

**SOIL EROSION
AND
SEDIMENTATION CONTROL
PLAN
NARRATIVE**

**BERTIE COUNTY HIGH SCHOOL ADDITION
WINDSOR, NC**



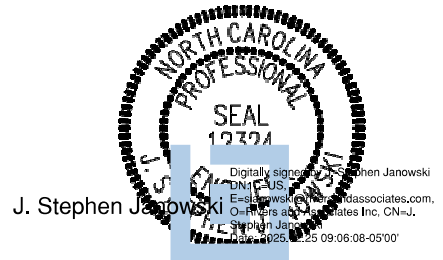
ENGINEERS, PLANNERS, SURVEYORS & LANDSCAPE ARCHITECTS

107 E. 2nd Street
Greenville, NC 27858
252-752-4135

February 24, 2025

Owner:

Bertie County
PO Box 530
Windsor, NC 27983



Bertie County--Register of Deeds
Belinda S. White, Register
Inst #7824 Book 820 Page 388
01/22/2004 04:04:18pm

Belinda S. White ROP
By: Sandra P. Clarke, Asst.

FILED

2004 JAN 22 PM 3:26

BERTIE COUNTY, C.S.C.

BY *AS*

File # 01-CVS-457

Film # _____

STATE OF NORTH CAROLINA

IN THE GENERAL COURT OF JUSTICE

COUNTY OF BERTIE

SUPERIOR COURT DIVISION

Bertie County,

Plaintiff

vs.

CONSENT JUDGMENT

International Paper Company,
Defendant

THIS ACTION coming on to be heard and being heard before the Honorable Judge Cy A. Grant, Sr., Senior Resident Superior Court Judge for Judicial District 6B, and it appearing to the Court and pursuant to the consent of the parties the Court finding as follows:

FINDINGS OF FACT

1. The Plaintiff instituted this action on the December 5, 2001 by the issuance of Summons, the filing of a Complaint, Declaration of Taking and Notice of Deposit and by the deposit of \$47,963.00 as its estimate of just compensation.

2. The Plaintiff served Summons together with a copy of the Complaint, Declaration of Taking and Notice of Deposit on the Defendant, and the Defendant filed an Answer to the Complaint within the time permitted by law. All parties who are necessary to the determination of this action are properly before the Court, and the Defendant is under no legal disability.

3. The Defendant was the owner of the property when the Complaint and Declaration of Taking were filed. Title to the subject property is not in dispute, and that the property described in the Complaint and Declaration of Taking is subject only to such liens and encumbrances as are set forth in Paragraph 9 of the Complaint.

4. The Defendant filed a Motion to Dismiss and for Costs and Damages which was heard by the Honorable Judge Cy A. Grant, Sr. on May 12, 2003. On June 3, 2003 Judge Grant entered an Order denying the Defendant's Motion, and on June 30, 2003, the Defendant filed a Notice of Appeal from that Order. The Defendant agrees to withdraw its Notice of Appeal because the parties have agreed to settle the cases referenced in the next paragraph on the terms stated in the Consent Judgments.

5. The Defendant and the Plaintiff have agreed to settle this case and a companion case entitled, "Bertie County v. International Paper Company and Sustainable Forests, LLC," Bertie County File No. 02-CVS-30 (the "cases"), and to settle the Defendant's appeals in the cases, as the Plaintiff has agreed to pay and the Defendant has agreed to accept the total sum of TWO HUNDRED FIFTY THOUSAND DOLLARS (\$250,000.00) for the properties described in paragraph 1 of the Decree in the Consent Judgments in the cases, plus fee simple title to the thirty-foot wide strip of

land that lies between the two tracts, which amount includes any claim for interest and all costs, as full and just compensation for the appropriation of the interests and areas as set forth in the Complaint and Declaration of Taking and as hereinafter more particularly described.

6. When the Plaintiff condemned the tract described herein and the tract in the companion case referenced above, it condemned a thirty-foot wide nonexclusive right of way over a thirty-foot wide area that lies between the two tracts, which area is more particularly described in the Consent Judgment entered in the companion case referenced above. The parties agree that the Plaintiff shall now take fee simple title to that area, and that the Defendant shall no longer have the right to use that area for ingress, egress, regress or any other purpose. In exchange, the Plaintiff has agreed to pay an additional \$10,000.00 to the Defendant so that the Defendant can construct or upgrade a new access road in order to have adequate access to its remaining property, which access road will be across lands other than those described herein that are owned by the Defendant.

7. The Plaintiff took exclusive custody, possession and control of the property 120 days after the filing of the Complaint and Declaration of Taking and that all activities which occurred on the property after that date were under the County's exclusive direction, custody and control. The Plaintiff has agreed to indemnify the Defendant for any and all liabilities that have arisen or may arise as a result of the Plaintiff's activities on the subject property, specifically including but not limited to any

liability arising from the Plaintiff's land clearing activities or logging of a portion of said lands which may be determined "wetlands".

CONCLUSIONS OF LAW

And based on the foregoing findings of fact and pursuant to the consent of the parties the Court concludes as a matter of law that:

1. This Court is the appropriate Court of venue and jurisdiction.
2. The taking of the property described herein by Bertie County was for a public purpose.
3. The agreement of the parties is reasonable and enforceable and should be accepted by this Court in the public interest.

DECREE

NOW, THEREFORE, BASED UPON THE FOREGOING FINDINGS OF FACT AND CONCLUSIONS OF LAW AND WITH THE CONSENT OF THE PARTIES, IT IS ORDERED, ADJUDGED AND DECREED THAT:

1. The Plaintiff is hereby granted for a public purpose, a fee simple interest in the following described property of the Defendant:

That certain lot or parcel of land being in Windsor Township, Bertie County, North Carolina, being bounded on the West by U.S. Highway 13, on the North and East by lands now or formerly owned by International Paper Company, and on the South by a thirty-foot wide strip of land and adjoining tract acquired in the companion case referenced above, and being more particularly described as follows:

Beginning at a power pole on the eastern edge of U.S Highway 13, said point of beginning is located by commencing at a pk nail set at the intersection of the centerlines of U.S. Highway 13 and S.R. 1257 – School Road, thence South 24 degrees 43 minutes 02 seconds East 331.36 feet to a pk nail set in the center of said highway; thence North 67 degrees 13 minutes 36 seconds East 48.87 feet to a power pole, the place of beginning, and thus having located the point of beginning and running North

48 degrees 43 minutes 06 seconds East 195.58 feet to an existing railroad spike; thence North 23 degrees 35 minutes 44 seconds West 220.30 feet to an iron rod set; thence North 53 degrees 10 minutes 18 seconds East 224.85 feet to an existing iron pipe; thence North 24 degrees 52 minutes 46 seconds West 103.96 feet to an existing iron pipe; thence North 58 degrees 06 minutes 41 seconds; East 1,084.80 feet to an iron rod set; thence turning and running parallel with said U.S. Highway 13, South 24 degrees 41 minutes 42 seconds East 1,351.24 feet to an iron rod set; thence running along an existing gravel path South 52 degrees 38 minutes 15 seconds West 1,524.52 feet to an iron rod set; thence along the eastern edge of U.S. Highway 13, North 24 degrees 41 minutes 42 seconds West 1,122.40 feet to the point of beginning. Said lot contains 46.50 acres, more or less, and is identified as "(OUTPARCEL) TRACT 1" and more particularly described on a map entitled "Survey For: Tract 1 - Bertie County Board of Education, (Bertie High School Site); Tract 2 - Bertie County", dated April 13, 1999, revised March 7, 2001, revised again on April 3, 2001, and revised again on December 12, 2001 and prepared by Randolph P. Nicholson, R.L.S., which map is recorded at Plat Cabinet B, Page 396 of the Bertie County Public Registry and incorporated by reference as if fully set out herein.

This is a portion of the land conveyed by deed to Halifax Timber Company, dated December 22, 1966 and recorded in Book 546, Page 667, in the Bertie County Public Registry. Halifax Timber Company merged with Hoerner Waldorf Corporation by merger dated December 5, 1969, recorded on March 2, 1970 in Corporate Book 3, Page 376. Hoerner Waldorf Corporation merged with Champion International Corporation by merger dated March 25, 1977, recorded on April 22, 1977 in Corporate Book 4, Page 228. Champion International Corporation merged with International Paper Company on December 31, 2000 and Affidavit of Merger is recorded in Deed Book 780 at Page 956 of the Bertie County Public Registry.

2. The Plaintiff pay to the Defendant the total sum of TWO HUNDRED FIFTY THOUSAND DOLLARS (\$250,000.00) for both the tract described above and the adjacent thirty-foot wide strip of land along with the tract just South of said thirty-foot wide strip of land, which strip of land and adjacent tract are the subject of the companion case entitled, "Bertie County v. International Paper Company and Sustainable Forests, LLC," Bertie County File No. 02-CVS-30; and that said sum, which includes any claim for interest and all costs, is the full, fair and adequate value of and

represents just compensation for the taking of the hereinabove-described interests and areas by the Plaintiff.

3. Since the Plaintiff is taking fee simple title to the thirty-foot wide area that lies between the two tracts, which thirty-foot wide area contains the road that the Defendant has been using to get access to its remaining property and since the Defendant shall no longer have the right to use that area for ingress, egress, regress or any other purpose, the Plaintiff shall pay an additional \$10,000.00 to the Defendant so that the Defendant can construct or upgrade a new access road in order to have adequate access to its remaining property, which access road will be across lands other than those described herein that are owned by the Defendant.

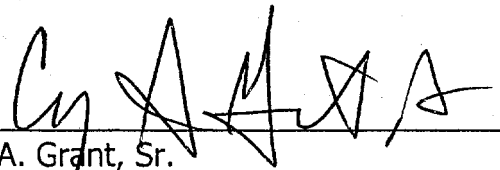
4. The Clerk of Superior Court of Bertie County return the court deposit to the Plaintiff.

5. The Defendant's appeal from the June 3, 2003 Order denying its Motion to Dismiss and for Costs and Damages is withdrawn by the Defendant and dismissed by the Court.

6. The Plaintiff indemnify and hold the Defendant harmless for any and all liabilities that have arisen or may arise as a result of the Plaintiff's activities on the subject property, specifically including but not limited to any liability arising from the Plaintiff's land clearing activities or logging of a portion of said lands which may be determined "wetlands".

7. A copy of this Judgment be certified by the Clerk of Superior Court of Bertie County to the Register of Deeds, who shall record the same among the land records of said County.

This the 14th day of January, 2005



Cy A. Grant, Sr.
Senior Resident Superior Court Judge
Judicial District 6B

CONSENTED TO:

PRITCHETT & BURCH, PLLC

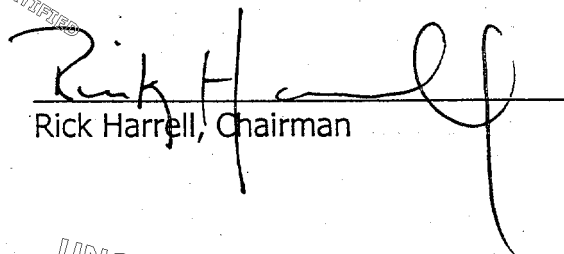
By:


Lloyd C. Smith, Jr.


Jonathan E. Huddleston
Post Office Drawer 100
Windsor, NC 27983
Telephone: (252)794-3161
Attorneys for Plaintiff

BERTIE COUNTY BOARD OF COMMISSIONERS

By:


Rick Harrell, Chairman

WOMBLE, CARLYLE, SANDRIDGE & RICE, PLLC

By: *John C. Cooke*

John C. Cooke
Post Office Box 831
Raleigh, North Carolina 27602
Telephone: (919) 755-6173
Attorneys for Defendants

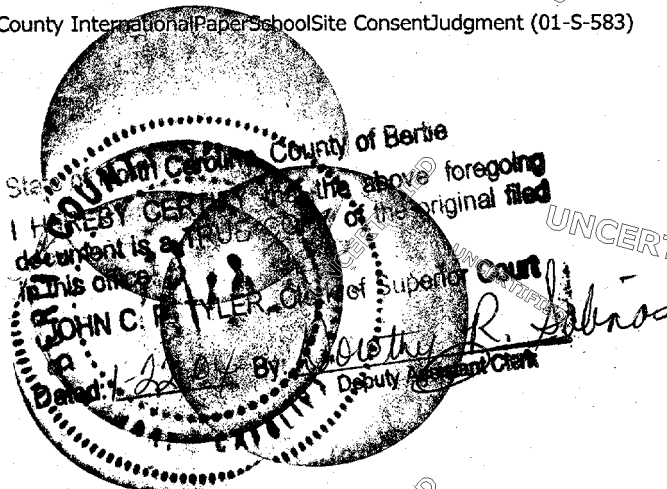
INTERNATIONAL PAPER COMPANY

By: *George A. O'Brien*

George A. O'Brien
print name

Sr. Vice President
title

LCS01County InternationalPaperSchoolSite ConsentJudgment (01-S-583)



APPROVED
AS TO FORM

By KME
Date 11-24-03
Legal Department





**STORM WATER DETENTION ROUTING
FOR
BERTIE COUNTY HIGH SCHOOL
WINDSOR, NORTH CAROLINA**

10 Year 24-Hour Storm

2/24/25

 Digitally signed by J. Stephen Janowski
DN: C=US, E=jjanowski@jersandassociates.com,
O=Jersandassociates Inc, CN=J.
Stephen Janowski
Date: 2025.02.25 09:06:32-05'00'

J. Stephen Janowski

Site Conditions Predevelopment

Total watershed area					19.09 acres
Transporation	C=	0.95	CN=	98	0.20 acres
Building	C=	1.00	CN=	98	0.00 acres
Managed Pervious Flat Lawn<2%	C=	0.20	CN=	73	0.00 acres
Denuded	C=	0.35	CN=	82	0.00 acres
Wooded	C=	0.15	CN=	78	18.89 acres
SCS Soil Group					B
Hydraulic Length		Overland	960	Channelized	460 feet
Vertical Relief		Overland	3	Channelized	1.5 feet
10 Year Rainfall					5.66 inches

Time of Concentration
channel flow

$$t_c = \frac{\left[\frac{L^3}{H^4} \right]^{0.385}}{128}$$

Overland	28.5	+	Channelized	8.0	36.4 minutes
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Composite C based on published values (exhibit 1-Malcom)

Rainfall Intensity = $I = \frac{g}{(h + T)}$

$\frac{R}{2}$	$\frac{g}{132}$	$\frac{h}{18}$	0.16
10	203	22	
25	246	23	
100	302	25	

3.47 inches per hr

Peak Discharge $Q = CIA$ **10.51 cfs**

Site Conditions Post Development

Total watershed area					19.09 acres
Transporation	C=	0.95	CN=	98	7.26 acres
Building	C=	1.00	CN=	98	3.02 acres
Future Impervious	C=	0.95	CN=	98	0.79 acres
Managed Pervious Flat Lawn 2%	C=	0.20	CN=	73	8.02 acres
Wooded Pervious	C=	0.15	CN=	78	0.00 acres
SCS Soil Group					B
Hydraulic Length		Chan Imp	420	Channelized	1,750 feet
Vertical Relief		Chan Imp	1	Channelized	6.50 feet
2 yr rainfall					2.96 inches

Design Hydrograph Formulation

Composite CN **87.5**

$S = \frac{1000}{CN} - 10$ **1.43**

Runoff

$Q^* = \frac{(P - 0.2S)^2}{P + 0.8S}$ **1.74 inches**

Time of Concentration
channel flow (not overland)

$$t_c = \frac{\left[\frac{L^3}{H^4} \right]^{0.385}}{128}$$

Overland	16.7	+	Channelized	8.5	25.2 minutes
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Composite C = **0.64**

Rainfall Intensity = $I = \frac{g}{(h + T)}$

$\frac{R}{2}$	$\frac{g}{132}$	$\frac{h}{18}$	0.64
10	203	22	
25	246	23	
100	302	25	

4.30 inches per hr

Peak Discharge $Q = CIA$ **52.79 cfs**

Time to peak $T_p = \frac{Vol}{1.39Q_p}$ **27.4 minutes**

Storage Required $S = (Q_p - Q_o) T_p$ **69,607 cf**
(Above 1st inch of runoff pool)

Allowable release at impoundment (pre-bypass) = **10.51 cfs**
Peak rate of inflow at impoundment (pre-bypass) = **52.79 cfs**
Allowable release at impoundment(post-bypass)= **10.51 cfs**
Peak rate of inflow at impoundment (post-bypass) = **52.79 cfs**

BYPASSED FLOW

	Area(ac)	C	I(in/hr)	
Transportation	0.00	0.95		
Roof	0.00	1.00		
Managed Pervic	0.00	0.2		
Wooded	0.00	0.10		
Total	0.00	0.10	4.30	

Q_{bypassed} 0.00 cfs

10 year storm

STAGE STORAGE DATA

Elevation	surface area	diff. elev	storage	accum. storage	Elevation	Stage
24.52	47,223			-	24.52	0
		0.48	24,005			
25.00	52,799	1.00	54,444	24,005	25.00	0.48
26.00	56,088	1.00	57,843	78,449	26.00	1.48
27.00	59,598	1.00	-	136,292	27.00	2.48
28.00	63,180		-	-	28.00	3.48
				197,681		

Storage elevation@minimum storage volume 25.63 msl

Storage	Stage	LN(storage)	LN(Stage)	Z Computed Stage
24,005	0.48			0.51
78,449	1.48	11.27	0.39	1.50
136,292	2.48	11.82	0.91	2.48
197,681	3.48	12.19	1.25	3.48

$$b = \frac{\ln\left(\frac{S_2}{S_1}\right)}{\ln\left(\frac{Z_2}{Z_1}\right)} = 1.10$$

$$K_s = \frac{S_2}{Z_2^b} = 50,292.03$$

$$Z = \left[\frac{S}{K_s}\right]^{1/b} = 25.33$$

25.63 feet msl

Size Outlet Device for Control Structure

invert elevation = 24.52 feet msl
estimated orifice center elev. = 24.69 feet msl
proposed water surface elev. = 25.63 feet msl
Average head (h) = 0.37 feet
discharge (d) = 10.5 cfs
coefficient of discharge = 0.6

Orifice equation

$$Q = C_d A \sqrt{2gh}$$

2.14 inches
4 inches
- days

SAY
orifice will drain temp storage in

Inflow Hydrograph

Peak Inflow = 52.79
Time to Peak = 27.4 min

Time T (min)	Inflow Q (cfs)	Orifice Outflow Q (cfs)	Temp Outflow Q (cfs)	Structure Overflow Q (cfs)	Total Outflow Q (cfs)
0	0.00	0.00	0.00	0.0	0.0
3.00	1.54	0.00	0.00	0.0	0.0
6.00	5.98	0.00	0.00	0.0	0.0
9.00	12.81	0.08	0.00	0.0	0.1
12.00	21.22	0.13	0.00	0.0	0.1
15.00	30.23	0.18	0.00	0.0	0.2
18.00	38.80	0.23	0.00	0.0	0.2
21.00	45.92	0.28	0.00	0.0	0.3
24.00	50.76	0.32	0.00	0.0	0.3
27.00	52.76	0.37	0.00	0.0	0.4
30.00	51.68	0.41	0.00	0.0	0.4
33.00	47.98	0.44	0.00	0.0	0.4
36.00	41.62	0.47	0.00	0.0	0.5
39.00	36.11	0.49	0.02	0.0	0.5
42.00	31.32	0.51	0.16	0.0	0.7
45.00	27.17	0.53	0.35	0.0	0.9
48.00	23.57	0.54	0.54	0.0	1.1
51.00	20.45	0.55	0.73	0.0	1.3
54.00	17.74	0.56	0.91	0.0	1.5
57.00	15.39	0.57	1.06	0.0	1.6
60.00	13.35	0.58	1.19	0.0	1.8
63.00	11.58	0.58	1.33	0.0	1.9
66.00	10.05	0.59	1.43	0.0	2.0
69.00	8.72	0.59	1.50	0.0	2.1
72.00	7.56	0.59	1.57	0.0	2.2
75.00	6.56	0.60	1.65	0.0	2.2
78.00	5.69	0.60	1.68	0.0	2.3
81.00	4.94	0.60	1.72	0.0	2.3
84.00	4.28	0.60	1.76	0.0	2.4
87.00	3.71	0.60	1.79	0.0	2.4
90.00	3.22	0.60	1.79	0.0	2.4
93.00	2.80	0.60	1.79	0.0	2.4
96.00	2.43	0.60	1.79	0.0	2.4
99.00	2.10	0.60	1.79	0.0	2.4
102.00	1.83	0.60	1.79	0.0	2.4
105.00	1.58	0.60	1.79	0.0	2.4
108.00	1.37	0.60	1.79	0.0	2.4
111.00	1.19	0.60	1.79	0.0	2.4
114.00	1.03	0.60	1.76	0.0	2.4
117.00	0.90	0.60	1.76	0.0	2.4
120.00	0.78	0.60	1.72	0.0	2.3
123.00	0.67	0.60	1.72	0.0	2.3
126.00	0.59	0.60	1.68	0.0	2.3
129.00	0.51	0.60	1.68	0.0	2.3
132.00	0.44	0.60	1.65	0.0	2.2
135.00	0.38	0.60	1.65	0.0	2.2
138.00	0.33	0.60	1.61	0.0	2.2
141.00	0.29	0.60	1.61	0.0	2.2
144.00	0.25	0.59	1.57	0.0	2.2
147.00	0.22	0.59	1.54	0.0	2.1
150.00	0.19	0.59	1.54	0.0	2.1
153.00	0.16	0.59	1.50	0.0	2.1
156.00	0.14	0.59	1.50	0.0	2.1
159.00	0.12	0.59	1.46	0.0	2.1
162.00	0.11	0.59	1.43	0.0	2.0
165.00	0.09	0.59	1.43	0.0	2.0
168.00	0.08	0.59	1.39	0.0	2.0
171.00	0.07	0.59	1.39	0.0	2.0
174.00	0.06	0.58	1.36	0.0	1.9
177.00	0.05	0.58	1.36	0.0	1.9
180.00	0.05	0.58	1.33	0.0	1.9
183.00	0.04	0.58	1.29	0.0	1.9
186.00	0.03	0.58	1.29	0.0	1.9
189.00	0.03	0.58	1.26	0.0	1.8
192.00	0.03	0.58	1.26	0.0	1.8
195.00	0.02	0.58	1.22	0.0	1.8
198.00	0.02	0.58	1.22	0.0	1.8
201.00	0.02	0.58	1.19	0.0	1.8
204.00	0.01	0.58	1.19	0.0	1.8
207.00	0.01	0.58	1.16	0.0	1.7
210.00	0.01	0.57	1.12	0.0	1.7
213.00	0.01	0.57	1.12	0.0	1.7
216.00	0.01	0.57	1.09	0.0	1.7
219.00	0.01	0.57	1.09	0.0	1.7
222.00	0.01	0.57	1.06	0.0	1.6
225.00	0.01	0.57	1.06	0.0	1.6
228.00	0.00	0.57	1.03	0.0	1.6
231.00	0.00	0.57	1.03	0.0	1.6

10 year storm

Stormwater routing						Perm Pool	Temp pool	Top of Box
						4 inch Orifice	1.00 Spillway 25.87 Weir	11.00 Spillway 27.19 Weir
T (time min)	Q (cfs)	Storage	Stage	Outflow	Elevation			
0	0	-	0.00	0.00	24.52			
3.00	1.5	-	0.00	0.00	24.52	0.00	0.0	0.00
6.00	6.0	277	0.01	0.00	24.53	0.04	0.0	0.00
9.00	12.8	1,354	0.04	0.08	24.56	0.08	0.0	0.00
12.00	21.2	3,644	0.09	0.13	24.61	0.13	0.0	0.00
15.00	30.2	7,440	0.18	0.18	24.70	0.18	0.0	0.00
18.00	38.8	12,849	0.29	0.23	24.81	0.23	0.0	0.00
21.00	45.9	19,792	0.43	0.28	24.95	0.28	0.0	0.00
24.00	50.8	28,008	0.59	0.32	25.11	0.32	0.0	0.00
27.00	52.8	37,086	0.76	0.37	25.28	0.37	0.0	0.00
30.00	51.7	46,517	0.93	0.41	25.45	0.41	0.0	0.00
33.00	48.0	55,746	1.10	0.44	25.62	0.44	0.0	0.00
36.00	41.6	64,303	1.25	0.47	25.77	0.47	0.0	0.00
39.00	36.1	71,711	1.38	0.51	25.90	0.49	0.0	0.00
42.00	31.3	78,118	1.49	0.67	26.01	0.51	0.2	0.00
45.00	27.2	83,636	1.59	0.88	26.11	0.53	0.4	0.00
48.00	23.6	88,369	1.67	1.09	26.19	0.54	0.5	0.00
51.00	20.4	92,416	1.74	1.28	26.26	0.55	0.7	0.00
54.00	17.7	95,866	1.80	1.47	26.32	0.56	0.91	0.00
57.00	15.4	98,795	1.85	1.63	26.37	0.57	1.06	0.00
60.00	13.4	101,271	1.89	1.77	26.41	0.58	1.19	0.00
63.00	11.6	103,356	1.93	1.91	26.45	0.58	1.33	0.00
66.00	10.0	105,098	1.96	2.02	26.48	0.59	1.43	0.00
69.00	8.7	106,543	1.98	2.09	26.50	0.59	1.50	0.00
72.00	7.6	107,736	2.00	2.17	26.52	0.59	1.57	0.00
75.00	6.6	108,707	2.02	2.24	26.54	0.60	1.65	0.00
78.00	5.7	109,484	2.03	2.28	26.55	0.60	1.68	0.00
81.00	4.9	110,098	2.04	2.32	26.56	0.60	1.72	0.00
84.00	4.3	110,569	2.05	2.36	26.57	0.60	1.76	0.00
87.00	3.7	110,915	2.06	2.40	26.58	0.60	1.79	0.00
90.00	3.2	111,152	2.06	2.40	26.58	0.60	1.79	0.00
93.00	2.8	111,301	2.06	2.40	26.58	0.60	1.79	0.00
96.00	2.4	111,372	2.06	2.40	26.58	0.60	1.79	0.00
99.00	2.1	111,377	2.06	2.40	26.58	0.60	1.79	0.00
102.00	1.8	111,324	2.06	2.40	26.58	0.60	1.79	0.00
105.00	1.6	111,221	2.06	2.40	26.58	0.60	1.79	0.00
108.00	1.4	111,075	2.06	2.40	26.58	0.60	1.79	0.00
111.00	1.2	110,891	2.06	2.40	26.58	0.60	1.79	0.00
114.00	1.0	110,674	2.05	2.36	26.57	0.60	1.76	0.00
117.00	0.9	110,435	2.05	2.36	26.57	0.60	1.76	0.00
120.00	0.8	110,172	2.04	2.32	26.56	0.60	1.72	0.00
123.00	0.7	109,895	2.04	2.32	26.56	0.60	1.72	0.00
126.00	0.6	109,599	2.03	2.28	26.55	0.60	1.68	0.00
129.00	0.5	109,293	2.03	2.28	26.55	0.60	1.68	0.00
132.00	0.4	108,974	2.02	2.24	26.54	0.60	1.65	0.00
135.00	0.4	108,650	2.02	2.24	26.54	0.60	1.65	0.00
138.00	0.3	108,315	2.01	2.20	26.53	0.60	1.61	0.00
141.00	0.3	107,978	2.01	2.20	26.53	0.60	1.61	0.00
144.00	0.2	107,633	2.00	2.17	26.52	0.59	1.57	0.00
147.00	0.2	107,288	1.99	2.13	26.51	0.59	1.54	0.00
150.00	0.2	106,944	1.99	2.13	26.51	0.59	1.54	0.00
153.00	0.2	106,595	1.98	2.09	26.50	0.59	1.50	0.00
156.00	0.1	106,248	1.98	2.09	26.50	0.59	1.50	0.00
159.00	0.1	105,897	1.97	2.05	26.49	0.59	1.46	0.00
162.00	0.1	105,549	1.96	2.02	26.48	0.59	1.43	0.00
165.00	0.1	105,205	1.96	2.02	26.48	0.59	1.43	0.00
168.00	0.1	104,859	1.95	1.98	26.47	0.59	1.39	0.00
171.00	0.1	104,517	1.95	1.98	26.47	0.59	1.39	0.00
174.00	0.1	104,173	1.94	1.94	26.46	0.58	1.36	0.00
177.00	0.1	103,833	1.94	1.94	26.46	0.58	1.36	0.00
180.00	0.0	103,493	1.93	1.91	26.45	0.58	1.33	0.00
183.00	0.0	103,157	1.92	1.87	26.44	0.58	1.29	0.00
186.00	0.0	102,827	1.92	1.87	26.44	0.58	1.29	0.00
189.00	0.0	102,496	1.91	1.84	26.43	0.58	1.26	0.00
192.00	0.0	102,171	1.91	1.84	26.43	0.58	1.26	0.00
195.00	0.0	101,845	1.90	1.80	26.42	0.58	1.22	0.00
198.00	0.0	101,524	1.90	1.80	26.42	0.58	1.22	0.00
201.00	0.0	101,203	1.89	1.77	26.41	0.58	1.19	0.00
204.00	0.0	100,888	1.89	1.77	26.41	0.58	1.19	0.00
207.00	0.0	100,573	1.88	1.73	26.40	0.58	1.16	0.00
210.00	0.0	100,263	1.87	1.70	26.39	0.57	1.12	0.00
213.00	0.0	99,959	1.87	1.70	26.39	0.57	1.12	0.00
216.00	0.0	99,655	1.86	1.67	26.38	0.57	1.09	0.00
219.00	0.0	99,356	1.86	1.67	26.38	0.57	1.09	0.00
222.00	0.0	99,058	1.85	1.63	26.37	0.57	1.06	0.00
225.00	0.0	98,765	1.85	1.63	26.37	0.57	1.06	0.00
228.00	0.0	98,473	1.84	1.60	26.36	0.57	1.03	0.00
231.00	0.0	98,186	1.84	1.60	26.36	0.57	1.03	0.00

Results of routing the 10 Year storm

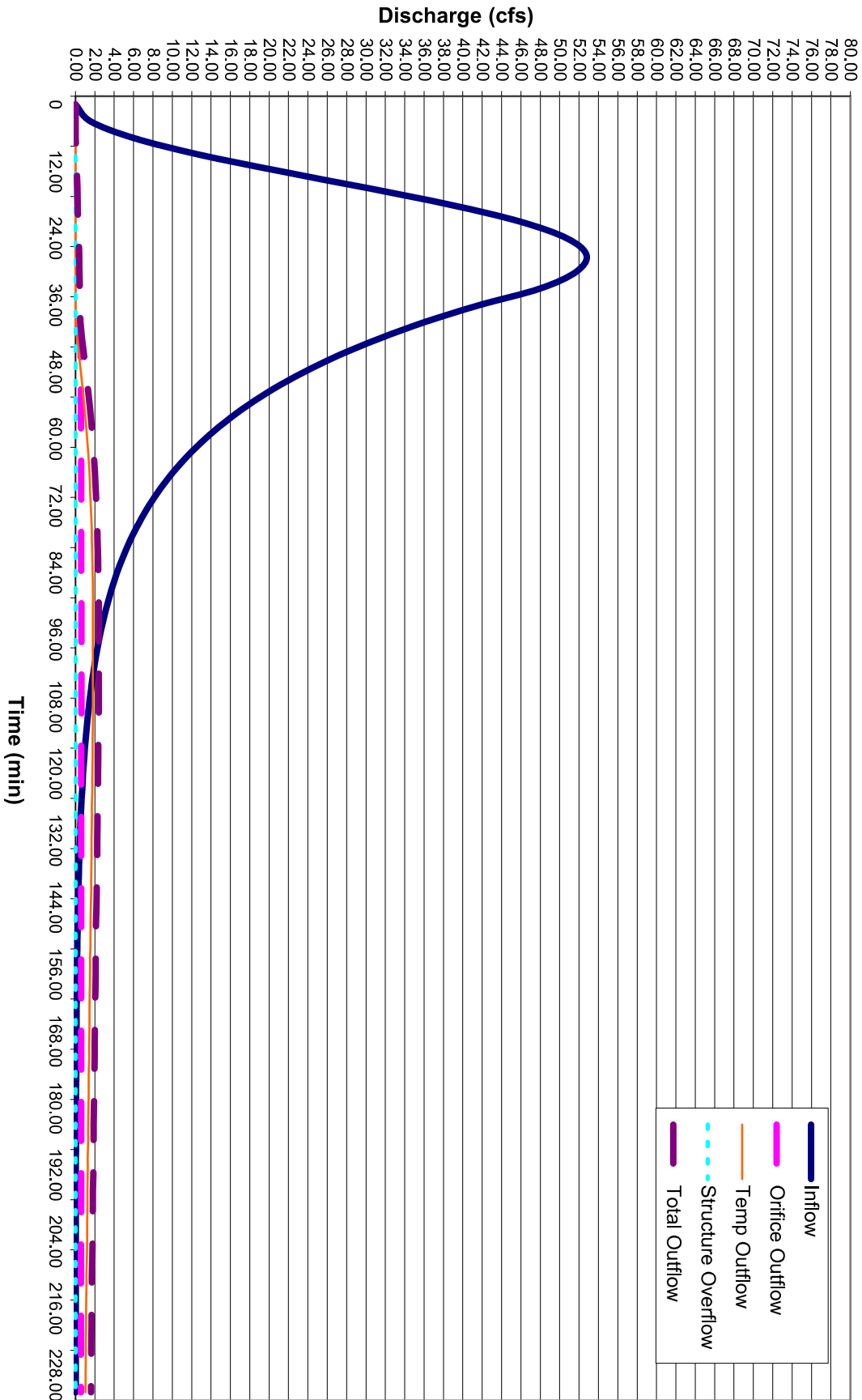
Use orifice = 4.00 inches
 Peak outflow = 2.40 cfs
 Peak Stage= 2.06 ft
 Water Elevation= 26.58 msl
 Peak Storage = 111,377 cf

Design Spillway Record DWG 25.87 msl Temporary Pool Elevation for 1st 1.5 inch of runoff 25.62 reqd
 Length of Weir 1.00 ft To control 1-year storm

Structure Overflow 27.19 msl Top of Outlet Control Structure
 Length of weir 11.00 ft

10 year storm

Routing Hydrograph (10-YR)





United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Bertie County, North Carolina**

Bertie Co HS Addition



February 25, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.




































Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
Soils			Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
Special Point Features		Water Features	
	Blowout		Streams and Canals
	Borrow Pit	Transportation	
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bertie County, North Carolina
Survey Area Data: Version 27, Sep 9, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Lf	Leaf loam	7.5	100.0%
Totals for Area of Interest		7.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bertie County, North Carolina

Lf—Leaf loam

Map Unit Setting

National map unit symbol: 3qyx

Elevation: 20 to 160 feet

Mean annual precipitation: 40 to 55 inches

Mean annual air temperature: 59 to 70 degrees F

Frost-free period: 200 to 280 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Leaf, drained, and similar soils: 80 percent

Leaf, undrained, and similar soils: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leaf, Drained

Setting

Landform: Flats on broad interstream divides, terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey marine deposits

Typical profile

A - 0 to 7 inches: loam

Btg - 7 to 67 inches: clay

Cg - 67 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D

Ecological site: F153AY065NC - Wet Clay Flats and Depressions

Hydric soil rating: Yes

Description of Leaf, Undrained

Setting

Landform: Flats on broad interstream divides, terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey marine deposits

Custom Soil Resource Report

Typical profile

A - 0 to 7 inches: loam

Btg - 7 to 67 inches: clay

Cg - 67 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: D

Ecological site: F153AY065NC - Wet Clay Flats and Depressions

Hydric soil rating: Yes

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I. **PROJECT DESCRIPTION**

This project includes the construction of a new high school building addition and parking lots rearrangement. There is some additional storm drainage that drains to an existing storm water wet detention pond analyzed to handle the additional drainage. It also includes the extension of an 8" sewer line across two small wooded portions of the existing middle school site. Approximately 29,356 SF of new building addition will be constructed. The parking lot and access improvements will account for 45,768 SF of new pavement and sidewalks. The property is bounded on the north by timberland, on the south by The Bertie County Middle School, on the east by Timberland and on the west by NC Hwy 13 and the existing Bertie County High School. The site has slopes averaging 0 to 1.5%. Overall, elevations vary from a high point of 33.5 feet above sea level to a low point of 22.00 feet above sea level. The soil types on the site are "leaf" poorly drained clayey loam. The top 12 inches is a top soil and the next 10 to 15 feet is heavy clay with a high plasticity index. This project drains to Cashie River and the Roanoke River Basin. All spoil will be disposed of on the site. The temporary stockpile will have 1.5 to 1 side slopes and be for topsoil. It will be redistributed and the remainder permanently seeded. The spoil area will be graded with 1.5:1 side slopes and be temporarily seeded. Upon the completion of the spread of topsoil it will be permanently seeded.

This site contains 46.5 acres on site of which 16.3 acres are surveyed as wetlands. Of these wetlands we propose to impact no acres with fill.

There are several grading features that are proposed that are in close proximity to the existing wetlands. The first is a stockpile area in the rear eastern portion of the site that is for the purpose of topsoil to be redistributed upon the completion of grading. This pile is estimated at 15 feet tall with 1.5 to one side slopes. It will be surrounded with silt fence spaced approximately 5 feet from the existing wetlands. Upon the completion of the redistribution of topsoil around the landscaped areas of the site, the remaining stockpile area will be stabilized with a seed mix of 50 lb/ac Tall Fescue, 10 lb/ac Centipede and 10 lb/acre Bermuda grass and mulch installed at 2 tons per acre. The second is construction disturbed area that sits on a ridge and drains to the northwest and north east. This area will be separated from the wetland by silt fence installed approximately 1 to 5 feet from the existing wetlands. This area will also be stabilized with a seed mix of 50 lb/ac Tall Fescue, 10 lb/ac Centipede and 10 lb/acre Bermuda grass and mulch installed at 2 tons per acre.

In addition to the grading features there an existing wet-detention pond for the that will collect runoff from the new disturbed area upon the installation of storm drainage. This pond is located on the lower elevations of the site near an outflow on the south side with an elevation of approximately 23.0 feet. Upon the completion and stabilization of the site additions, sediment will be removed from the forebay to the existing bottom elevation.

II. **SITE DESCRIPTION**

The site has slopes averaging 0 to 1.5%. Overall, elevations vary from a high point of 33.5 feet above sea level to a low point of 22.00 feet above sea level. The soil types on the site are sandy loam.

III **ADJACENT PROPERTY**

The property is bounded on the north by timberland, on the south by The Bertie County Middle School, on the east by Timberland and on the west by NC Hwy 13 and the existing Bertie County High School.

IV. **SOILS**

According to the soil survey from the U.S. Dept of Agriculture, the soils on this site include "Leaf loam".

V. **PLANNED STORM WATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL MEASURES**

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

A Temporary Gravel Construction Entrance is to be used at driveway connections to the site.

TEMPORARY SILT FENCE

Temporary Silt Fences are to be placed at the toe of fill sites adjacent to the property line to collect sediment laden runoff. The silt fence will provide an excellent barrier to protect off-site facilities from sediments.

FABRIC DROP INLET PROTECTION

Sediment fence will be installed around all catch basins and drop inlets to prevent sediment from entering the storm drainage system.

STORM INLET SEDIMENT TRAP

Storm inlet sediment traps will be used at concentrated runoff points associated with drop inlets as shown on plans.

GROUND COVER: Provide a groundcover (temporary or permanent) on exposed slopes within 21 calendar days following completion of any phase of grading; and , a permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.

VI. CONSTRUCTION SCHEDULE

Phase 1 Initial Clearing and Grubbing Phase

1. EROSION AND SEDIMENT CONTROL (E&SC) PERMIT AND A CERTIFICATION OF COVERAGE (COC) MUST BE OBTAINED BEFORE THE LAND ACTIVITIES OCCURE.
2. WHEN THE PROJECT IS COMPLETED, THE PERMITTEE SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN. AFTER DEMLR INFORMS THE PERMITTEE OF THE PROJECTS CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT deq.nc.gov/NCGO1 TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (e-NOT). A \$100 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE e-NOT HAS BEEN FILLED OUT.
3. PERIMETER MEASURES MUST BE LEFT IN PLACE UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED. AFTER SITE IS PERMANENTLY STABILIZED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND PROVIDE PERMANENT SEEDING WHERE TEMPORARY MEASURES HAVE BEEN REMOVED AND GROUND COVER IS NOT ADEQUATE. SEDIMENT BASINS MAY NOT BE REMOVED OR CONVERTED TO PERMANENT BMPS UNTIL ALL UPLAND AREAS ARE PERMANENTLY STABILIZED.
4. OBTAIN PLAN APPROVALS AND ALL APPLICABLE PERMITS.
5. FLAG LIMITS OF ROUGH GRADING FOR BUILDING SITE, PARKING LOTS AND ESTABLISH GRADE LIMITS AS NEEDED.
6. CONTACT LAND QUALITY SECTION AT 252-946-6481 THEN HOLD PRECONSTRUCTION MEETING WITH GRADING CONTRACTOR, EROSION CONROL ADMINISTRATOR, PROJECT ENGINEER AND OWNER BEFORE WORK BEGINS.
7. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE.
8. INSTALL THE PERIMETER SEDIMENT FENCES AS THE FIRST CONSTRUCTION ACTIVITY PRIOR TO SITE. CLEAR ONLY ENOUGH TO INSTALL SILT FENCE, TEMPORARY SILT FENCE OUTLETS.

Phase 2 Site Grading and Stabilization

1. STRIP SITE OF TOPSOIL AND INSTALL IN THE DESIGNATED AREA
2. BEGIN IMPORTING FILL FOR THE CONSTRUCTION OF THE BUILDING PAD AND DRIVE AREAS.
3. INSTALL STORM DRAINAGE PIPING AND END OF DAY MEASURES.
4. INSTALL CONCRETE WASHOUT AREA PRIOR TO CONSTRUCTION OF STORM DRAINAGE STRUCTURES.
5. INSTALL INLET PROTECTION AROUND CATCH BASINS AND DROP INLETS AND INSTALL RIP RAP PROTECTION AND ENERGY DISIPATORS.
6. FINAL GRADE THE BUILDING PADS AND ATHLETIC FIELDS INSTALL GRAVEL AND CURB AND GUTTER IN PREPARATION FOR LAYDOWN AREA.
7. FINE GRADE AND PAVE SIDEWALK, DRIVEWAY AND PARKING LOTS AND LAY DOWN GRAVEL FOR GRAVEL FIRE LANE.
8. PROVIDE A GROUND COVER (TEMPORARY OR PERMANENT) ON EXPOSED SLOPES 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING FOR SLOPES 3:1 OR FLATTER INCLUDING ALL OTHER SLOPES 4:1 OR FLATTER. PROVIDE A GROUND COVER (TEMPORARY OR PERMANENT) ON EXPOSED SLOPES WITHIN 7 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING FOR SLOPES 3:1 OR STEEPER INCLUDING ALL PERMANENT DIKES, SWALES, DITCHES AND SLOPES AND DISTRUBANCES WITHIN HIGH QUALITY WATER (HQWQ) ZONES.
9. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED BY THE STATE OR OWNER IF DEEMED NECESSARY.
10. MAINTAIN PERMANENT VEGETATION BY TOP DRESSING WITH 700 LBS PER ACRE OF FERTILIZER EVERY 6 MONTHS UNTIL THE COMPLETION OF THE PROJECT.
11. WITHIN 6" OF FINAL GRADE, RE-DISTRIBUTE 6" OF TOP SOIL
12. FINE GRADE, PERMANENTLY SEED AND MULCH ALL LANDSCAPED AREAS
13. REMOVE ALL REMAINING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES UPON COMPLETION AND STABILIZATION OF PROJECT.

VII. MAINTENANCE PLAN

1. All erosion and sediment control practices will be checked for stability and operation following every run-off producing rainfall but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.
2. Sediment will be removed from behind the silt fence when it becomes 0.5 feet deep.
3. Sediment will be removed from the sediment trap when the storage has been approximately 50% filled. Gravel will be cleaned and replaced when the sediment pool no longer drains properly.
4. All seeded areas will be fertilized, re-seeded as necessary, and mulched according to specifications in the vegetative plan to maintain a vigorous, dense vegetative cover.

VIII. VICINITY PLAN

See Erosion Control Plan

IX. VEGETATION PLAN

See Construction Drawings

X. SPECIFICATIONS AND DETAILS

A. 6.02 Land Grading

1. Construct and maintain all erosion and sedimentation control practices and measures in accordance with the approved sedimentation control plan and construction schedule.
2. Remove good topsoil from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.
3. Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil (Practice 6.04, Topsoiling).
4. Clear and grub areas to be filled by removing trees, vegetation, roots, or other objectionable material that would affect the planned stability of the fill.
5. Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.
6. Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.
7. Do not incorporate frozen, soft, mucky, or highly compressible materials into fill slopes.
8. Do not place fill on a frozen foundation, due to possible subsidence and slippage.
9. Keep diversions and other water conveyance measures free of sediment during all phases of development.
10. Handle seeps or springs encountered during construction in accordance with approved methods (Practice 6.81, Subsurface Drain).
11. Permanently stabilize all graded areas immediately after final grading is completed on each area in the grading plan. Apply temporary stabilization measures on all graded areas when work is to be interrupted or delayed for 30 working days or longer.
12. Show topsoil stockpiles, borrow areas, and spoil areas on the plans, and make sure they are adequately protected from erosion. Include final stabilization of these areas in the plan.

B. 6.06 Temporary Gravel Construction Entrance

1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
3. Provide drainage to carry water to a sediment trap or other suitable outlet.
4. Use geotextile fabrics because they improve stability of the foundation in locations subject to seepage or high water table.

C. 6.14 Mulching

Select a material based on site and practice requirements, availability of material, labor, and equipment. Table 6.14a lists commonly used mulches and some alternatives.

Before mulching, complete the required grading, install sediment control practices, and prepare the seedbed. Apply seed before mulching except in the following cases:

- Seed is applied as part of a hydroseeder slurry containing wood fiber mulch.
- A hydroseeder slurry is applied over straw.

APPLICATION OF ORGANIC MULCH

Organic mulches are effective where they can be tacked securely to the surface. Material and specifications are given in Table 6.14a.

Spread mulch uniformly by hand, or with a mulch blower. When spreading straw mulch by hand, divide the area to be mulched into sections of approximately 1,000 ft², and place 70-90 lb of straw (1 1/2 to 2 bales) in each section to facilitate uniform distribution. After spreading mulch, no more than 25% of the ground surface should be visible. In hydroseeding operations a green dye, added to the slurry, assures a uniform application.

ANCHORING ORGANIC MULCH

Straw mulch must be anchored immediately after spreading. The following methods of anchoring mulch may be used:

Mulch anchoring tool—A tractor-drawn implement designed to punch mulch into the soil, a mulch anchoring tool provides maximum erosion control with straw. A regular farm disk, weighted and set nearly straight, may substitute, but will not do a job comparable to the mulch anchoring tool. The disk should not be sharp enough to cut the straw. These methods are limited to slopes no steeper than 3:1, where equipment can operate safely. Operate machinery on the contour.

Liquid mulch binders—Application of liquid mulch binders and tackifiers should be heaviest at the edges of areas and at crests of ridges and banks, to resist wind. Binder should be applied uniformly to the rest of the area. Binders may be applied after mulch is spread, or may be sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is the most effective method. Liquid binders include asphalt and an array of commercially available synthetic binders.

Emulsified asphalt is the most commonly used mulch binder. Any type thin enough to be blown from spray equipment is satisfactory. Asphalt is classified according to the time it takes to cure. Rapid setting (RS or CRS designation) is formulated for curing in less than 24 hours, even during periods of high humidity; it is best used in spring and fall. Medium setting (MS or CMS) is

formulated for curing within 24 to 48 hours, and slow setting (SS or CSS) is formulated for use during hot, dry weather, requiring 48 hours or more curing time.

Apply asphalt at 0.10 gallons per square yard (10 gal/1,000 ft²). Heavier applications cause straw to “perch” over rills.

In traffic areas, uncured asphalt can be picked up on shoes and cause damage to rugs, clothing etc. Use types RS or CRS to minimize such problems.

Synthetic binders such as Petroset, Terratack, and Aerospray may be used, as recommended by the manufacturer, to anchor mulch. These are expensive, and therefore usually used in small areas or in residential areas where asphalt may be a problem (Use of trade names does not constitute an endorsement).

Mulch nettings—Lightweight plastic, cotton, jute, wire, or paper nets may be stapled over the mulch according to the manufacturer’s recommendations (see “Nets and Mats” below).

Peg and twine—Because it is labor-intensive, this method is feasible only in small areas where other methods cannot be used. Drive 8–10 inch wooden pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes may be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross-within-a-square pattern. Turn twine two or more times around each peg. Twine may be tightened over the mulch by driving pegs further into the ground.

Vegetation—Rye (grain) may be used to anchor mulch in fall plantings, and German millet in spring. Broadcast at 15 lb/acre before applying mulch.

CHEMICAL MULCHES

Chemical mulches may be effective for soil stabilization if used between May 1 and June 15, or Sept. 15 and Oct. 15, provided that they are used on slopes no steeper than 4:1, and that proper seedbed preparation has been accomplished, including surface roughening where required.

Chemical mulches may be used to bind other mulches, or with wood fiber in a hydroseeded slurry at any time. Follow the manufacturer’s recommendations for application.

FIBERGLASS ROVING

Fiberglass roving (“roving”) is wound into a cylindrical package so that it can be continuously withdrawn from the center using a compressed air ejector. Roving expands into a mat of glass fibers as it contacts the soil surface. It is often used over a straw mulch, but must still be tacked with asphalt.

Spread roving uniformly over the area at a rate of 0.25 to 0.35 lb/yd². Anchor with asphalt immediately after application, at a rate of 0.25 to 0.35 gal/yd².

As a channel lining, and at other sites of concentrated flow, the roving mat must be further anchored to prevent undermining. It may be secured with stakes placed at intervals no greater than 10 feet along the drainageway, and randomly throughout its width, but not more than 10 feet apart. As an option to staking, the roving can be buried to a depth of 5 inches at the upgrade end and at intervals of 50 feet along the length of the channel.

NETS AND MATS

Nets alone generally provide little moisture conservation benefits and only limited erosion protection. Therefore, they are usually used in conjunction with an organic mulch such as straw.

Except when wood fiber slurry is used, netting should always be installed over the mulch. Wood fiber may be sprayed on top of an installed net.

Mats, including “excelsior” (wood fiber) blankets, are considered protective mulches and may be used alone, on erodible soils, and during all times of the year. Place the matting in firm contact with the soil, and staple securely.

INSTALLATION OF NETTING AND MATTING

Products designed to control erosion should be installed in accordance with manufacturer's instructions. Any mat or blanket-type product used as a protective mulch should provide cover of at least 30% of the surface where it is applied. Installation is illustrated in Figure 6.14a.

1. Apply lime, fertilizer, and seed before laying the net or mat.
2. Start laying the net from the top of the channel or slope, and unroll it down the grade. Allow netting to lay loosely on the soil or mulch cover but without wrinkles—do not stretch.
3. To secure the net, bury the upslope end in a slot or trench no less than 6 inches deep, cover with soil, and tamp firmly as shown in Figure 6.14a. Staple the net every 12 inches across the top end and every 3 ft around the edges and bottom. Where 2 strips of net are laid side by side, the adjacent edges should be overlapped 3 inches and stapled together. Each strip of netting should also be stapled down the center, every 3 ft. Do not stretch the net when applying staples.
4. To join two strips, cut a trench to anchor the end of the new net. Overlap the end of the previous roll 18 inches, as shown in Figure 6.14a, and staple every 12 inches just below the anchor slot.

D. 6.51 Fabric Drop Inlet Protection (Temporary)

1. Uniformly grade a shallow depression approaching the inlet.
2. Drive 5-foot steel posts 2 feet into the ground surrounding the inlet. Space posts evenly around the perimeter of the inlet, a maximum of 4 feet apart.
3. Surround the posts with wire mesh hardware cloth. Secure the wire mesh to the steel posts at the top, middle, and bottom. Placing a 2-foot flap of the wire mesh under the gravel for anchoring is recommended.
4. Place clean gravel (NC DOT #5 or #57 stone) on a 2:1 slope with a height of 16 inches around the wire, and smooth to an even grade.
5. Once the contributing drainage area has been stabilized, remove accumulated sediment, and establish final grading elevations.
6. Compact the area properly and stabilize it with groundcover.

E. 6.60 Temporary Sediment Trap

1. Clear, grub, and strip the area under the embankment of all vegetation and root mat. Remove all surface soil containing high amounts of organic matter, and stockpile or dispose of it properly. Haul all objectionable material to the designated disposal area.
2. Ensure that fill material for the embankment is free of roots, woody vegetation, organic matter, and other objectionable material. Place the fill in lifts not to exceed 9 inches, and machine compact it. Over fill the embankment 6 inches to allow for settlement.
3. Construct the outlet section in the embankment. Protect the connection between the riprap and the soil from piping by using filter fabric or a keyway cutoff trench between the riprap structure and soil.
 - Place the filter fabric between the riprap and the soil. Extend the fabric across the spillway foundation and sides to the top of the dam; or
 - Excavate a keyway trench along the center line of the spillway foundation extending up the sides to the height of the dam. The trench should be at least 2 feet deep and 2 feet wide with 1:1 side slopes.

4. Clear the pond area below the elevation of the crest of the spillway to facilitate sediment cleanout.
5. All cut and fill slopes should be 2:1 or flatter.
6. Ensure that the stone (drainage) section of the embankment has a minimum bottom width of 3 feet and maximum side slopes of 1:1 that extend to the bottom of the spillway section.
7. Construct the minimum finished stone spillway bottom width, as shown on the plans, with 2:1 side slopes extending to the top of the over filled embankment. Keep the thickness of the sides of the spillway outlet structure at a minimum of 21 inches. The weir must be level and constructed to grade to assure design capacity.
8. Material used in the stone section should be a well-graded mixture of stone with a d50 size of 9 inches (class B erosion control stone is recommended) and a maximum stone size of 14 inches. The stone may be machine placed and the smaller stones worked into the voids of the larger stones. The stone should be hard, angular, and highly weather-resistant.
9. Discharge inlet water into the basin in a manner to prevent erosion. Use temporary slope drains or diversions with outlet protection to divert sediment-laden water to the upper end of the pool area to improve basin trap efficiency (References: Runoff Control Measures and Outlet Protection).
10. Ensure that the stone spillway outlet section extends downstream past the toe of the embankment until stable conditions are reached and outlet velocity is acceptable for the receiving stream. Keep the edges of the stone outlet section flush with the surrounding ground, and shape the center to confine the outflow stream (References: Outlet Protection).
11. Direct emergency bypass to natural, stable areas. Locate bypass outlets so that flow will not damage the embankment.
12. Stabilize the embankment and all disturbed areas above the sediment pool and downstream from the trap immediately after construction (References: Surface Stabilization).
13. Show the distance from the top of the spillway to the sediment cleanout level (1/2 the design depth) on the plans and mark it in the field.
14. Install porous baffles as specified in Practice 6.65, Porous Baffles.

F. 6.62 Temporary Sediment Fence

MATERIALS

1. Use a synthetic filter fabric of at least 95% by weight of polyolefins or polyester, which is certified by the manufacturer or supplier as conforming to the requirements in ASTM D 6461, which is shown in part in Table 6.62b.

Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120° F.

2. Ensure that posts for sediment fences are 1.33 lb/linear ft steel with a minimum length of 5 feet. Make sure that steel posts have projections to facilitate fastening the fabric.
3. For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

APPENDIX