DESIGN HW ELEV	18.85
FACILITY LOCATION	Behind 168 North Quarter (Lot 18)			PERM POOL ELEV	n/a
CITY-STATE	Williamsburg, Va. 23185	SVC DRAIN AREA acres	40.95	2-YR OUTFLOW cfs	18.90
CURRENT OWNER	Busch Properties Inc.			10-YR OUTFLOW cfs	87.39
OWNER ADDRESS	100 Kingsmill Road			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	Woods, SF Resid & County Complex Area		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23185	IMPERV AREA acres	12.86	CONSTR CERTI	Yes
OWNER PHONE		RECV STREAM	UT of Halfway Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	No	LAST INSP DATE	8/24/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	3
		CHAN PROT CTRL	Yes	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0.153	form Tutters Neck. BMP orif retrofit 1997 with 8" DIP. Dual low flow orifices.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu


CC017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North Quarter
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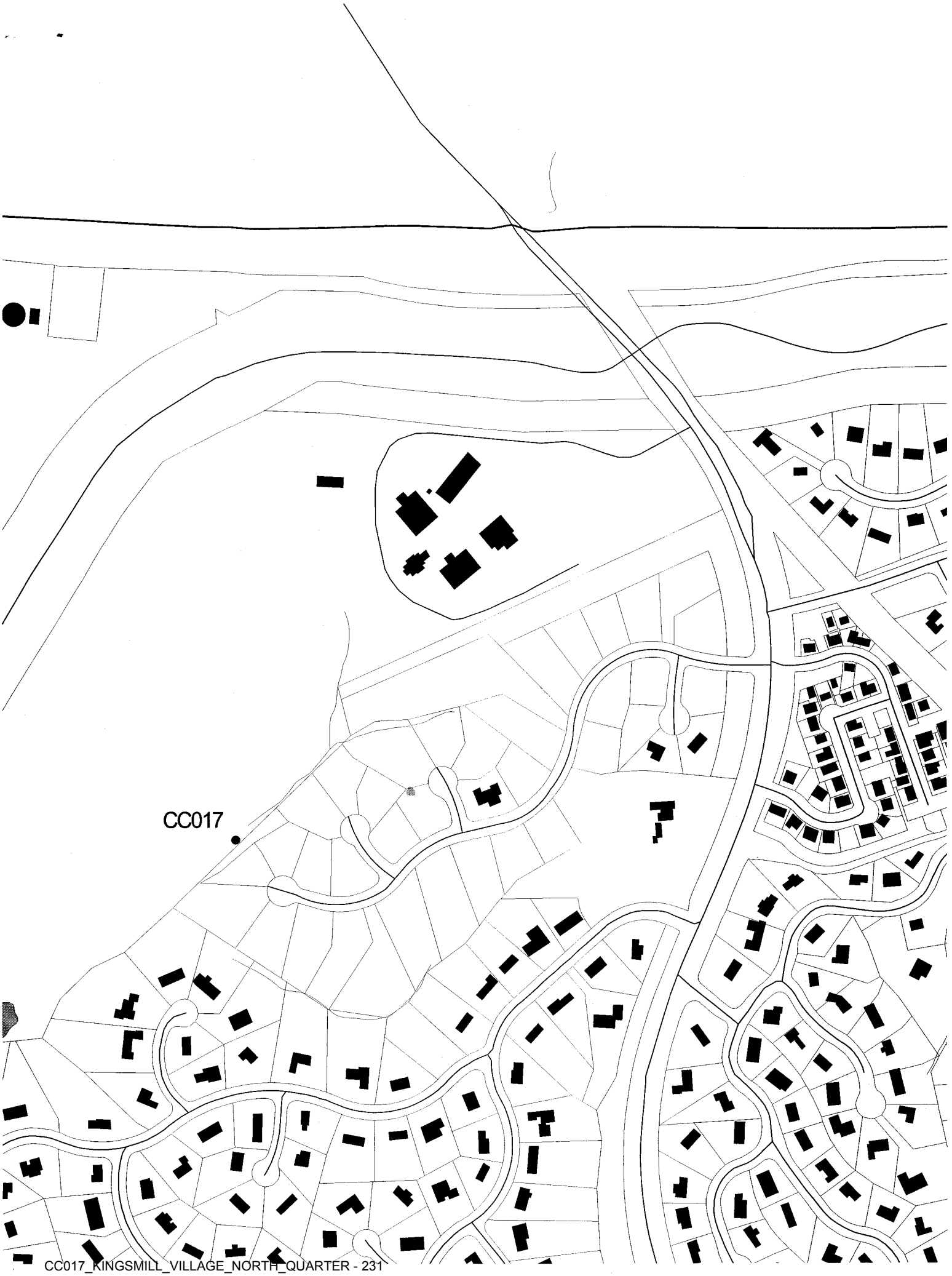
CC017

Scott Thomas

From: Scott Thomas
Sent: Wednesday, August 29, 2001 5:46 PM
To: Darryl Cook
Cc: Mike Woolson
Subject: RE: Kingsmill North Quarter

As you know, we just sent out the letter about field related issues pertaining to the BMP on August 24th. I am sure that caused the spark and they probably think our motivation to close the file is related to the County complex to be situated upstream.

Although I had briefly mentioned it to you in the email dated 8/24 (before I sent the letter), that fact that the future county project may occur upstream had no connection or bearing whatsoever in Mike trying to close the project out and initiating my final inspection of the facility. This has been on his list of "closeouts" for awhile, as well as about 7 other facilities in Kingsmill, and I finally got around to performing the final inspection and looking at the record drawing/construction certification documents.

My comments about the facility were pretty typical as it pertains to construction-related items for dry pond facilities at this point in the project timeline, regardless of whether any upstream development was or was not to occur.

Anyways, I have all the information about the facility in my active RD/CC review file. There would be no further action on this facility until the construction-related comments are satisfactory addressed by the developer. I created an "as-built" file with all relative information (that I know of) and would be ready to meet at any time to discuss.

Scott

-----Original Message-----
From: Darryl Cook
Sent: Wednesday, August 29, 2001 7:22 AM
To: Scott Thomas
Cc: Mike Woolson
Subject: RE: Kingsmill North Quarter

I just got a call from Arch Marston yesterday and they have been retained by Kingsmill to review the design of the BMP facility. I'm not sure what the motivation is but they are apparently concerned about the fact that the County is going to use it as the BMP for the new building construction. Let me know If we have everything together and I'll call Arch to let him know when he can come over.

-----Original Message-----
From: Scott Thomas
Sent: Friday, August 24, 2001 4:41 PM
To: Darryl Cook
Cc: Mike Woolson
Subject: Kingsmill North Quarter

Darryl

One of the files that Mike is trying to close out is Kingsmill North Quarter (formerly Tutters Neck North). I have reviewed the entire "active"file, record drawing, construction certification and performed a detailed Final Inspection of the BMP with Mike. I have no comments on the record drawing or construction certification. However, I have drafted a letter to go to Busch Properties for construction-related (work-field) items associated with the facility.

Based on my file review, it appears the facility was originally designed as a wet pond, changed to a dry pond and then due to some ponding and the threat of tree kills, it was retrofitted around 1997. The as-built drawings do not reflect the final work. I don't think this is much of a big deal as the basin is of pretty much typical dry pond design and correspondence/sketches in the file show the minor retrofits that were done. The certification is good for the dam embankment and pond riser/barrel which would be of the most concern. The Final Inspection we performed does not reveal anything different than what the 1996 as-builts and retrofit sketches/correspondence show.

Being that you were involved in history of the original design and subsequent retrofit; that this is the facility in which the new County building will tie into; and that my comments are pretty straight forward, I suggest you briefly scan

my letter to go to Tom Dunn of Busch Properties.

I put a copy of the letter and my inspection report in you box and will hold it until I get some feedback from you.

Scott

North Quarter
Bond
Kingsmill
$10,000
[redacted] as per K.L.

CODE COMPLIANCE REVIEW COMMENTS
BUSCH - TUTTER'S NECK NORTH
PLAN NO. S-70-94
November 19, 1994 DEC

1. Provide conservation easements for all onsite natural open space areas claimed for BMP points. Offsite open space areas cannot be counted as natural open space credit. However, there are sufficient credits available onsite to total 10 points so additional onsite credits are not needed.

2. Provide temporary slope drains for all sediment traps to lower the water from the trap to the toe of slope. Suggest that the corrugated pipe outfalls be used for this purpose. If they are to be used, add a note concerning the timing of installation of the outfalls such that they are installed from the storm drain system into the trap and then used to receive the discharge from the traps.

3. The following comments refer to the detention basin design:
   a. Raise the top of the dam from elevation 19.0 to 19.5 to provide 1 foot of freeboard for the 100-year storm.
   b. The basin embankment must bel located in common area and not be situated on private property on an individual lot.

4. Provide 20-foot wide drainage easements for all the storm drain outfall pipes to the end of the riprap protection.

RECEIVED 6-25-91

MEMORANDUM

TO: DARRYL COOK
FILE 7169-B196

FROM: DEBORAH LENCESKI

DATE: JUNE 24, 1991

RE: JOINT BMP POND BETWEEN KINGSMILL VILLAGE AND COUNTY PROPERTY

Minutes of our meeting of June 14, 1991.

1. Six point, extended dry detention pond can be built for Kingsmill Village if County property is included in open space calculations.

2. Maximum amount of development of County property can occur if this pond is enlarged (i.e. increasing height of dam) and converted to eight point, extended wet pond.

3. Darryl is to research realistic development levels and green space preservation areas.

4. I am to research alternatives for dam construction.

cc: Mr. John Hagee

Assume 6 impervious acres to be developed on County property.

Calculation as follows:

23.5 ac total
- 5.7 ac developed now
17.8 ac left to dev.
- 4.4 ac 25% slopes
13.4 ac available
.45 impervious -
6.0 acres

Per Tony Gussman - No Conservation Easement exists on the east side of County property where we border County Road. May [illegible]

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER - 236