synTerra
Science & Engineering Consultants
148 River St., Suite 220, Greenville, SC 29601 | 864.421.9999

August 3, 2023

Ms. Salley Lewis
Vulcan Materials Company
201 Brown Road
Piedmont, SC 29673

Subject: Orangeburg Mine Map — Stormwater Runoff Design Summary

This letter and accompanying attachments provide guidelines for the design of two sediment basins (or detention ponds) at the Vulcan property located approximately 3 miles southeast from the city of Eutawville in Orangeburg County, South Carolina. The described measures are necessary to control sediment and stormwater runoff related to overburden area construction.

The overburden area at this project site is in the southwest portion of the property. A total of two sediment basins (or detention ponds) are needed because of the size of the overburden and topography of the area. The two basins/ponds are labeled as Pond 1 and Pond 2. Stormwater will be routed to the basins/ponds via ditches, terraces, and down drains.

The sediment basins are designed to treat stormwater from the overburden area by trapping sediment; the treated stormwater will be discharged downstream during construction. The location of the overburden area and sediment basins can be found on the Pre-Development and Post-Development Drainage Areas Figures (**Attachment 1**). The sediment produced from the overburden area will be routed to the two sediment basins. The sediment basins are designed to maintain a sediment trapping efficiency of at least 80 percent during a 25-year, 24-hour storm event.

After construction and stabilization at the project site, the sediment basins will be converted to detention ponds. The basins are designed to meet the detention pond criteria of not overtopping during a 100-year, 24-hour storm event, maintaining a minimum of 6 vertical inches between the water surface elevation and the emergency spillway during a 10-year, 24-hour storm event. The detention pond is designed to manage stormwater flows from the newly constructed areas designated on the grading plan.

Sediment, Erosion, Discharge by Computer-Aided Design (SEDCAD) hydrologic software was used to determine pre-development, during-construction (with sediment basins), and post-development (with detention ponds) stormwater runoff volumes and flow rates. As shown in the Sediment Basin and Detention Pond Parameters in **Attachment 2**, the peak flows at the hydrological points of interest meet the criteria of post-development peaks flows being less than pre-development peak flows for 2-year, 24-hour and 10-year, 24-hour storm events. The rainfall input data used to estimate storm flows in SEDCAD was provided by the South Carolina

Department of Health and Environmental Control (SCDHEC) Stormwater Management Best Management Practices Handbook.

The sediment basins and detention ponds have been designed to manage stormwater flows from the overburden area designated on the grading plans. The roadside ditch system and pipe-down drains shown on the grading plans will allow for proper drainage to the ponds. **Attachment 2** titled Sediment Basin and Detention Pond Parameters describes the drainage areas, flow rates, and individual design guideline criteria for each of the ponds. The design guideline criteria for the basins/ponds are shown in the attached chart titled Sediment Basin and Detention Pond General Construction Guidelines (**Attachment 3**). **Attachment 2** and **Attachment 3** are intended for field use. Pre-development, during-construction (with sediment basins), and post-development (with detention ponds) calculations from SEDCAD are included as **Attachment 4**.

The soil type around the pit area has a wide variety including, but not limited to Goldsboro sandy loam, Rains sandy loam, Lynchburg sandy loam, Stallings loamy sand, Coxville sandy loam, Mouzon fine sandy loam, Noboco sandy loam, and Ocilla loamy sand. The soil types carry a hydrologic soil group classification ranging from A to D, but overall, predominantly hydrologic soil group D. Pre-development ground cover is considered to be wooded in fair hydrologic condition and grassed in fair condition. The curve number representing wooded areas in fair condition is 79 and grassed in fair condition is 78. The post-development ground cover is considered to have fair grass cover with a curve number of 84. Impervious areas such as asphalt and buildings have a curve number of 98, and gravel areas have a curve number of 91. Some areas that contribute runoff to the hydrologic points of interest will remain undisturbed and will bypass the sediment ponds. Curve numbers for these areas are identical to pre-development conditions. A soil map is included as **Attachment 5**.

The following criteria will be identical for Pond 1 and Pond 2:

<u>Concrete riser structure</u>

- Minimum dimension of 48-inch diameter
- Trash rack
- Two floating skimmers
    - Skimmers will be removed, and the orifice will be plugged when the sediment ponds are converted to detention ponds.
    - Orifices will be installed when sediment ponds are converted to detention ponds.

Rip-rap (SCDOT Class C) dike surrounding riser

- Number 5 stone on face
- Tie-in to earthen berm
- Minimum 5 feet distance between rip-rap and riser

Outlet pipe

- Concrete or corrugated metal
- Tie-in to riser

Discharge location

- Rip-rap stone bed apron
- Filter fabric underlain and tied into adjacent grades
- Apron length and width adequate for proper energy dissipation

Berm designs

Each pond will have a:

- Minimum width of 25 feet
- Tie-in to existing ground
- 3 horizontal to 1 vertical side slope design

Best management practices — including, but not limited to, silt fence, stormwater ditching, and grassing — shall be used throughout the site during and after construction of the overburden areas to control erosion and/or off-site sedimentation.

Please review this information and respond with comments at your convenience.

Sincerely,

SynTerra

Lynna Lotrakul, P.E.

Senior Peer Review:

Andrea Kehn, P.E.

Attachments:

Attachment 1	Pre-Development and Post-Development Drainage Areas Figures
Attachment 2	Sediment Basin and Detention Pond Parameters
Attachment 3	Sediment Basin and Detention Pond Construction Guidelines
Attachment 4	SEDCAD Output Reports
Attachment 5	Soil Map

ATTACHMENT 1

PRE-DEVELOPMENT AND POST-DEVELOPMENT DRAINAGE AREAS FIGURES

LEGEND:

- OVERBURDEN AREA
- PERMIT BOUNDARY
- PROPERTY LINE
- ENTRANCE AND OFFICE AREA
- SHOP AREA
- PIT LIMIT
- BUFFER
- WETLANDS
- ARCHAEOLOGICAL SITE AREAS
- ADJACENT PROPERTIES
- PRE-DEVELOPMENT DRAINAGE AREA

NORTH

ACME STREET

GRAVEL DRIVE

VULCAN LANDS INC

Permit Boundary

PRE-DEVELOPMENT DRAINAGE AREA 1

Buffer Area
161.59 Acres

ADDIDAS STREET (S-136)

Property Line

Archeological Site
38OR421

Wetlands

Permit Boundary

PRE-DEVELOPMENT DRAINAGE AREA 4

VULCAN LANDS INC

Property Line

Archeological Site
38OR421

HYDROLOGIC POINT OF INTEREST 4

PRE-DEVELOPMENT DRAINAGE AREA 3

PRE-DEVELOPMENT DRAINAGE AREA 2

Tributary

VULCAN LANDS INC

Wetlands

HYDROLOGIC POINT OF INTEREST 3

HORIZON STREET (S-1690)

VULCAN LANDS INC

Property Line

HYDROLOGIC POINT OF INTEREST 1

EP: 0+15.46
PP: 0+00.00

ADDIDAS STREET (S-136)

HYDROLOGIC POINT OF INTEREST 2

HORIZON STREET (S-1690)

GRAPHIC SCALE
300 0 150 300 600
(IN FEET)

PRE-DEVELOPMENT DRAINAGE AREAS

synTerra
148 River Street, Suite 220
Greenville, South Carolina 29601
864.421.9999
www.synterracorp.com

E			
D			
C			
B			
A	7/6/2023	PRELIMINARY- NOT FOR CONSTRUCTION	AJC
	DATE	REVISION	BY

TOLERANCES–UNLESS NOTED
FRACTIONAL: ± 1/16"
DECIMAL: ± 0.010"
ANGLE: ± 0.1"

Vulcan Materials Company

PRE-DEVELOPMENT DRAINAGE AREAS

DIVISION: PLANT: ORANGEBURG QUARRY
DRAWN BY: J. COLEMAN DATE: 7/6/2023
CHECKED BY: L. LOTRAKUL DATE: 7/6/2023
PROJ. NO.: 00.5872.00
FILE SERVER:
SCALE: 1" = 400'
SHEET 1 OF 2
DWG. NO.:
REV.: A

7/6/2023 3:12 PM P:\Vulcan Construction Materials.963\20. Orangeburg Quarry\00.5872.00 Mine Permit & NPDES Permit\CAD\00587200-BASE.dwg

LEGEND:

- OVERBURDEN AREA
- PERMIT BOUNDARY
- PROPERTY LINE
- ENTRANCE AND OFFICE AREA
- SHOP AREA
- PIT LIMIT
- BUFFER
- WETLANDS
- STRIP LIMIT
- ARCHAEOLOGICAL SITE AREAS
- ADJACENT PROPERTIES

NORTH

ACME STREET

GRAVEL DRIVE

Future Affected Area

Future Affected Area

Permit Boundary

ADDIDAS STREET (S-136)

POST-DEVELOPMENT DRAINAGE AREA 1

Buffer Area 161.59 Acres

Future Affected Area 85.36 Acres

Property Line

Archeological Site 38OR421

Archeological Site 38OR421

Wetlands

Tributary

HORIZON STREET (S-1690)

HORIZON STREET (S-1690)

Property Line

HYDROLOGIC POINT OF INTEREST 1

Pit Limit

PIT AREA (STORMWATER DRAINS TO PIT)

Overburden Area 97.95 Acres

POST-DEVELOPMENT DRAINAGE AREA 2

ADDIDAS STREET (S-136)

Permit Boundary

POST-DEVELOPMENT DRAINAGE AREA 4

Property Line

Pit Limit

HYDROLOGIC POINT OF INTEREST 4

HYDROLOGIC POINT OF INTEREST 3

Wetlands

POST-DEVELOPMENT DRAINAGE AREA 3

HYDROLOGIC POINT OF INTEREST 2

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)

POST-DEVELOPMENT DRAINAGE AREAS

synTerra
248 River Street, Suite 220
Greenville, South Carolina 29601
864-421-9999
www.synterracorp.com

E			
D			
C			
B			
A	7/6/2023	FOR CLIENT REVIEW	JCC
	DATE	REVISION	BY

TOLERANCES–UNLESS NOTED
FRACTIONAL: ± 1/16"
DECIMAL: ± 0.010"
ANGLE: ± 0.1°

Vulcan Materials Company

POST-DEVELOPMENT DRAINAGE AREAS

DIVISION
PLANT: ORANGEBURG QUARRY

DRAWN BY: J. COLEMAN | DATE: 7/6/2023
DESIGN BY: L. LOTRAKUL | DATE: 7/6/2023
PROJ. NO.
FILE SERVER
SCALE: 1" = 400'
SHEET 2 OF 2
DWG. NO.
REV. A

P:\Vulcan Construction Materials.963120. Orangeburg Quarry\00.5872.00 Mine Permit & NPDES Permit\CAD\00587200-BASE.dwg
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ATTACHMENT 2

SEDIMENT BASIN AND DETENTION POND PARAMETERS

SEDIMENT BASIN AND DETENTION POND PARAMETERS

	Pre-Development Drainage Areas				
	POI 1	**POI 2**	**POI 3**	**POI 4**	**TOTAL**
Existing Drainage Area (acre)	282.25	122.17	53.79	230.65	688.86

	Post-Development Drainage Area				
	POI 1	**POI 2**	**POI 3**	**POI 4**	**TOTAL**
Drainage Area towards POI (acre)	276.13	60.16	9.28	12.79	358.36
Drainage Area towards Pit (acre)	330.50				330.50
Total (acre)					688.86

	Pre-Development Flow Rates (cfs)			
Storm Event	**POI 1**	**POI 2**	**POI 3**	**POI 4**
2-year, 24-hour	76.76	99.01	21.69	97.47
10-year, 24-hour	153.51	152.36	43.22	196.96
25-year, 24-hour	206.15	186.92	57.90	265.22
100-year, 24-hour	297.20	245.32	83.22	383.45

	Post-Development Flow Rates (cfs)			
Storm Event	**POI 1**	**POI 2**	**POI 3**	**POI 4**
2-year, 24-hour	31.00	15.28	12.33	4.72
10-year, 24-hour	59.35	28.47	24.31	9.04
25-year, 24-hour	78.21	37.06	32.40	11.96
100-year, 24-hour	110.27	67.07	46.27	16.94

	Basin/Pond Dimensions	
	Pond 1	**Pond 1**
Bottom Elevation (ft)	89	86
Top Elevation (ft)	96	96
Depth (ft)	7	10
Full Pond Surface Area (acre)	3.51	3.21
	Emergency Spillway	
Width (ft)	10	10
Elevation (ft)	95	95
	Storm Riser	
Top of Riser Elevation (ft)	93.5	93.5
Skimmer Diameter* (in)	8	8
Skimmer Orifice Elevation* (ft)	90	87
Orifice Size** (in) and Elevation (ft)	8-inch at 89.5 ft	8-inch at 86.5 ft
Orifice Size** (in) and Elevation (ft)	6-inch at 90.75 ft	6-inch at 88.5 ft
	Outlet Pipe	
Diameter (in)	24	24
Length (ft)	75	100
Slope (%)	1.3	2.0
Material	RCP	RCP

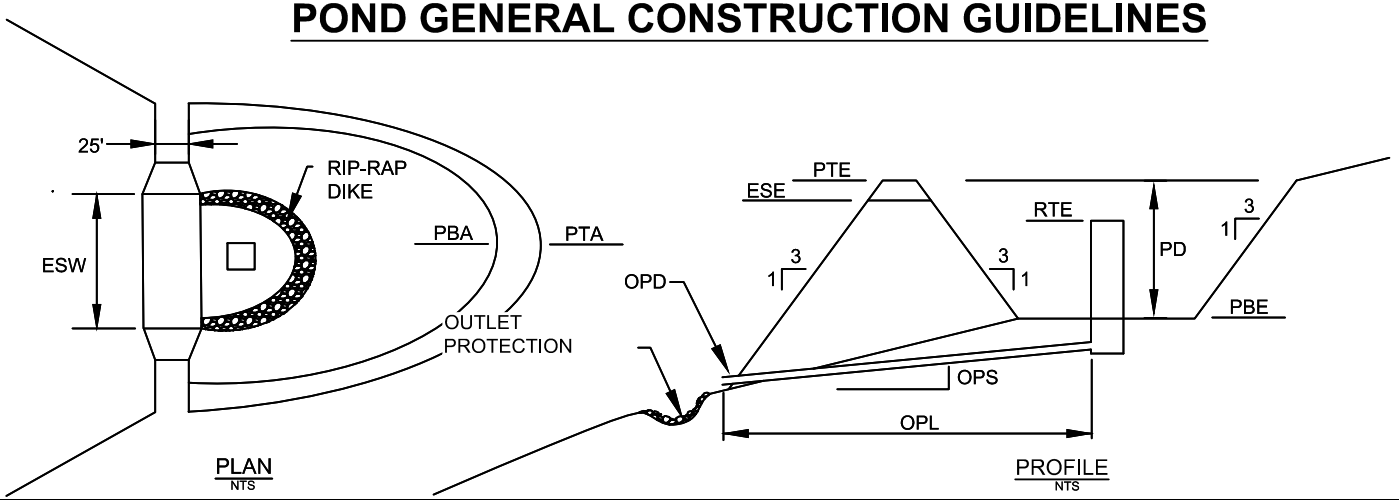
Notes:

1. cfs = cubic feet per second
2. ft = feet
3. in = inches
4. POI = point of interest; refer to Pre-Development and Post-Development Drainage Areas Figures for locations
5. RCP = reinforced concrete pipe
6. (*) For during construction. Two skimmers will be installed at each sediment basin.
7. (**) For post construction/development
8. Sediment Basins will be converted to Detention Ponds for Post Construction/Development

ATTACHMENT 3

SEDIMENT BASIN AND DETENTION POND CONSTRUCTION GUIDELINES

VULCAN QUARRIES - ORANGEBURG
POND GENERAL CONSTRUCTION GUIDELINES

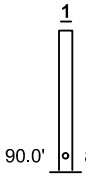


ABBREVATIONS

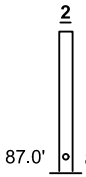
PTE	POND TOP ELEVATION
ESE	EMERGENCY SPILLWAY ELEVATION
RTE	RISER TOP ELEVATION
PD	POND DEPTH
PBE	POND BOTTOM ELEVATION
ESW	EMERGENCY SPILLWAY WIDTH
PBA	POND BOTTOM AREA
PTA	POND TOP AREA
OPL	OUTLET PIPE LENGTH
OPS	OUTLET PIPE SLOPE
OPD	OUTLET PIPE DIAMETER

	POND 1	POND 2
PTE	96.0'	96.0'
ESE	95.0'	95.0'
RTE	93.5'	93.5'
PD	7'	10'
PBE	89.0'	86.0'
ESW	10'	10'
PBA	1.091 ac	0.793 ac
PTA	3.505 ac	3.209 ac
OPL	75'	100'
OPS	0.013	0.020
OPD	24"	24"

RISERS



NOTE: 2 - 8" SKIMMERS AT 90.0'



NOTE: 2 - 8" SKIMMERS AT 87.0'

NOTES:

1. PONDS 1 AND 2 WILL BE LEFT AS PERMANENT DETENTION PONDS. THE SKIMMERS WILL BE REMOVED AND THE HOLES PATCHED. REFER TO THE TABLE BELOW FOR ORIFICE SIZES AND ELEVATIONS FOR THE STORM RISERS.

	DETENTION PONDS	
	1	2
ORIFICE SIZE AND CORRESPONDING ELEVATION	8 IN AT 89.5 FT	8 IN AT 86.5 FT
ORIFICE SIZE AND CORRESPONDING ELEVATION	6-IN AT 90.75 FT	6-IN AT 88.5 FT

ATTACHMENT 4

SEDCAD OUTPUT REPORTS

Vulcan Orangeburg

Pre Development

for Hydrological Point of Interest 1 through 4

2-year, 24-hour Storm Event

3.8 inches

L.Lotrakul

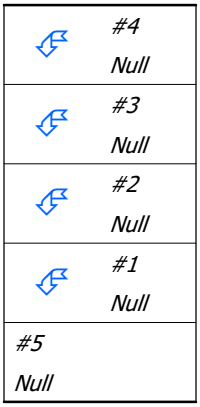
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	3.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#5	0.000	0.000	POI 1 (southwest)
Null	#2	==>	#5	0.000	0.000	POI 2 (most southern point)
Null	#3	==>	#5	0.000	0.000	POI 3 (mid south, from wetlands)
Null	#4	==>	#5	0.000	0.000	POI 4 (southeast)
Null	#5	==>	End	0.000	0.000	



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	230.650	230.650	97.47	33.24
#3	53.790	53.790	21.69	8.01
#2	122.170	122.170	99.01	36.00
#1	282.250	282.250	76.76	42.04
#5	0.000	688.860	263.33	119.30

Structure Detail:

Structure #4 (Null)

POI 4 (southeast)

Structure #3 (Null)

POI 3 (mid south, from wetlands)

Structure #2 (Null)

POI 2 (most southern point)

Structure #1 (Null)

POI 1 (southwest)

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	157.970	2.178	1.122	0.130	78.000	TR55	83.71	22.575
	2	72.680	5.300	0.000	0.000	78.640	TR55	20.32	10.666
	Σ	**230.650**						**97.47**	**33.241**
#3	1	53.790	3.363	0.000	0.000	79.000	TR55	21.69	8.013
	Σ	**53.790**						**21.69**	**8.013**
#2	1	122.170	3.144	0.000	0.000	98.000	TR55	99.01	36.000
	Σ	**122.170**						**99.01**	**36.000**
#1	1	282.250	5.614	0.000	0.000	79.000	TR55	76.76	42.044
	Σ	**282.250**						**76.76**	**42.044**
#5	Σ	**688.860**						**263.33**	**119.298**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	1.05	2.00	191.00	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,340.00	0.110	16.010
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.00	0.720	0.657
#1	**1**	**Time of Concentration:**					**5.614**
#2	1	1. Forest with heavy ground litter	0.37	0.50	135.00	0.150	0.250
		4. Cultivated, straight row	0.09	2.00	2,265.00	0.260	2.419
		4. Cultivated, straight row	0.41	2.00	482.00	0.570	0.234
		8. Large gullies, diversions, and low flowing streams	0.11	1.00	879.00	1.010	0.241
#2	**1**	**Time of Concentration:**					**3.144**
#3	1	1. Forest with heavy ground litter	0.66	1.00	151.00	0.200	0.209
		4. Cultivated, straight row	0.05	1.00	2,141.00	0.190	3.130
		8. Large gullies, diversions, and low flowing streams	0.53	1.00	190.00	2.170	0.024
#3	**1**	**Time of Concentration:**					**3.363**
#4	1	1. Forest with heavy ground litter	20.59	7.00	34.00	1.140	0.008
		8. Large gullies, diversions, and low flowing streams	0.04	2.00	4,767.00	0.610	2.170
#4	**1**	**Time of Concentration:**					**2.178**
#4	2	8. Large gullies, diversions, and low flowing streams	0.02	1.00	5,866.00	0.390	4.178
		8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**2**	**Time of Concentration:**					**5.300**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122
#4	**1**	**Muskingum K:**					**1.122**

Vulcan Orangeburg

Pre Development

for Hydrological Point of Interest 1 through 4

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

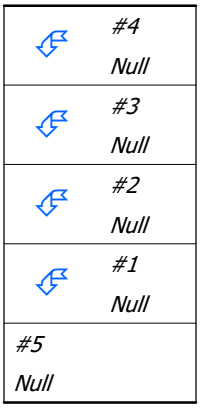
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#5	0.000	0.000	POI 1 (southwest)
Null	#2	==>	#5	0.000	0.000	POI 2 (most southern point)
Null	#3	==>	#5	0.000	0.000	POI 3 (mid south, from wetlands)
Null	#4	==>	#5	0.000	0.000	POI 4 (southeast)
Null	#5	==>	End	0.000	0.000	



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	230.650	230.650	196.96	65.25
#3	53.790	53.790	43.22	15.57
#2	122.170	122.170	152.36	56.16
#1	282.250	282.250	153.51	81.68
#5	0.000	688.860	492.64	218.65

Structure Detail:

Structure #4 (Null)

POI 4 (southeast)

Structure #3 (Null)

POI 3 (mid south, from wetlands)

Structure #2 (Null)

POI 2 (most southern point)

Structure #1 (Null)

POI 1 (southwest)

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	157.970	2.178	1.122	0.130	78.000	TR55	169.01	44.432
	2	72.680	5.300	0.000	0.000	78.640	TR55	40.88	20.818
	Σ	**230.650**						**196.96**	**65.250**
#3	1	53.790	3.363	0.000	0.000	79.000	TR55	43.22	15.567
	Σ	**53.790**						**43.22**	**15.567**
#2	1	122.170	3.144	0.000	0.000	98.000	TR55	152.36	56.157
	Σ	**122.170**						**152.36**	**56.157**
#1	1	282.250	5.614	0.000	0.000	79.000	TR55	153.51	81.681
	Σ	**282.250**						**153.51**	**81.681**
#5	Σ	**688.860**						**492.64**	**218.654**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	1.05	2.00	191.00	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,340.00	0.110	16.010
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.00	0.720	0.657
#1	**1**	**Time of Concentration:**					**5.614**
#2	1	1. Forest with heavy ground litter	0.37	0.50	135.00	0.150	0.250
		4. Cultivated, straight row	0.09	2.00	2,265.00	0.260	2.419
		4. Cultivated, straight row	0.41	2.00	482.00	0.570	0.234
		8. Large gullies, diversions, and low flowing streams	0.11	1.00	879.00	1.010	0.241
#2	**1**	**Time of Concentration:**					**3.144**
#3	1	1. Forest with heavy ground litter	0.66	1.00	151.00	0.200	0.209
		4. Cultivated, straight row	0.05	1.00	2,141.00	0.190	3.130
		8. Large gullies, diversions, and low flowing streams	0.53	1.00	190.00	2.170	0.024
#3	**1**	**Time of Concentration:**					**3.363**
#4	1	1. Forest with heavy ground litter	20.59	7.00	34.00	1.140	0.008
		8. Large gullies, diversions, and low flowing streams	0.04	2.00	4,767.00	0.610	2.170
#4	**1**	**Time of Concentration:**					**2.178**
#4	2	8. Large gullies, diversions, and low flowing streams	0.02	1.00	5,866.00	0.390	4.178
		8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**2**	**Time of Concentration:**					**5.300**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122
#4	**1**	**Muskingum K:**					**1.122**

Vulcan Orangeburg

Pre Development

for Hydrological Point of Interest 1 through 4

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

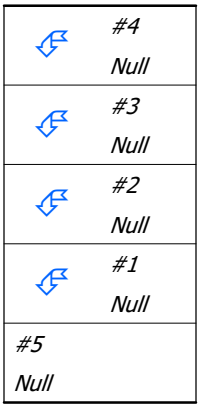
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#5	0.000	0.000	POI 1 (southwest)
Null	#2	==>	#5	0.000	0.000	POI 2 (most southern point)
Null	#3	==>	#5	0.000	0.000	POI 3 (mid south, from wetlands)
Null	#4	==>	#5	0.000	0.000	POI 4 (southeast)
Null	#5	==>	End	0.000	0.000	



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	230.650	230.650	265.22	87.46
#3	53.790	53.790	57.90	20.79
#2	122.170	122.170	186.92	69.27
#1	282.250	282.250	206.15	109.08
#5	0.000	688.860	648.73	286.60

Structure Detail:

Structure #4 (Null)

POI 4 (southeast)

Structure #3 (Null)

POI 3 (mid south, from wetlands)

Structure #2 (Null)

POI 2 (most southern point)

Structure #1 (Null)

POI 1 (southwest)

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	157.970	2.178	1.122	0.130	78.000	TR55	227.56	59.615
	2	72.680	5.300	0.000	0.000	78.640	TR55	55.00	27.848
	Σ	**230.650**						**265.22**	**87.462**
#3	1	53.790	3.363	0.000	0.000	79.000	TR55	57.90	20.788
	Σ	**53.790**						**57.90**	**20.788**
#2	1	122.170	3.144	0.000	0.000	98.000	TR55	186.92	69.269
	Σ	**122.170**						**186.92**	**69.269**
#1	1	282.250	5.614	0.000	0.000	79.000	TR55	206.15	109.076
	Σ	**282.250**						**206.15**	**109.076**
#5	Σ	**688.860**						**648.73**	**286.595**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	1.05	2.00	191.00	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,340.00	0.110	16.010
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.00	0.720	0.657
#1	**1**	**Time of Concentration:**					**5.614**
#2	1	1. Forest with heavy ground litter	0.37	0.50	135.00	0.150	0.250
		4. Cultivated, straight row	0.09	2.00	2,265.00	0.260	2.419
		4. Cultivated, straight row	0.41	2.00	482.00	0.570	0.234
		8. Large gullies, diversions, and low flowing streams	0.11	1.00	879.00	1.010	0.241
#2	**1**	**Time of Concentration:**					**3.144**
#3	1	1. Forest with heavy ground litter	0.66	1.00	151.00	0.200	0.209
		4. Cultivated, straight row	0.05	1.00	2,141.00	0.190	3.130
		8. Large gullies, diversions, and low flowing streams	0.53	1.00	190.00	2.170	0.024
#3	**1**	**Time of Concentration:**					**3.363**
#4	1	1. Forest with heavy ground litter	20.59	7.00	34.00	1.140	0.008
		8. Large gullies, diversions, and low flowing streams	0.04	2.00	4,767.00	0.610	2.170
#4	**1**	**Time of Concentration:**					**2.178**
#4	2	8. Large gullies, diversions, and low flowing streams	0.02	1.00	5,866.00	0.390	4.178
		8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**2**	**Time of Concentration:**					**5.300**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122
#4	**1**	**Muskingum K:**					**1.122**

Vulcan Orangeburg

Pre Development

for Hydrological Point of Interest 1 through 4

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

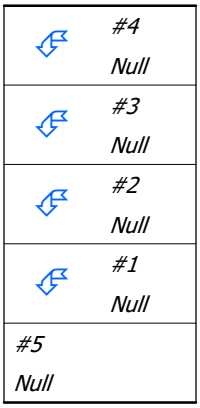
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#5	0.000	0.000	POI 1 (southwest)
Null	#2	==>	#5	0.000	0.000	POI 2 (most southern point)
Null	#3	==>	#5	0.000	0.000	POI 3 (mid south, from wetlands)
Null	#4	==>	#5	0.000	0.000	POI 4 (southeast)
Null	#5	==>	End	0.000	0.000	



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	230.650	230.650	383.45	126.37
#3	53.790	53.790	83.22	29.91
#2	122.170	122.170	245.32	91.47
#1	282.250	282.250	297.20	156.96
#5	0.000	688.860	917.86	404.71

Structure Detail:

Structure #4 (Null)

POI 4 (southeast)

Structure #3 (Null)

POI 3 (mid south, from wetlands)

Structure #2 (Null)

POI 2 (most southern point)

Structure #1 (Null)

POI 1 (southwest)

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	157.970	2.178	1.122	0.130	78.000	TR55	328.61	86.227
	2	72.680	5.300	0.000	0.000	78.640	TR55	79.44	40.146
	Σ	**230.650**						**383.45**	**126.373**
#3	1	53.790	3.363	0.000	0.000	79.000	TR55	83.22	29.913
	Σ	**53.790**						**83.22**	**29.913**
#2	1	122.170	3.144	0.000	0.000	98.000	TR55	245.32	91.468
	Σ	**122.170**						**245.32**	**91.468**
#1	1	282.250	5.614	0.000	0.000	79.000	TR55	297.20	156.955
	Σ	**282.250**						**297.20**	**156.955**
#5	Σ	**688.860**						**917.86**	**404.709**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	1. Forest with heavy ground litter	1.05	2.00	191.00	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,340.00	0.110	16.010
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.00	0.720	0.657
#1	**1**	**Time of Concentration:**					**5.614**
#2	1	1. Forest with heavy ground litter	0.37	0.50	135.00	0.150	0.250
		4. Cultivated, straight row	0.09	2.00	2,265.00	0.260	2.419
		4. Cultivated, straight row	0.41	2.00	482.00	0.570	0.234
		8. Large gullies, diversions, and low flowing streams	0.11	1.00	879.00	1.010	0.241
#2	**1**	**Time of Concentration:**					**3.144**
#3	1	1. Forest with heavy ground litter	0.66	1.00	151.00	0.200	0.209
		4. Cultivated, straight row	0.05	1.00	2,141.00	0.190	3.130
		8. Large gullies, diversions, and low flowing streams	0.53	1.00	190.00	2.170	0.024
#3	**1**	**Time of Concentration:**					**3.363**
#4	1	1. Forest with heavy ground litter	20.59	7.00	34.00	1.140	0.008
		8. Large gullies, diversions, and low flowing streams	0.04	2.00	4,767.00	0.610	2.170
#4	**1**	**Time of Concentration:**					**2.178**
#4	2	8. Large gullies, diversions, and low flowing streams	0.02	1.00	5,866.00	0.390	4.178
		8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**2**	**Time of Concentration:**					**5.300**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	8. Large gullies, diversions, and low flowing streams	0.04	1.00	2,425.00	0.600	1.122
#4	**1**	**Muskingum K:**					**1.122**

Vulcan Orangeburg

During Construction

Sediment Basin 1

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

General Information

Storm Information:

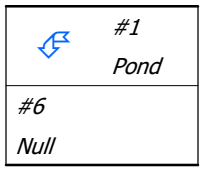
Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#6	0.000	0.000	Temp. Sed. Pond
Null	#6	==>	End	0.000	0.000	



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	38.420	38.420	249.31	16.53	12,223.7	797,047	492.06	255.14
	Out			9.91	11.11	624.5	161,751	0.04	0.02
#6		0.000	38.420	9.91	11.11	624.5	161,689	0.04	0.02

Particle Size Distribution(s) at Each Structure

Structure #1 (Temp. Sed. Pond):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	99.034%	100.000%
0.0630	72.617%	100.000%
0.0440	48.522%	100.000%
0.0380	46.864%	100.000%
0.0040	5.526%	100.000%
0.0030	3.426%	67.062%
0.0010	0.000%	0.000%

Structure #6:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	100.000%
0.0030	67.062%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Temp. Sed. Pond

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	5.00	24.00	75.00	1.30	0.0150	93.50	4

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	93.78 ft
H'graph Detention Time:	12.16 hrs
Pond Model:	CSTRS
Dewater Time:	3.83 days
Trap Efficiency:	94.89 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		Top of Sed. Storage
89.01	1.102	0.011	0.000		
89.50	1.634	0.677	0.000		
90.00	2.284	1.652	2.260	5.22*	
90.01	2.286	1.675	2.260	0.12*	
90.50	2.381	2.818	2.260	6.12*	
91.00	2.480	4.033	2.260	6.51*	
91.50	2.580	5.298	2.260	6.77*	
92.00	2.683	6.614	2.260	7.04*	
92.50	2.782	7.980	2.260	7.31*	
93.00	2.882	9.395	2.260	7.58*	
93.50	2.984	10.862	2.260	7.85*	Spillway #2
93.78	3.042	11.705	9.912	36.15	Peak Stage
94.00	3.088	12.380	16.033		
94.50	3.190	13.949	36.688		
95.00	3.293	15.570	37.901		Spillway #3
95.50	3.398	17.243	51.150		
96.00	3.505	18.968	64.363		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000	0.000	0.000
89.01	0.000	0.000	0.000	0.000	0.000
89.50	0.000	0.000	0.000	0.000	0.000
90.00	1.130	0.000	0.000	1.130	2.260
90.01	1.130	0.000	0.000	1.130	2.260
90.50	1.130	0.000	0.000	1.130	2.260
91.00	1.130	0.000	0.000	1.130	2.260
91.50	1.130	0.000	0.000	1.130	2.260
92.00	1.130	0.000	0.000	1.130	2.260
92.50	1.130	0.000	0.000	1.130	2.260
93.00	1.130	0.000	0.000	1.130	2.260
93.50	1.130	0.000	0.000	1.130	2.260
94.00	1.130	13.773	0.000	1.130	16.033
94.50	1.130	34.428	0.000	1.130	36.688
95.00	1.130	35.641	0.000	1.130	37.901
95.50	1.130	36.813	12.076	1.130	51.150

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
96.00	1.130	37.950	24.153	1.130	64.363

Structure #6 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	38.420	0.171	0.000	0.000	94.000	TR55	249.31	16.529
	Σ	**38.420**						**249.31**	**16.529**
#6	Σ	**38.420**						**9.91**	**11.111**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,402.00	10.00	1.0000	1.0000	1	12,223.7	797,047	492.06	255.14
	Σ							**12,223.7**	**797,047**	**492.06**	**255.14**
#6	Σ							**624.5**	**161,689**	**0.04**	**0.02**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**

Vulcan Orangeburg

During Construction

Sediment Basin 1

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

General Information

Storm Information:

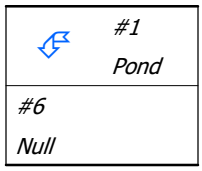
Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#6	0.000	0.000	Temp. Sed. Pond
Null	#6	==>	End	0.000	0.000	



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	38.420	38.420	308.46	20.71	15,624.2	811,535	501.08	258.96
	Out			26.62	15.24	1,293.4	164,542	24.95	11.97
#6		0.000	38.420	26.62	15.24	1,293.4	164,479	24.94	11.97

Particle Size Distribution(s) at Each Structure

Structure #1 (Temp. Sed. Pond):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	98.973%	100.000%
0.0630	72.573%	100.000%
0.0440	48.492%	100.000%
0.0380	46.835%	100.000%
0.0040	5.523%	66.717%
0.0030	3.424%	41.365%
0.0010	0.000%	0.000%

Structure #6:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	66.717%
0.0030	41.365%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Temp. Sed. Pond

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	5.00	24.00	75.00	1.30	0.0150	93.50	4

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	94.26 ft
H'graph Detention Time:	9.32 hrs
Pond Model:	CSTRS
Dewater Time:	2.39 days
Trap Efficiency:	91.72 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		Top of Sed. Storage
89.01	1.102	0.011	0.000		
89.50	1.634	0.677	0.000		
90.00	2.284	1.652	2.260	5.22*	
90.01	2.286	1.675	2.260	0.12*	
90.50	2.381	2.818	2.260	6.12*	
91.00	2.480	4.033	2.260	6.51*	
91.50	2.580	5.298	2.260	6.77*	
92.00	2.683	6.614	2.260	7.04*	
92.50	2.782	7.980	2.260	7.31*	
93.00	2.882	9.395	2.260	7.58*	
93.50	2.984	10.862	2.260	7.85*	Spillway #2
94.00	3.088	12.380	16.033	1.15*	
94.26	3.140	13.184	26.618	1.60	Peak Stage
94.50	3.190	13.949	36.688		
95.00	3.293	15.570	37.901		Spillway #3
95.50	3.398	17.243	51.150		
96.00	3.505	18.968	64.363		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000	0.000	0.000
89.01	0.000	0.000	0.000	0.000	0.000
89.50	0.000	0.000	0.000	0.000	0.000
90.00	1.130	0.000	0.000	1.130	2.260
90.01	1.130	0.000	0.000	1.130	2.260
90.50	1.130	0.000	0.000	1.130	2.260
91.00	1.130	0.000	0.000	1.130	2.260
91.50	1.130	0.000	0.000	1.130	2.260
92.00	1.130	0.000	0.000	1.130	2.260
92.50	1.130	0.000	0.000	1.130	2.260
93.00	1.130	0.000	0.000	1.130	2.260
93.50	1.130	0.000	0.000	1.130	2.260
94.00	1.130	13.773	0.000	1.130	16.033
94.50	1.130	34.428	0.000	1.130	36.688
95.00	1.130	35.641	0.000	1.130	37.901
95.50	1.130	36.813	12.076	1.130	51.150

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
96.00	1.130	37.950	24.153	1.130	64.363

Structure #6 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	38.420	0.171	0.000	0.000	94.000	TR55	308.46	20.708
	Σ	**38.420**						**308.46**	**20.708**
#6	Σ	**38.420**						**26.62**	**15.239**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,402.00	10.00	1.0000	1.0000	1	15,624.2	811,535	501.08	258.96
	Σ							**15,624.2**	**811,535**	**501.08**	**258.96**
#6	Σ							**1,293.4**	**164,479**	**24.94**	**11.97**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**

Vulcan Orangeburg

During Construction

Sediment Basin 1

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

General Information

Storm Information:

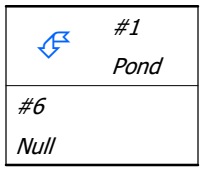
Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#6	0.000	0.000	Temp. Sed. Pond
Null	#6	==>	End	0.000	0.000	



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	38.420	38.420	407.96	27.80	21,549.3	830,862	513.10	264.16
	Out			48.63	22.26	2,503.4	172,336	42.90	23.75
#6		0.000	38.420	48.63	22.26	2,503.4	172,269	42.88	23.74

Particle Size Distribution(s) at Each Structure

Structure #1 (Temp. Sed. Pond):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	98.915%	100.000%
0.0630	72.530%	100.000%
0.0440	48.464%	100.000%
0.0380	46.808%	100.000%
0.0040	5.520%	47.514%
0.0030	3.422%	29.459%
0.0010	0.000%	0.000%

Structure #6:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	47.514%
0.0030	29.459%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Temp. Sed. Pond

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	5.00	24.00	75.00	1.30	0.0150	93.50	4

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	95.40 ft
H'graph Detention Time:	7.03 hrs
Pond Model:	CSTRS
Dewater Time:	2.46 days
Trap Efficiency:	88.38 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		Top of Sed. Storage
89.01	1.102	0.011	0.000		
89.50	1.634	0.677	0.000		
90.00	2.284	1.652	2.260	5.22*	
90.01	2.286	1.675	2.260	0.12*	
90.50	2.381	2.818	2.260	6.12*	
91.00	2.480	4.033	2.260	6.51*	
91.50	2.580	5.298	2.260	6.77*	
92.00	2.683	6.614	2.260	7.04*	
92.50	2.782	7.980	2.260	7.31*	
93.00	2.882	9.395	2.260	7.58*	
93.50	2.984	10.862	2.260	7.85*	Spillway #2
94.00	3.088	12.380	16.033	1.15*	
94.50	3.190	13.949	36.688	1.45	
95.00	3.293	15.570	37.901	0.85	Spillway #3
95.40	3.378	16.924	48.625	1.00	Peak Stage
95.50	3.398	17.243	51.150		
96.00	3.505	18.968	64.363		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000	0.000	0.000
89.01	0.000	0.000	0.000	0.000	0.000
89.50	0.000	0.000	0.000	0.000	0.000
90.00	1.130	0.000	0.000	1.130	2.260
90.01	1.130	0.000	0.000	1.130	2.260
90.50	1.130	0.000	0.000	1.130	2.260
91.00	1.130	0.000	0.000	1.130	2.260
91.50	1.130	0.000	0.000	1.130	2.260
92.00	1.130	0.000	0.000	1.130	2.260
92.50	1.130	0.000	0.000	1.130	2.260
93.00	1.130	0.000	0.000	1.130	2.260
93.50	1.130	0.000	0.000	1.130	2.260
94.00	1.130	13.773	0.000	1.130	16.033
94.50	1.130	34.428	0.000	1.130	36.688
95.00	1.130	35.641	0.000	1.130	37.901
95.50	1.130	36.813	12.076	1.130	51.150

Elevation (ft)	User-input discharge (cfs)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
96.00	1.130	37.950	24.153	1.130	64.363

Structure #6 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	38.420	0.171	0.000	0.000	94.000	TR55	407.96	27.802
	Σ	**38.420**						**407.96**	**27.802**
#6	Σ	**38.420**						**48.63**	**22.264**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,402.00	10.00	1.0000	1.0000	1	21,549.3	830,862	513.10	264.16
	Σ							**21,549.3**	**830,862**	**513.10**	**264.16**
#6	Σ							**2,503.4**	**172,269**	**42.88**	**23.74**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**

Vulcan Orangeburg

During Construction

Sediment Basin 2

10-year, 24-hour storm event

5.8 inches

L.Lotrakul

General Information

Storm Information:

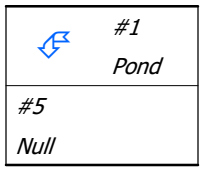
Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	4.810	0.162	Sediment Basin 2
Null	#5	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	0.93	4.00	432.00	2.88	0.041
	1. Forest with heavy ground litter	0.08	1.00	1,202.00	0.07	4.769
#1	**Muskingum K:**					**4.810**

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	44.210	44.210	287.77	19.05	1,305.1	103,977	64.22	30.19
	Out			2.26	8.21	40.2	20,080	0.00	0.00
#5		0.000	44.210	2.26	8.21	40.2	1,949,172	0.08	0.00

Particle Size Distribution(s) at Each Structure

Structure #1 (Sediment Basin 2):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	98.863%	100.000%
0.0630	72.492%	100.000%
0.0440	48.438%	100.000%
0.0380	46.783%	100.000%
0.0040	5.517%	100.000%
0.0030	3.420%	100.000%
0.0010	0.000%	0.000%

Structure #5:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	100.000%
0.0030	100.000%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Sediment Basin 2

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	8.00	24.00	100.00	2.00	0.0150	93.50	2

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	93.43 ft
H'graph Detention Time:	15.10 hrs
Pond Model:	CSTRS
Dewater Time:	3.58 days
Trap Efficiency:	96.92 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		Top of Sed. Storage
86.01	0.798	0.008	0.000		
86.50	1.061	0.462	0.000		
87.00	1.365	1.067	2.260	3.24*	
87.50	1.707	1.833	2.260	4.10*	
87.62	1.792	2.043	2.260	1.12*	
88.00	2.080	2.778	2.260	3.94*	
88.50	2.146	3.835	2.260	5.66*	
89.00	2.214	4.925	2.260	5.84*	
89.50	2.282	6.049	2.260	6.02*	
90.00	2.352	7.208	2.260	6.20*	
90.50	2.420	8.400	2.260	6.39*	
91.00	2.489	9.628	2.260	6.57*	
91.50	2.558	10.889	2.260	6.76*	
92.00	2.629	12.186	2.260	6.94*	
92.50	2.699	13.518	2.260	7.13*	
93.00	2.769	14.885	2.260	7.32*	
93.43	2.831	16.102	2.260	0.00	Peak Stage
93.50	2.841	16.287	2.260		Spillway #1
94.00	2.913	17.726	16.033		
94.50	2.986	19.200	41.216		
95.00	3.059	20.711	44.209		Spillway #2
95.50	3.134	22.260	57.188		
96.00	3.209	23.845	70.148		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000	0.000	0.000
86.01	0.000	0.000	0.000	0.000	0.000
86.50	0.000	0.000	0.000	0.000	0.000
87.00	0.000	0.000	1.130	1.130	2.260
87.50	0.000	0.000	1.130	1.130	2.260
87.62	0.000	0.000	1.130	1.130	2.260
88.00	0.000	0.000	1.130	1.130	2.260
88.50	0.000	0.000	1.130	1.130	2.260
89.00	0.000	0.000	1.130	1.130	2.260
89.50	0.000	0.000	1.130	1.130	2.260

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
90.00	0.000	0.000	1.130	1.130	2.260
90.50	0.000	0.000	1.130	1.130	2.260
91.00	0.000	0.000	1.130	1.130	2.260
91.50	0.000	0.000	1.130	1.130	2.260
92.00	0.000	0.000	1.130	1.130	2.260
92.50	0.000	0.000	1.130	1.130	2.260
93.00	0.000	0.000	1.130	1.130	2.260
93.50	0.000	0.000	1.130	1.130	2.260
94.00	13.773	0.000	1.130	1.130	16.033
94.50	38.956	0.000	1.130	1.130	41.216
95.00	41.949	0.000	1.130	1.130	44.209
95.50	42.851	12.076	1.130	1.130	57.188
96.00	43.735	24.153	1.130	1.130	70.148

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	44.210	0.169	0.000	0.000	94.000	TR55	287.77	19.047
	Σ	**44.210**						**287.77**	**19.047**
#5	Σ	**44.210**						**2.26**	**8.209**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,815.00	1.50	1.0000	1.0000	1	1,305.1	103,977	64.22	30.19
	Σ							**1,305.1**	**103,977**	**64.22**	**30.19**
#5	Σ							**40.2**	**1,949,172**	**0.08**	**0.00**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.01	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**

Vulcan Orangeburg

During Construction

Sediment Basin 2

25-year, 24-hour storm event

7.1 inches

L.Lotrakul

General Information

Storm Information:

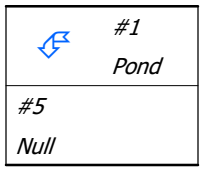
Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	4.810	0.162	Sediment Basin 2
Null	#5	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	0.93	4.00	432.00	2.88	0.041
	1. Forest with heavy ground litter	0.08	1.00	1,202.00	0.07	4.769
#1	**Muskingum K:**					**4.810**

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	44.210	44.210	356.04	23.86	1,668.1	106,657	65.89	30.78
	Out			11.16	12.72	93.8	20,116	0.17	0.06
#5		0.000	44.210	10.97	12.72	93.8	2,152,965	18.28	0.06

Particle Size Distribution(s) at Each Structure

Structure #1 (Sediment Basin 2):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	98.802%	100.000%
0.0630	72.448%	100.000%
0.0440	48.409%	100.000%
0.0380	46.755%	100.000%
0.0040	5.514%	98.003%
0.0030	3.418%	60.762%
0.0010	0.000%	0.000%

Structure #5:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	98.003%
0.0030	60.762%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Sediment Basin 2

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	8.00	24.00	100.00	2.00	0.0150	93.50	2

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	93.82 ft
H'graph Detention Time:	11.17 hrs
Pond Model:	CSTRS
Dewater Time:	5.05 days
Trap Efficiency:	94.37 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		Top of Sed. Storage
86.01	0.798	0.008	0.000		
86.50	1.061	0.462	0.000		
87.00	1.365	1.067	2.260	3.24*	
87.50	1.707	1.833	2.260	4.10*	
87.62	1.792	2.043	2.260	1.12*	
88.00	2.080	2.778	2.260	3.94*	
88.50	2.146	3.835	2.260	5.66*	
89.00	2.214	4.925	2.260	5.84*	
89.50	2.282	6.049	2.260	6.02*	
90.00	2.352	7.208	2.260	6.20*	
90.50	2.420	8.400	2.260	6.39*	
91.00	2.489	9.628	2.260	6.57*	
91.50	2.558	10.889	2.260	6.76*	
92.00	2.629	12.186	2.260	6.94*	
92.50	2.699	13.518	2.260	7.13*	
93.00	2.769	14.885	2.260	7.32*	
93.50	2.841	16.287	2.260	7.51*	Spillway #1
93.82	2.888	17.216	11.158	35.50	Peak Stage
94.00	2.913	17.726	16.033		
94.50	2.986	19.200	41.216		
95.00	3.059	20.711	44.209		Spillway #2
95.50	3.134	22.260	57.188		
96.00	3.209	23.845	70.148		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000	0.000	0.000
86.01	0.000	0.000	0.000	0.000	0.000
86.50	0.000	0.000	0.000	0.000	0.000
87.00	0.000	0.000	1.130	1.130	2.260
87.50	0.000	0.000	1.130	1.130	2.260
87.62	0.000	0.000	1.130	1.130	2.260
88.00	0.000	0.000	1.130	1.130	2.260
88.50	0.000	0.000	1.130	1.130	2.260
89.00	0.000	0.000	1.130	1.130	2.260
89.50	0.000	0.000	1.130	1.130	2.260

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
90.00	0.000	0.000	1.130	1.130	2.260
90.50	0.000	0.000	1.130	1.130	2.260
91.00	0.000	0.000	1.130	1.130	2.260
91.50	0.000	0.000	1.130	1.130	2.260
92.00	0.000	0.000	1.130	1.130	2.260
92.50	0.000	0.000	1.130	1.130	2.260
93.00	0.000	0.000	1.130	1.130	2.260
93.50	0.000	0.000	1.130	1.130	2.260
94.00	13.773	0.000	1.130	1.130	16.033
94.50	38.956	0.000	1.130	1.130	41.216
95.00	41.949	0.000	1.130	1.130	44.209
95.50	42.851	12.076	1.130	1.130	57.188
96.00	43.735	24.153	1.130	1.130	70.148

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	44.210	0.169	0.000	0.000	94.000	TR55	356.04	23.863
	Σ	**44.210**						**356.04**	**23.863**
#5	Σ	**44.210**						**10.97**	**12.723**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,815.00	1.50	1.0000	1.0000	1	1,668.1	106,657	65.89	30.78
	Σ							**1,668.1**	**106,657**	**65.89**	**30.78**
#5	Σ							**93.8**	**2,152,965**	**18.28**	**0.06**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.01	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**

Vulcan Orangeburg

During Construction

Sediment Basin 2

100-year, 24-hour storm event

9.3 inches

L.Lotrakul

General Information

Storm Information:

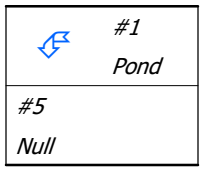
Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Particle Size Distribution:

Size (mm)	Coxville
1.4000	100.000%
1.0000	89.600%
0.0630	65.700%
0.0440	43.900%
0.0380	42.400%
0.0040	5.000%
0.0030	3.100%
0.0010	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	4.810	0.162	Sediment Basin 2
Null	#5	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	0.93	4.00	432.00	2.88	0.041
	1. Forest with heavy ground litter	0.08	1.00	1,202.00	0.07	4.769
#1	**Muskingum K:**					**4.810**

Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	44.210	44.210	470.89	32.04	2,300.7	110,295	68.14	31.60
	Out			42.78	20.83	253.6	20,084	4.75	2.54
#5		0.000	44.210	40.45	20.83	253.6	2,301,353	543.98	2.45

Particle Size Distribution(s) at Each Structure

Structure #1 (Sediment Basin 2):

Size (mm)	In	Out
1.4000	100.000%	100.000%
1.0000	98.745%	100.000%
0.0630	72.406%	100.000%
0.0440	48.381%	100.000%
0.0380	46.728%	100.000%
0.0040	5.510%	49.992%
0.0030	3.416%	30.995%
0.0010	0.000%	0.000%

Structure #5:

Size (mm)	In/Out
1.4000	100.000%
1.0000	100.000%
0.0630	100.000%
0.0440	100.000%
0.0380	100.000%
0.0040	49.992%
0.0030	30.995%
0.0010	0.000%

Structure Detail:

Structure #1 (Pond)

Sediment Basin 2

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft
*Sediment Storage:	0.00 ac-ft
Dead Space:	0.00 %

**No sediment capacity defined*

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	8.00	24.00	100.00	2.00	0.0150	93.50	2

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	94.76 ft
H'graph Detention Time:	7.48 hrs
Pond Model:	CSTRS
Dewater Time:	3.68 days
Trap Efficiency:	88.98 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		Top of Sed. Storage
86.01	0.798	0.008	0.000		
86.50	1.061	0.462	0.000		
87.00	1.365	1.067	2.260	3.24*	
87.50	1.707	1.833	2.260	4.10*	
87.62	1.792	2.043	2.260	1.12*	
88.00	2.080	2.778	2.260	3.94*	
88.50	2.146	3.835	2.260	5.66*	
89.00	2.214	4.925	2.260	5.84*	
89.50	2.282	6.049	2.260	6.02*	
90.00	2.352	7.208	2.260	6.20*	
90.50	2.420	8.400	2.260	6.39*	
91.00	2.489	9.628	2.260	6.57*	
91.50	2.558	10.889	2.260	6.76*	
92.00	2.629	12.186	2.260	6.94*	
92.50	2.699	13.518	2.260	7.13*	
93.00	2.769	14.885	2.260	7.32*	
93.50	2.841	16.287	2.260	7.51*	Spillway #1
94.00	2.913	17.726	16.033	1.09*	
94.50	2.986	19.200	41.216	1.85	
94.76	3.024	19.991	42.781	0.75	Peak Stage
95.00	3.059	20.711	44.209		Spillway #2
95.50	3.134	22.260	57.188		
96.00	3.209	23.845	70.148		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000	0.000	0.000
86.01	0.000	0.000	0.000	0.000	0.000
86.50	0.000	0.000	0.000	0.000	0.000
87.00	0.000	0.000	1.130	1.130	2.260
87.50	0.000	0.000	1.130	1.130	2.260
87.62	0.000	0.000	1.130	1.130	2.260
88.00	0.000	0.000	1.130	1.130	2.260
88.50	0.000	0.000	1.130	1.130	2.260
89.00	0.000	0.000	1.130	1.130	2.260
89.50	0.000	0.000	1.130	1.130	2.260

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	User-input discharge (cfs)	User-input discharge (cfs)	Combined Total Discharge (cfs)
90.00	0.000	0.000	1.130	1.130	2.260
90.50	0.000	0.000	1.130	1.130	2.260
91.00	0.000	0.000	1.130	1.130	2.260
91.50	0.000	0.000	1.130	1.130	2.260
92.00	0.000	0.000	1.130	1.130	2.260
92.50	0.000	0.000	1.130	1.130	2.260
93.00	0.000	0.000	1.130	1.130	2.260
93.50	0.000	0.000	1.130	1.130	2.260
94.00	13.773	0.000	1.130	1.130	16.033
94.50	38.956	0.000	1.130	1.130	41.216
95.00	41.949	0.000	1.130	1.130	44.209
95.50	42.851	12.076	1.130	1.130	57.188
96.00	43.735	24.153	1.130	1.130	70.148

Structure #5 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	44.210	0.169	0.000	0.000	94.000	TR55	470.89	32.037
	Σ	**44.210**						**470.89**	**32.037**
#5	Σ	**44.210**						**40.45**	**20.832**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.240	1,815.00	1.50	1.0000	1.0000	1	2,300.7	110,295	68.14	31.60
	Σ							**2,300.7**	**110,295**	**68.14**	**31.60**
#5	Σ							**253.6**	**2,301,353**	**543.98**	**2.45**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.01	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 1

2-year, 24-hour Storm Event

3.8 inches

L.Lotrakul

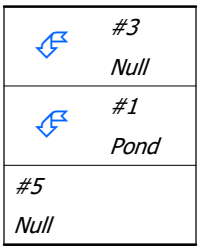
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	3.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	0.000	0.000	Detention Pond 1 (West)
Null	#3	==>	#5	0.000	0.000	Southwest Channel
Null	#5	==>	End	0.000	0.000	POI 1 (Wetlands, Stream, Existing, Shop, Office)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		1.990	1.990	5.10	0.36
#1	In	38.420	38.420	117.20	7.12
	Out			2.99	6.04
#5		235.720	276.130	31.00	42.98

Structure Detail:

Structure #3 (Null)

Southwest Channel

Structure #1 (Pond)

Detention Pond 1 (West)

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	4.50	24.00	75.00	1.30	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	91.58 ft
Dewater Time:	3.14 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		
89.25	1.348	0.304	0.000		
89.50	1.633	0.676	0.000		Low hole SPW #1
89.75	1.945	1.123	0.174	31.09*	
90.00	2.284	1.651	0.596	10.72*	
90.25	2.332	2.228	1.103	6.33*	
90.50	2.381	2.817	1.395	5.70	
90.75	2.430	3.419	1.636	4.85	
91.00	2.479	4.032	1.988	4.10	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
91.25	2.530	4.658	2.514	3.35	
91.50	2.580	5.297	2.886	5.10	
91.58	2.598	5.518	2.992	4.10	Peak Stage
91.75	2.631	5.949	3.198		
92.00	2.683	6.613	3.476		
92.25	2.732	7.290	3.731		
92.50	2.782	7.979	3.968		
92.75	2.832	8.681	4.190		
93.00	2.882	9.395	4.400		
93.25	2.933	10.122	4.600		
93.50	2.984	10.861	4.792		Spillway #1
93.75	3.036	11.614	4.976		
94.00	3.088	12.379	13.773		
94.25	3.139	13.157	25.303		
94.50	3.190	13.948	33.171		
94.75	3.241	14.752	33.805		
95.00	3.293	15.569	34.428		Spillway #2
95.25	3.346	16.399	39.049		
95.50	3.398	17.242	43.660		
95.75	3.451	18.098	48.260		
96.00	3.505	18.968	60.966		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000
89.25	0.000	0.000	0.000
89.50	8.00>0.000	0.000	0.000
89.75	0.174	0.000	0.174
90.00	0.596	0.000	0.596
90.25	1.103	0.000	1.103
90.50	1.395	0.000	1.395
90.75	6.00>1.636	0.000	1.636
91.00	1.988	0.000	1.988
91.25	2.514	0.000	2.514
91.50	2.886	0.000	2.886
91.75	3.198	0.000	3.198
92.00	3.476	0.000	3.476

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
92.25	3.731	0.000	3.731
92.50	3.968	0.000	3.968
92.75	4.190	0.000	4.190
93.00	4.400	0.000	4.400
93.25	4.600	0.000	4.600
93.50	4.792	0.000	4.792
93.75	4.976	0.000	4.976
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	33.171	0.000	33.171
94.75	33.805	0.000	33.805
95.00	34.428	0.000	34.428
95.25	35.040	4.010	39.049
95.50	35.641	8.019	43.660
95.75	36.232	12.029	48.260
96.00	36.813	24.153	60.966

Structure #5 (Null)

POI 1 (Wetlands, Stream, Existing, Shop, Office)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	1.990	0.285	0.027	0.283	84.000	TR55	5.10	0.362
	Σ	**1.990**						**5.10**	**0.362**
#1	1	38.420	0.171	0.027	0.283	84.000	TR55	117.20	7.119
	Σ	**38.420**						**117.20**	**7.119**
#5	1	235.720	16.953	0.000	0.000	80.000	TR55	28.18	36.577
	Σ	**276.130**						**31.00**	**42.984**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**
#3	1	3. Short grass pasture	31.67	19.00	60.00	4.500	0.003
		8. Large gullies, diversions, and low flowing streams	0.26	4.00	1,548.00	1.520	0.282
#3	**1**	**Time of Concentration:**					**0.285**
#5	1	1. Forest with heavy ground litter	1.05	2.00	191.02	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,369.42	0.110	16.084
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.57	0.720	0.657
#5	**1**	**Time of Concentration:**					**16.953**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#1	**1**	**Muskingum K:**					**0.027**
#3	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#3	**1**	**Muskingum K:**					**0.027**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 1

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

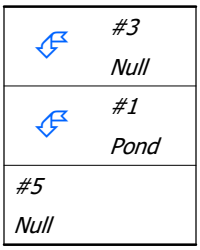
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	0.000	0.000	Detention Pond 1 (West)
Null	#3	==>	#5	0.000	0.000	Southwest Channel
Null	#5	==>	End	0.000	0.000	POI 1 (Wetlands, Stream, Existing, Shop, Office)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		1.990	1.990	9.20	0.66
#1	In	38.420	38.420	210.64	13.00
	Out			4.55	10.61
#5		235.720	276.130	59.35	81.43

Structure Detail:

Structure #3 (Null)

Southwest Channel

Structure #1 (Pond)

Detention Pond 1 (West)

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	4.50	24.00	75.00	1.30	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	93.19 ft
Dewater Time:	3.69 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		
89.25	1.348	0.304	0.000		
89.50	1.633	0.676	0.000		Low hole SPW #1
89.75	1.945	1.123	0.174	31.09*	
90.00	2.284	1.651	0.596	10.72*	
90.25	2.332	2.228	1.103	6.33*	
90.50	2.381	2.817	1.395	5.11*	
90.75	2.430	3.419	1.636	4.45*	
91.00	2.479	4.032	1.988	4.15	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
91.25	2.530	4.658	2.514	3.35	
91.50	2.580	5.297	2.886	2.90	
91.75	2.631	5.949	3.198	2.55	
92.00	2.683	6.613	3.476	2.45	
92.25	2.732	7.290	3.731	2.25	
92.50	2.782	7.979	3.968	2.15	
92.75	2.832	8.681	4.190	2.10	
93.00	2.882	9.395	4.400	3.15	
93.19	2.921	9.949	4.553	5.70	Peak Stage
93.25	2.933	10.122	4.600		
93.50	2.984	10.861	4.792		Spillway #1
93.75	3.036	11.614	4.976		
94.00	3.088	12.379	13.773		
94.25	3.139	13.157	25.303		
94.50	3.190	13.948	33.171		
94.75	3.241	14.752	33.805		
95.00	3.293	15.569	34.428		Spillway #2
95.25	3.346	16.399	39.049		
95.50	3.398	17.242	43.660		
95.75	3.451	18.098	48.260		
96.00	3.505	18.968	60.966		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000
89.25	0.000	0.000	0.000
89.50	8.00>0.000	0.000	0.000
89.75	0.174	0.000	0.174
90.00	0.596	0.000	0.596
90.25	1.103	0.000	1.103
90.50	1.395	0.000	1.395
90.75	6.00>1.636	0.000	1.636
91.00	1.988	0.000	1.988
91.25	2.514	0.000	2.514
91.50	2.886	0.000	2.886
91.75	3.198	0.000	3.198
92.00	3.476	0.000	3.476

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
92.25	3.731	0.000	3.731
92.50	3.968	0.000	3.968
92.75	4.190	0.000	4.190
93.00	4.400	0.000	4.400
93.25	4.600	0.000	4.600
93.50	4.792	0.000	4.792
93.75	4.976	0.000	4.976
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	33.171	0.000	33.171
94.75	33.805	0.000	33.805
95.00	34.428	0.000	34.428
95.25	35.040	4.010	39.049
95.50	35.641	8.019	43.660
95.75	36.232	12.029	48.260
96.00	36.813	24.153	60.966

Structure #5 (Null)

POI 1 (Wetlands, Stream, Existing, Shop, Office)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	1.990	0.285	0.027	0.283	84.000	TR55	9.20	0.662
	Σ	**1.990**						**9.20**	**0.662**
#1	1	38.420	0.171	0.027	0.283	84.000	TR55	210.64	12.999
	Σ	**38.420**						**210.64**	**12.999**
#5	1	235.720	16.953	0.000	0.000	80.000	TR55	54.81	70.156
	Σ	**276.130**						**59.35**	**81.428**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**
#3	1	3. Short grass pasture	31.67	19.00	60.00	4.500	0.003
		8. Large gullies, diversions, and low flowing streams	0.26	4.00	1,548.00	1.520	0.282
#3	**1**	**Time of Concentration:**					**0.285**
#5	1	1. Forest with heavy ground litter	1.05	2.00	191.02	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,369.42	0.110	16.084
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.57	0.720	0.657
#5	**1**	**Time of Concentration:**					**16.953**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#1	**1**	**Muskingum K:**					**0.027**
#3	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#3	**1**	**Muskingum K:**					**0.027**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 1

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

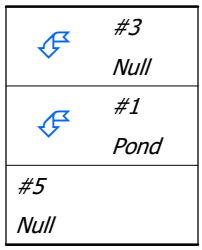
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	0.000	0.000	Detention Pond 1 (West)
Null	#3	==>	#5	0.000	0.000	Southwest Channel
Null	#5	==>	End	0.000	0.000	POI 1 (Wetlands, Stream, Existing, Shop, Office)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		1.990	1.990	11.89	0.86
#1	In	38.420	38.420	271.80	16.97
	Out			10.89	13.92
#5		235.720	276.130	78.21	108.03

Structure Detail:

Structure #3 (Null)

Southwest Channel

Structure #1 (Pond)

Detention Pond 1 (West)

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	4.50	24.00	75.00	1.30	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	93.92 ft
Dewater Time:	3.98 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		
89.25	1.348	0.304	0.000		
89.50	1.633	0.676	0.000		Low hole SPW #1
89.75	1.945	1.123	0.174	31.09*	
90.00	2.284	1.651	0.596	10.72*	
90.25	2.332	2.228	1.103	6.33*	
90.50	2.381	2.817	1.395	5.11*	
90.75	2.430	3.419	1.636	4.45*	
91.00	2.479	4.032	1.988	3.74*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
91.25	2.530	4.658	2.514	3.40	
91.50	2.580	5.297	2.886	2.85	
91.75	2.631	5.949	3.198	2.60	
92.00	2.683	6.613	3.476	2.40	
92.25	2.732	7.290	3.731	2.25	
92.50	2.782	7.979	3.968	2.20	
92.75	2.832	8.681	4.190	2.05	
93.00	2.882	9.395	4.400	2.05	
93.25	2.933	10.122	4.600	1.95	
93.50	2.984	10.861	4.792	1.90	Spillway #1
93.75	3.036	11.614	4.976	5.35	
93.92	3.071	12.128	10.891	5.15	Peak Stage
94.00	3.088	12.379	13.773		
94.25	3.139	13.157	25.303		
94.50	3.190	13.948	33.171		
94.75	3.241	14.752	33.805		
95.00	3.293	15.569	34.428		Spillway #2
95.25	3.346	16.399	39.049		
95.50	3.398	17.242	43.660		
95.75	3.451	18.098	48.260		
96.00	3.505	18.968	60.966		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000
89.25	0.000	0.000	0.000
89.50	8.00>0.000	0.000	0.000
89.75	0.174	0.000	0.174
90.00	0.596	0.000	0.596
90.25	1.103	0.000	1.103
90.50	1.395	0.000	1.395
90.75	6.00>1.636	0.000	1.636
91.00	1.988	0.000	1.988
91.25	2.514	0.000	2.514
91.50	2.886	0.000	2.886
91.75	3.198	0.000	3.198
92.00	3.476	0.000	3.476

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
92.25	3.731	0.000	3.731
92.50	3.968	0.000	3.968
92.75	4.190	0.000	4.190
93.00	4.400	0.000	4.400
93.25	4.600	0.000	4.600
93.50	4.792	0.000	4.792
93.75	4.976	0.000	4.976
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	33.171	0.000	33.171
94.75	33.805	0.000	33.805
95.00	34.428	0.000	34.428
95.25	35.040	4.010	39.049
95.50	35.641	8.019	43.660
95.75	36.232	12.029	48.260
96.00	36.813	24.153	60.966

Structure #5 (Null)

POI 1 (Wetlands, Stream, Existing, Shop, Office)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	1.990	0.285	0.027	0.283	84.000	TR55	11.89	0.864
	Σ	**1.990**						**11.89**	**0.864**
#1	1	38.420	0.171	0.027	0.283	84.000	TR55	271.80	16.972
	Σ	**38.420**						**271.80**	**16.972**
#5	1	235.720	16.953	0.000	0.000	80.000	TR55	73.17	93.252
	Σ	**276.130**						**78.21**	**108.032**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**
#3	1	3. Short grass pasture	31.67	19.00	60.00	4.500	0.003
		8. Large gullies, diversions, and low flowing streams	0.26	4.00	1,548.00	1.520	0.282
#3	**1**	**Time of Concentration:**					**0.285**
#5	1	1. Forest with heavy ground litter	1.05	2.00	191.02	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,369.42	0.110	16.084
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.57	0.720	0.657
#5	**1**	**Time of Concentration:**					**16.953**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#1	**1**	**Muskingum K:**					**0.027**
#3	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#3	**1**	**Muskingum K:**					**0.027**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 1

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

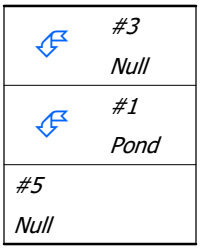
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#5	0.000	0.000	Detention Pond 1 (West)
Null	#3	==>	#5	0.000	0.000	Southwest Channel
Null	#5	==>	End	0.000	0.000	POI 1 (Wetlands, Stream, Existing, Shop, Office)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		1.990	1.990	16.43	1.21
#1	In	38.420	38.420	374.87	23.83
	Out			33.87	20.59
#5		235.720	276.130	110.27	155.31

Structure Detail:

Structure #3 (Null)

Southwest Channel

Structure #1 (Pond)

Detention Pond 1 (West)

Pond Inputs:

Initial Pool Elev:	89.50 ft
Initial Pool:	0.68 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	4.50	24.00	75.00	1.30	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	94.78 ft
Dewater Time:	4.08 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
89.00	1.091	0.000	0.000		
89.25	1.348	0.304	0.000		
89.50	1.633	0.676	0.000		Low hole SPW #1
89.75	1.945	1.123	0.174	31.09*	
90.00	2.284	1.651	0.596	10.72*	
90.25	2.332	2.228	1.103	6.33*	
90.50	2.381	2.817	1.395	5.11*	
90.75	2.430	3.419	1.636	4.45*	
91.00	2.479	4.032	1.988	3.74*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
91.25	2.530	4.658	2.514	3.40	
91.50	2.580	5.297	2.886	2.85	
91.75	2.631	5.949	3.198	2.60	
92.00	2.683	6.613	3.476	2.45	
92.25	2.732	7.290	3.731	2.25	
92.50	2.782	7.979	3.968	2.15	
92.75	2.832	8.681	4.190	2.10	
93.00	2.882	9.395	4.400	2.00	
93.25	2.933	10.122	4.600	1.95	
93.50	2.984	10.861	4.792	1.90	Spillway #1
93.75	3.036	11.614	4.976	4.40	
94.00	3.088	12.379	13.773	5.55	
94.25	3.139	13.157	25.303	1.30	
94.50	3.190	13.948	33.171	0.65	
94.75	3.241	14.752	33.805	0.80	
94.78	3.247	14.842	33.874	0.20	Peak Stage
95.00	3.293	15.569	34.428		Spillway #2
95.25	3.346	16.399	39.049		
95.50	3.398	17.242	43.660		
95.75	3.451	18.098	48.260		
96.00	3.505	18.968	60.966		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
89.00	0.000	0.000	0.000
89.25	0.000	0.000	0.000
89.50	8.00>0.000	0.000	0.000
89.75	0.174	0.000	0.174
90.00	0.596	0.000	0.596
90.25	1.103	0.000	1.103
90.50	1.395	0.000	1.395
90.75	6.00>1.636	0.000	1.636
91.00	1.988	0.000	1.988
91.25	2.514	0.000	2.514
91.50	2.886	0.000	2.886
91.75	3.198	0.000	3.198
92.00	3.476	0.000	3.476

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
92.25	3.731	0.000	3.731
92.50	3.968	0.000	3.968
92.75	4.190	0.000	4.190
93.00	4.400	0.000	4.400
93.25	4.600	0.000	4.600
93.50	4.792	0.000	4.792
93.75	4.976	0.000	4.976
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	33.171	0.000	33.171
94.75	33.805	0.000	33.805
95.00	34.428	0.000	34.428
95.25	35.040	4.010	39.049
95.50	35.641	8.019	43.660
95.75	36.232	12.029	48.260
96.00	36.813	24.153	60.966

Structure #5 (Null)

POI 1 (Wetlands, Stream, Existing, Shop, Office)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	1.990	0.285	0.027	0.283	84.000	TR55	16.43	1.213
	Σ	**1.990**						**16.43**	**1.213**
#1	1	38.420	0.171	0.027	0.283	84.000	TR55	374.87	23.827
	Σ	**38.420**						**374.87**	**23.827**
#5	1	235.720	16.953	0.000	0.000	80.000	TR55	105.12	133.505
	Σ	**276.130**						**110.27**	**155.308**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	32.31	21.00	65.00	2.840	0.006
		8. Large gullies, diversions, and low flowing streams	0.94	16.00	1,703.03	2.900	0.163
		8. Large gullies, diversions, and low flowing streams	20.00	27.00	135.00	13.410	0.002
#1	**1**	**Time of Concentration:**					**0.171**
#3	1	3. Short grass pasture	31.67	19.00	60.00	4.500	0.003
		8. Large gullies, diversions, and low flowing streams	0.26	4.00	1,548.00	1.520	0.282
#3	**1**	**Time of Concentration:**					**0.285**
#5	1	1. Forest with heavy ground litter	1.05	2.00	191.02	0.250	0.212
		4. Cultivated, straight row	0.02	1.00	6,369.42	0.110	16.084
		8. Large gullies, diversions, and low flowing streams	0.06	1.00	1,703.57	0.720	0.657
#5	**1**	**Time of Concentration:**					**16.953**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#1	**1**	**Muskingum K:**					**0.027**
#3	1	3. Short grass pasture	3.33	3.00	90.00	1.460	0.017
		8. Large gullies, diversions, and low flowing streams	0.89	1.00	112.00	2.830	0.010
#3	**1**	**Muskingum K:**					**0.027**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 2

2-year, 24-hour Storm Event

3.8 inches

L.Lotrakul

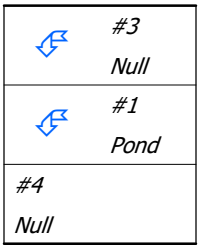
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	3.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#4	0.000	0.000	Detention Pond 2 (East)
Null	#3	==>	#4	0.000	0.000	Southeast Channel
Null	#4	==>	End	0.000	0.000	POI 2 (includes Western Portion of Wetlands)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		2.520	2.520	6.08	0.45
#1	In	44.210	44.210	135.29	8.20
	Out			3.58	7.42
#4		13.440	60.170	15.28	9.88

Structure Detail:

Structure #3 (Null)

Southeast Channel

Structure #1 (Pond)

Detention Pond 2 (East)

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	7.50	24.00	100.00	2.00	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	89.46 ft
Dewater Time:	2.57 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		
86.25	0.921	0.214	0.000		
86.50	1.058	0.461	0.000		Low hole SPW #1
86.75	1.204	0.744	0.174	19.66*	
87.00	1.360	1.064	0.596	6.50*	
87.25	1.526	1.425	1.103	3.96*	
87.50	1.701	1.828	1.395	3.95	
87.75	1.886	2.276	1.636	3.60	
88.00	2.080	2.772	1.846	3.45	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
88.25	2.113	3.296	2.034	3.25	
88.50	2.146	3.828	2.206	3.05	
88.75	2.180	4.369	2.508	2.80	
89.00	2.214	4.918	2.996	2.40	
89.25	2.248	5.476	3.336	3.45	
89.46	2.277	5.960	3.581	5.65	Peak Stage
89.50	2.282	6.042	3.623		
89.75	2.317	6.617	3.879		
90.00	2.352	7.201	4.115		
90.25	2.386	7.793	4.336		
90.50	2.420	8.394	4.544		
90.75	2.454	9.003	4.741		
91.00	2.489	9.621	4.930		
91.25	2.523	10.247	5.111		
91.50	2.558	10.882	5.285		
91.75	2.594	11.526	5.454		
92.00	2.629	12.179	5.617		
92.25	2.664	12.841	5.775		
92.50	2.699	13.511	5.929		
92.75	2.734	14.190	6.079		
93.00	2.769	14.878	6.225		
93.25	2.805	15.575	6.367		
93.50	2.841	16.280	6.507		Spillway #1
93.75	2.877	16.995	6.643		
94.00	2.913	17.719	13.773		
94.25	2.949	18.452	25.303		
94.50	2.986	19.193	38.956		
94.75	3.022	19.944	40.558		
95.00	3.059	20.705	41.027		Spillway #2
95.25	3.096	21.474	45.500		
95.50	3.134	22.253	49.968		
95.75	3.171	23.041	54.431		
96.00	3.209	23.838	67.004		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000
86.25	0.000	0.000	0.000
86.50	8.00>0.000	0.000	0.000
86.75	0.174	0.000	0.174
87.00	0.596	0.000	0.596
87.25	1.103	0.000	1.103
87.50	1.395	0.000	1.395
87.75	1.636	0.000	1.636
88.00	1.846	0.000	1.846
88.25	2.034	0.000	2.034
88.50	6.00>2.206	0.000	2.206
88.75	2.508	0.000	2.508
89.00	2.996	0.000	2.996
89.25	3.336	0.000	3.336
89.50	3.623	0.000	3.623
89.75	3.879	0.000	3.879
90.00	4.115	0.000	4.115
90.25	4.336	0.000	4.336
90.50	4.544	0.000	4.544
90.75	4.741	0.000	4.741
91.00	4.930	0.000	4.930
91.25	5.111	0.000	5.111
91.50	5.285	0.000	5.285
91.75	5.454	0.000	5.454
92.00	5.617	0.000	5.617
92.25	5.775	0.000	5.775
92.50	5.929	0.000	5.929
92.75	6.079	0.000	6.079
93.00	6.225	0.000	6.225
93.25	6.367	0.000	6.367
93.50	6.507	0.000	6.507
93.75	6.643	0.000	6.643
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	38.956	0.000	38.956
94.75	40.558	0.000	40.558
95.00	41.027	0.000	41.027
95.25	41.491	4.010	45.500
95.50	41.949	8.019	49.968
95.75	42.403	12.029	54.431
96.00	42.851	24.153	67.004

Structure #4 (Null)

POI 2 (includes Western Portion of Wetlands)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	2.520	0.324	0.003	0.254	84.000	TR55	6.08	0.453
	Σ	**2.520**						**6.08**	**0.453**
#1	1	44.210	0.169	0.000	0.000	84.000	TR55	135.29	8.203
	Σ	**44.210**						**135.29**	**8.203**
#4	1	13.440	1.210	0.331	0.126	79.000	TR55	11.81	2.000
	Σ	**60.170**						**15.28**	**9.876**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.00	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**
#3	1	3. Short grass pasture	33.33	19.00	57.00	4.610	0.003
		8. Large gullies, diversions, and low flowing streams	0.35	7.20	2,046.03	1.770	0.321
#3	**1**	**Time of Concentration:**					**0.324**
#4	1	1. Forest with heavy ground litter	0.19	0.30	154.00	0.110	0.388
		4. Cultivated, straight row	0.08	0.50	656.00	0.240	0.759
		8. Large gullies, diversions, and low flowing streams	0.22	0.70	319.00	1.400	0.063
#4	**1**	**Time of Concentration:**					**1.210**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#3	1	6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#3	**1**	**Muskingum K:**					**0.003**
#4	1	8. Large gullies, diversions, and low flowing streams	0.03	0.20	627.00	0.530	0.328
		6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#4	**1**	**Muskingum K:**					**0.331**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 2

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

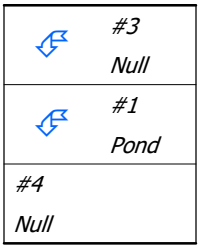
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#4	0.000	0.000	Detention Pond 2 (East)
Null	#3	==>	#4	0.000	0.000	Southeast Channel
Null	#4	==>	End	0.000	0.000	POI 2 (includes Western Portion of Wetlands)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		2.520	2.520	10.99	0.83
#1	In	44.210	44.210	243.14	14.98
	Out			5.32	12.54
#4		13.440	60.170	28.47	17.25

Structure Detail:

Structure #3 (Null)

Southeast Channel

Structure #1 (Pond)

Detention Pond 2 (East)

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	7.50	24.00	100.00	2.00	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	91.56 ft
Dewater Time:	3.10 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		
86.25	0.921	0.214	0.000		
86.50	1.058	0.461	0.000		Low hole SPW #1
86.75	1.204	0.744	0.174	19.66*	
87.00	1.360	1.064	0.596	6.50*	
87.25	1.526	1.425	1.103	3.96*	
87.50	1.701	1.828	1.395	3.50*	
87.75	1.886	2.276	1.636	3.31*	
88.00	2.080	2.772	1.846	3.25*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
88.25	2.113	3.296	2.034	3.12*	
88.50	2.146	3.828	2.206	3.05	
88.75	2.180	4.369	2.508	2.80	
89.00	2.214	4.918	2.996	2.40	
89.25	2.248	5.476	3.336	2.15	
89.50	2.282	6.042	3.623	1.95	
89.75	2.317	6.617	3.879	1.85	
90.00	2.352	7.201	4.115	1.80	
90.25	2.386	7.793	4.336	1.70	
90.50	2.420	8.394	4.544	1.65	
90.75	2.454	9.003	4.741	1.55	
91.00	2.489	9.621	4.930	1.55	
91.25	2.523	10.247	5.111	2.30	
91.50	2.558	10.882	5.285	3.75	
91.56	2.567	11.032	5.324	2.55	Peak Stage
91.75	2.594	11.526	5.454		
92.00	2.629	12.179	5.617		
92.25	2.664	12.841	5.775		
92.50	2.699	13.511	5.929		
92.75	2.734	14.190	6.079		
93.00	2.769	14.878	6.225		
93.25	2.805	15.575	6.367		
93.50	2.841	16.280	6.507		Spillway #1
93.75	2.877	16.995	6.643		
94.00	2.913	17.719	13.773		
94.25	2.949	18.452	25.303		
94.50	2.986	19.193	38.956		
94.75	3.022	19.944	40.558		
95.00	3.059	20.705	41.027		Spillway #2
95.25	3.096	21.474	45.500		
95.50	3.134	22.253	49.968		
95.75	3.171	23.041	54.431		
96.00	3.209	23.838	67.004		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000
86.25	0.000	0.000	0.000
86.50	8.00>0.000	0.000	0.000
86.75	0.174	0.000	0.174
87.00	0.596	0.000	0.596
87.25	1.103	0.000	1.103
87.50	1.395	0.000	1.395
87.75	1.636	0.000	1.636
88.00	1.846	0.000	1.846
88.25	2.034	0.000	2.034
88.50	6.00>2.206	0.000	2.206
88.75	2.508	0.000	2.508
89.00	2.996	0.000	2.996
89.25	3.336	0.000	3.336
89.50	3.623	0.000	3.623
89.75	3.879	0.000	3.879
90.00	4.115	0.000	4.115
90.25	4.336	0.000	4.336
90.50	4.544	0.000	4.544
90.75	4.741	0.000	4.741
91.00	4.930	0.000	4.930
91.25	5.111	0.000	5.111
91.50	5.285	0.000	5.285
91.75	5.454	0.000	5.454
92.00	5.617	0.000	5.617
92.25	5.775	0.000	5.775
92.50	5.929	0.000	5.929
92.75	6.079	0.000	6.079
93.00	6.225	0.000	6.225
93.25	6.367	0.000	6.367
93.50	6.507	0.000	6.507
93.75	6.643	0.000	6.643
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	38.956	0.000	38.956
94.75	40.558	0.000	40.558
95.00	41.027	0.000	41.027
95.25	41.491	4.010	45.500
95.50	41.949	8.019	49.968
95.75	42.403	12.029	54.431
96.00	42.851	24.153	67.004

Structure #4 (Null)

POI 2 (includes Western Portion of Wetlands)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	2.520	0.324	0.003	0.254	84.000	TR55	10.99	0.828
	Σ	**2.520**						**10.99**	**0.828**
#1	1	44.210	0.169	0.000	0.000	84.000	TR55	243.14	14.979
	Σ	**44.210**						**243.14**	**14.979**
#4	1	13.440	1.210	0.331	0.126	79.000	TR55	23.29	3.886
	Σ	**60.170**						**28.47**	**17.254**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.00	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**
#3	1	3. Short grass pasture	33.33	19.00	57.00	4.610	0.003
		8. Large gullies, diversions, and low flowing streams	0.35	7.20	2,046.03	1.770	0.321
#3	**1**	**Time of Concentration:**					**0.324**
#4	1	1. Forest with heavy ground litter	0.19	0.30	154.00	0.110	0.388
		4. Cultivated, straight row	0.08	0.50	656.00	0.240	0.759
		8. Large gullies, diversions, and low flowing streams	0.22	0.70	319.00	1.400	0.063
#4	**1**	**Time of Concentration:**					**1.210**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#3	1	6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#3	**1**	**Muskingum K:**					**0.003**
#4	1	8. Large gullies, diversions, and low flowing streams	0.03	0.20	627.00	0.530	0.328
		6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#4	**1**	**Muskingum K:**					**0.331**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 2

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

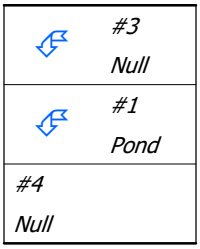
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#4	0.000	0.000	Detention Pond 2 (East)
Null	#3	==>	#4	0.000	0.000	Southeast Channel
Null	#4	==>	End	0.000	0.000	POI 2 (includes Western Portion of Wetlands)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		2.520	2.520	14.21	1.08
#1	In	44.210	44.210	313.74	19.56
	Out			6.17	15.72
#4		13.440	60.170	37.06	22.00

Structure Detail:

Structure #3 (Null)

Southeast Channel

Structure #1 (Pond)

Detention Pond 2 (East)

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	7.50	24.00	100.00	2.00	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	92.91 ft
Dewater Time:	3.39 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		
86.25	0.921	0.214	0.000		
86.50	1.058	0.461	0.000		Low hole SPW #1
86.75	1.204	0.744	0.174	19.66*	
87.00	1.360	1.064	0.596	6.50*	
87.25	1.526	1.425	1.103	3.96*	
87.50	1.701	1.828	1.395	3.50*	
87.75	1.886	2.276	1.636	3.31*	
88.00	2.080	2.772	1.846	3.25*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
88.25	2.113	3.296	2.034	3.12*	
88.50	2.146	3.828	2.206	2.92*	
88.75	2.180	4.369	2.508	2.61*	
89.00	2.214	4.918	2.996	2.40	
89.25	2.248	5.476	3.336	2.15	
89.50	2.282	6.042	3.623	2.00	
89.75	2.317	6.617	3.879	1.85	
90.00	2.352	7.201	4.115	1.75	
90.25	2.386	7.793	4.336	1.70	
90.50	2.420	8.394	4.544	1.65	
90.75	2.454	9.003	4.741	1.55	
91.00	2.489	9.621	4.930	1.55	
91.25	2.523	10.247	5.111	1.55	
91.50	2.558	10.882	5.285	1.45	
91.75	2.594	11.526	5.454	1.45	
92.00	2.629	12.179	5.617	1.45	
92.25	2.664	12.841	5.775	1.40	
92.50	2.699	13.511	5.929	1.40	
92.75	2.734	14.190	6.079	3.20	
92.91	2.756	14.619	6.170	3.95	Peak Stage
93.00	2.769	14.878	6.225		
93.25	2.805	15.575	6.367		
93.50	2.841	16.280	6.507		Spillway #1
93.75	2.877	16.995	6.643		
94.00	2.913	17.719	13.773		
94.25	2.949	18.452	25.303		
94.50	2.986	19.193	38.956		
94.75	3.022	19.944	40.558		
95.00	3.059	20.705	41.027		Spillway #2
95.25	3.096	21.474	45.500		
95.50	3.134	22.253	49.968		
95.75	3.171	23.041	54.431		
96.00	3.209	23.838	67.004		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000
86.25	0.000	0.000	0.000
86.50	8.00>0.000	0.000	0.000
86.75	0.174	0.000	0.174
87.00	0.596	0.000	0.596
87.25	1.103	0.000	1.103
87.50	1.395	0.000	1.395
87.75	1.636	0.000	1.636
88.00	1.846	0.000	1.846
88.25	2.034	0.000	2.034
88.50	6.00>2.206	0.000	2.206
88.75	2.508	0.000	2.508
89.00	2.996	0.000	2.996
89.25	3.336	0.000	3.336
89.50	3.623	0.000	3.623
89.75	3.879	0.000	3.879
90.00	4.115	0.000	4.115
90.25	4.336	0.000	4.336
90.50	4.544	0.000	4.544
90.75	4.741	0.000	4.741
91.00	4.930	0.000	4.930
91.25	5.111	0.000	5.111
91.50	5.285	0.000	5.285
91.75	5.454	0.000	5.454
92.00	5.617	0.000	5.617
92.25	5.775	0.000	5.775
92.50	5.929	0.000	5.929
92.75	6.079	0.000	6.079
93.00	6.225	0.000	6.225
93.25	6.367	0.000	6.367
93.50	6.507	0.000	6.507
93.75	6.643	0.000	6.643
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	38.956	0.000	38.956
94.75	40.558	0.000	40.558
95.00	41.027	0.000	41.027
95.25	41.491	4.010	45.500
95.50	41.949	8.019	49.968
95.75	42.403	12.029	54.431
96.00	42.851	24.153	67.004

Structure #4 (Null)

POI 2 (includes Western Portion of Wetlands)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	2.520	0.324	0.003	0.254	84.000	TR55	14.21	1.082
	Σ	**2.520**						**14.21**	**1.082**
#1	1	44.210	0.169	0.000	0.000	84.000	TR55	313.74	19.557
	Σ	**44.210**						**313.74**	**19.557**
#4	1	13.440	1.210	0.331	0.126	79.000	TR55	31.11	5.189
	Σ	**60.170**						**37.06**	**21.995**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.00	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**
#3	1	3. Short grass pasture	33.33	19.00	57.00	4.610	0.003
		8. Large gullies, diversions, and low flowing streams	0.35	7.20	2,046.03	1.770	0.321
#3	**1**	**Time of Concentration:**					**0.324**
#4	1	1. Forest with heavy ground litter	0.19	0.30	154.00	0.110	0.388
		4. Cultivated, straight row	0.08	0.50	656.00	0.240	0.759
		8. Large gullies, diversions, and low flowing streams	0.22	0.70	319.00	1.400	0.063
#4	**1**	**Time of Concentration:**					**1.210**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#3	1	6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#3	**1**	**Muskingum K:**					**0.003**
#4	1	8. Large gullies, diversions, and low flowing streams	0.03	0.20	627.00	0.530	0.328
		6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#4	**1**	**Muskingum K:**					**0.331**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 2

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

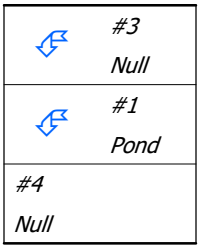
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	#4	0.000	0.000	Detention Pond 2 (East)
Null	#3	==>	#4	0.000	0.000	Southeast Channel
Null	#4	==>	End	0.000	0.000	POI 2 (includes Western Portion of Wetlands)



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#3		2.520	2.520	19.65	1.52
#1	In	44.210	44.210	432.70	27.46
	Out			23.18	22.27
#4		13.440	60.170	67.07	31.25

Structure Detail:

Structure #3 (Null)

Southeast Channel

Structure #1 (Pond)

Detention Pond 2 (East)

Pond Inputs:

Initial Pool Elev:	86.50 ft
Initial Pool:	0.46 ac-ft

Enhanced Perf. Riser

Riser Diameter (in)	Riser Height (ft)	Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Number of Holes per Elev
48.00	7.50	24.00	100.00	2.00	0.0150	93.50	1

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
95.00	30.00	3.00:1	3.00:1	10.00

Pond Results:

Peak Elevation:	94.20 ft
Dewater Time:	3.76 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
86.00	0.793	0.000	0.000		
86.25	0.921	0.214	0.000		
86.50	1.058	0.461	0.000		Low hole SPW #1
86.75	1.204	0.744	0.174	19.66*	
87.00	1.360	1.064	0.596	6.50*	
87.25	1.526	1.425	1.103	3.96*	
87.50	1.701	1.828	1.395	3.50*	
87.75	1.886	2.276	1.636	3.31*	
88.00	2.080	2.772	1.846	3.25*	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
88.25	2.113	3.296	2.034	3.12*	
88.50	2.146	3.828	2.206	2.92*	
88.75	2.180	4.369	2.508	2.61*	
89.00	2.214	4.918	2.996	2.22*	
89.25	2.248	5.476	3.336	2.02*	
89.50	2.282	6.042	3.623	1.89*	
89.75	2.317	6.617	3.879	1.85	
90.00	2.352	7.201	4.115	1.75	
90.25	2.386	7.793	4.336	1.70	
90.50	2.420	8.394	4.544	1.65	
90.75	2.454	9.003	4.741	1.55	
91.00	2.489	9.621	4.930	1.55	
91.25	2.523	10.247	5.111	1.55	
91.50	2.558	10.882	5.285	1.45	
91.75	2.594	11.526	5.454	1.45	
92.00	2.629	12.179	5.617	1.45	
92.25	2.664	12.841	5.775	1.40	
92.50	2.699	13.511	5.929	1.40	
92.75	2.734	14.190	6.079	1.35	
93.00	2.769	14.878	6.225	1.35	
93.25	2.805	15.575	6.367	1.35	
93.50	2.841	16.280	6.507	1.30	Spillway #1
93.75	2.877	16.995	6.643	4.35	
94.00	2.913	17.719	13.773	4.60	
94.20	2.943	18.317	23.183	2.15	Peak Stage
94.25	2.949	18.452	25.303		
94.50	2.986	19.193	38.956		
94.75	3.022	19.944	40.558		
95.00	3.059	20.705	41.027		Spillway #2
95.25	3.096	21.474	45.500		
95.50	3.134	22.253	49.968		
95.75	3.171	23.041	54.431		
96.00	3.209	23.838	67.004		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Enh. PerfRiser (cfs)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
86.00	0.000	0.000	0.000
86.25	0.000	0.000	0.000
86.50	8.00>0.000	0.000	0.000
86.75	0.174	0.000	0.174
87.00	0.596	0.000	0.596
87.25	1.103	0.000	1.103
87.50	1.395	0.000	1.395
87.75	1.636	0.000	1.636
88.00	1.846	0.000	1.846
88.25	2.034	0.000	2.034
88.50	6.00>2.206	0.000	2.206
88.75	2.508	0.000	2.508
89.00	2.996	0.000	2.996
89.25	3.336	0.000	3.336
89.50	3.623	0.000	3.623
89.75	3.879	0.000	3.879
90.00	4.115	0.000	4.115
90.25	4.336	0.000	4.336
90.50	4.544	0.000	4.544
90.75	4.741	0.000	4.741
91.00	4.930	0.000	4.930
91.25	5.111	0.000	5.111
91.50	5.285	0.000	5.285
91.75	5.454	0.000	5.454
92.00	5.617	0.000	5.617
92.25	5.775	0.000	5.775
92.50	5.929	0.000	5.929
92.75	6.079	0.000	6.079
93.00	6.225	0.000	6.225
93.25	6.367	0.000	6.367
93.50	6.507	0.000	6.507
93.75	6.643	0.000	6.643
94.00	13.773	0.000	13.773
94.25	25.303	0.000	25.303
94.50	38.956	0.000	38.956
94.75	40.558	0.000	40.558
95.00	41.027	0.000	41.027
95.25	41.491	4.010	45.500
95.50	41.949	8.019	49.968
95.75	42.403	12.029	54.431
96.00	42.851	24.153	67.004

Structure #4 (Null)

POI 2 (includes Western Portion of Wetlands)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#3	1	2.520	0.324	0.003	0.254	84.000	TR55	19.65	1.519
	Σ	**2.520**						**19.65**	**1.519**
#1	1	44.210	0.169	0.000	0.000	84.000	TR55	432.70	27.456
	Σ	**44.210**						**432.70**	**27.456**
#4	1	13.440	1.210	0.331	0.126	79.000	TR55	44.53	7.467
	Σ	**60.170**						**67.07**	**31.252**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	2. Minimum tillage cultivation	4.62	8.00	173.00	1.070	0.044
		8. Large gullies, diversions, and low flowing streams	1.03	13.00	1,257.00	3.050	0.114
		8. Large gullies, diversions, and low flowing streams	18.76	103.00	549.00	12.990	0.011
#1	**1**	**Time of Concentration:**					**0.169**
#3	1	3. Short grass pasture	33.33	19.00	57.00	4.610	0.003
		8. Large gullies, diversions, and low flowing streams	0.35	7.20	2,046.03	1.770	0.321
#3	**1**	**Time of Concentration:**					**0.324**
#4	1	1. Forest with heavy ground litter	0.19	0.30	154.00	0.110	0.388
		4. Cultivated, straight row	0.08	0.50	656.00	0.240	0.759
		8. Large gullies, diversions, and low flowing streams	0.22	0.70	319.00	1.400	0.063
#4	**1**	**Time of Concentration:**					**1.210**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#3	1	6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#3	**1**	**Muskingum K:**					**0.003**
#4	1	8. Large gullies, diversions, and low flowing streams	0.03	0.20	627.00	0.530	0.328
		6. Grassed waterway	1.36	0.30	22.00	1.750	0.003
#4	**1**	**Muskingum K:**					**0.331**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 3

2-year, 24-hour Storm Event

3.8 inches

L.Lotrakul

General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	3.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#4	==>	End	0.000	0.000	Wetlands

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	9.280	9.280	12.33	1.38

Structure Detail:

Structure #4 (Null)

Wetlands

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	9.280	0.652	0.000	0.000	79.000	TR55	12.33	1.380
	Σ	**9.280**						**12.33**	**1.380**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	1. Forest with heavy ground litter	0.65	1.00	154.00	0.200	0.213
		4. Cultivated, straight row	0.28	2.00	727.00	0.460	0.439
#4	**1**	**Time of Concentration:**					**0.652**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 3

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#4	==>	End	0.000	0.000	Wetlands

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	9.280	9.280	24.31	2.68

Structure Detail:

Structure #4 (Null)

Wetlands

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	9.280	0.652	0.000	0.000	79.000	TR55	24.31	2.681
	Σ	**9.280**						**24.31**	**2.681**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	1. Forest with heavy ground litter	0.65	1.00	154.00	0.200	0.213
		4. Cultivated, straight row	0.28	2.00	727.00	0.460	0.439
#4	**1**	**Time of Concentration:**					**0.652**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 3

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#4	==>	End	0.000	0.000	Wetlands

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	9.280	9.280	32.40	3.58

Structure Detail:

Structure #4 (Null)

Wetlands

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	9.280	0.652	0.000	0.000	79.000	TR55	32.40	3.581
	Σ	**9.280**						**32.40**	**3.581**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	1. Forest with heavy ground litter	0.65	1.00	154.00	0.200	0.213
		4. Cultivated, straight row	0.28	2.00	727.00	0.460	0.439
#4	**1**	**Time of Concentration:**					**0.652**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 3

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#4	==>	End	0.000	0.000	Wetlands

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#4	9.280	9.280	46.27	5.15

Structure Detail:

Structure #4 (Null)

Wetlands

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#4	1	9.280	0.652	0.000	0.000	79.000	TR55	46.27	5.152
	Σ	**9.280**						**46.27**	**5.152**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	1	1. Forest with heavy ground litter	0.65	1.00	154.00	0.200	0.213
		4. Cultivated, straight row	0.28	2.00	727.00	0.460	0.439
#4	**1**	**Time of Concentration:**					**0.652**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 4

2-year, 24-hour Storm Event

3.8 inches

L.Lotrakul

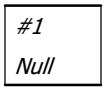
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	2 yr - 24 hr
Rainfall Depth:	3.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Buffer and Grass to POI 4 (South East)



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	12.790	12.790	4.72	2.11

Structure Detail:

Structure #1 (Null)

Buffer and Grass to POI 4 (South East)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.790	4.463	0.000	0.000	81.500	TR55	4.72	2.107
	Σ	**12.790**						**4.72**	**2.107**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	6. Grassed waterway	0.09	7.00	7,392.00	0.460	4.463
#1	**1**	**Time of Concentration:**					**4.463**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 4

10-year, 24-hour Storm Event

5.8 inches

L.Lotrakul

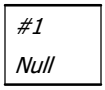
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.800 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Buffer and Grass to POI 4 (South East)



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	12.790	12.790	9.04	3.97

Structure Detail:

Structure #1 (Null)

Buffer and Grass to POI 4 (South East)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.790	4.463	0.000	0.000	81.500	TR55	9.04	3.966
	Σ	**12.790**						**9.04**	**3.966**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	6. Grassed waterway	0.09	7.00	7,392.00	0.460	4.463
#1	**1**	**Time of Concentration:**					**4.463**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 4

25-year, 24-hour Storm Event

7.1 inches

L.Lotrakul

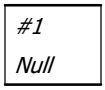
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	25 yr - 24 hr
Rainfall Depth:	7.100 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Buffer and Grass to POI 4 (South East)



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	12.790	12.790	11.96	5.24

Structure Detail:

Structure #1 (Null)

Buffer and Grass to POI 4 (South East)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.790	4.463	0.000	0.000	81.500	TR55	11.96	5.236
	Σ	**12.790**						**11.96**	**5.236**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	6. Grassed waterway	0.09	7.00	7,392.00	0.460	4.463
#1	**1**	**Time of Concentration:**					**4.463**

Vulcan Orangeburg

Post Development

for Hydrological Point of Interest 4

100-year, 24-hour Storm Event

9.3 inches

L.Lotrakul

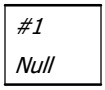
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	100 yr - 24 hr
Rainfall Depth:	9.300 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	End	0.000	0.000	Buffer and Grass to POI 4 (South East)



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	12.790	12.790	16.94	7.44

Structure Detail:

Structure #1 (Null)

Buffer and Grass to POI 4 (South East)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	12.790	4.463	0.000	0.000	81.500	TR55	16.94	7.441
	Σ	**12.790**						**16.94**	**7.441**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	6. Grassed waterway	0.09	7.00	7,392.00	0.460	4.463
#1	**1**	**Time of Concentration:**					**4.463**

ATTACHMENT 5

SOIL MAP

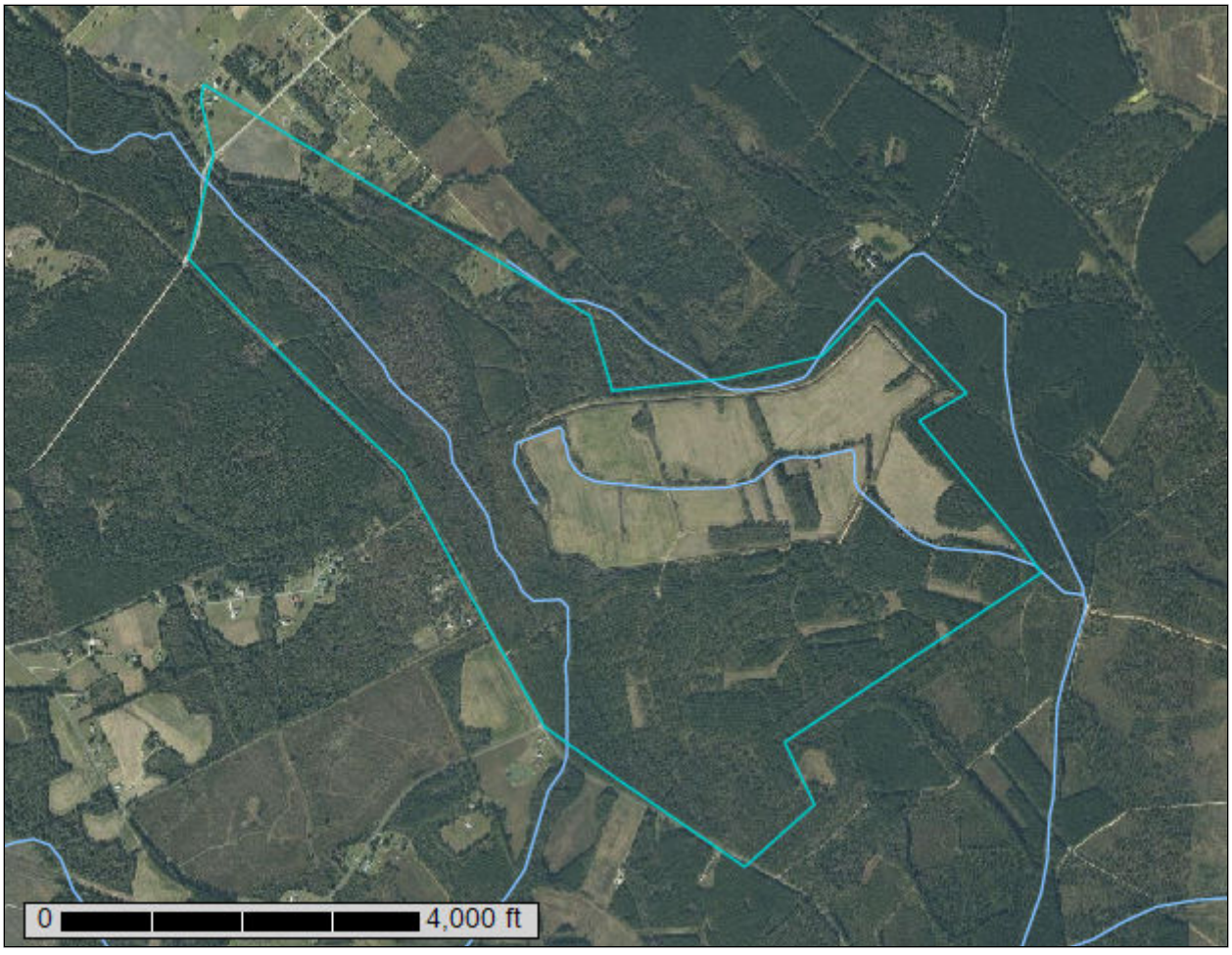
United States Department of Agriculture

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 Orangeburg County, South Carolina



April 8, 2021

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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Contents

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.

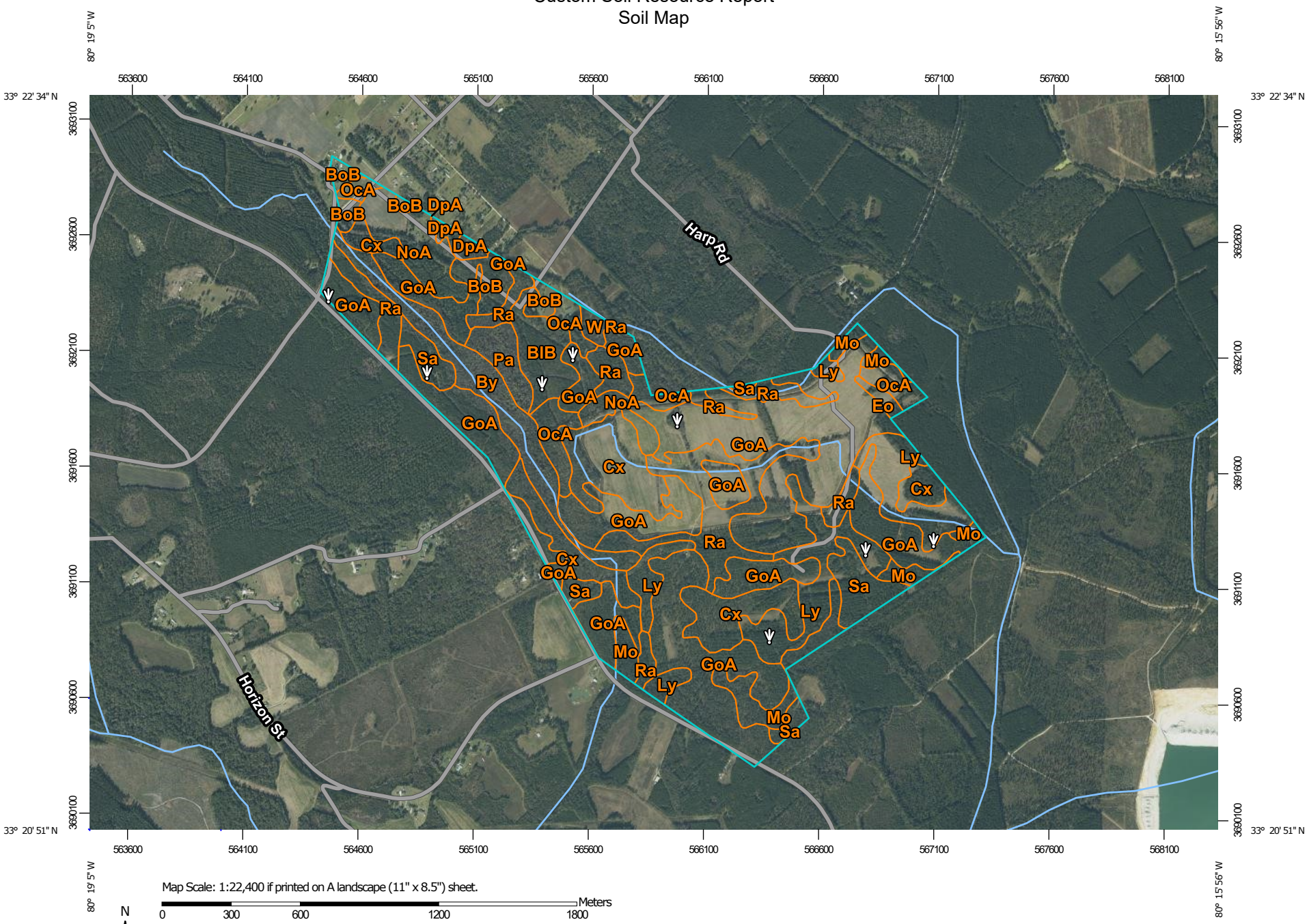
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Orangeburg County, South Carolina
Survey Area Data: Version 17, Jun 3, 2020

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

Date(s) aerial images were photographed: Nov 3, 2019—Nov 10, 2019

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
BlB	Blanton sand, 0 to 6 percent slopes	20.0	2.6%
BoB	Bonneau sand, 0 to 4 percent slopes	20.6	2.7%
By	Byars loam	41.7	5.5%
Cx	Coxville sandy loam	85.5	11.2%
Dn	Dunbar sandy loam	3.6	0.5%
DpA	Duplin loamy sand, 0 to 2 percent slopes	1.2	0.2%
Eo	Elloree loamy sand	2.8	0.4%
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	296.4	38.8%
Ly	Lynchburg fine sandy loam, 0 to 2 percent slopes	70.5	9.2%
Mo	Mouzon fine sandy loam	31.8	4.2%
NoA	Noboco loamy sand, 0 to 2 percent slopes	32.6	4.3%
OcA	Ocilla loamy sand, 0 to 2 percent slopes	30.9	4.0%
Pa	Pantego fine sandy loam	12.3	1.6%
Ra	Rains sandy loam	77.7	10.2%
Sa	Stallings loamy sand	31.8	4.2%
W	Water	3.6	0.5%
Totals for Area of Interest		**763.2**	**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.

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.

Orangeburg County, South Carolina

BlB—Blanton sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 4d5r
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition

Blanton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blanton

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and/or loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
Bw - 5 to 61 inches: sand
Bt1 - 61 to 64 inches: sandy loam
Bt2 - 64 to 82 inches: sandy clay loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

BoB—Bonneau sand, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: 4d5t
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bonneau and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonneau

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

A - 0 to 8 inches: sand
E - 8 to 35 inches: loamy sand
Bt1 - 35 to 69 inches: sandy clay loam
Bt2 - 69 to 80 inches: sandy clay

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Coxville

Percent of map unit: 2 percent

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Blanton

Percent of map unit: 2 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

By—Byars loam

Map Unit Setting

National map unit symbol: 4d5v
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Byars and similar soils: 95 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Byars

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey marine deposits

Typical profile

A - 0 to 9 inches: loam
Btg - 9 to 45 inches: clay
Btg - 45 to 63 inches: clay loam
BCg - 63 to 70 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Coxville

Percent of map unit: 2 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Cx—Coxville sandy loam

Map Unit Setting

National map unit symbol: 4d5x
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Coxville and similar soils: 95 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coxville

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey marine deposits

Typical profile

A - 0 to 5 inches: sandy loam
Btg - 5 to 60 inches: clay

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): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Depressions, marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Dn—Dunbar sandy loam

Map Unit Setting

National map unit symbol: 4d60
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dunbar and similar soils: 96 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunbar

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey marine deposits

Typical profile

Ap - 0 to 8 inches: sandy loam
Bt - 8 to 26 inches: clay loam
Btg - 26 to 70 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Coxville

Percent of map unit: 2 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

DpA—Duplin loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 4d61
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Duplin and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Duplin

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey marine deposits

Typical profile

Ap - 0 to 6 inches: loamy sand
E - 6 to 13 inches: loamy sand
Bt - 13 to 38 inches: sandy clay
Btg - 38 to 62 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Eo—Elloree loamy sand

Map Unit Setting

National map unit symbol: 4d62
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition

Elloree and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elloree

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy sand
Eg - 6 to 23 inches: sand
Btg - 23 to 42 inches: sandy loam
BCg - 42 to 69 inches: loamy sand
Cg - 69 to 80 inches: sandy 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): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

GoA—Goldsboro sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 4d66
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Goldsboro and similar soils: 96 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goldsboro

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 16 inches: sandy loam
Bt - 16 to 45 inches: sandy clay loam
Btg - 45 to 68 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: R153AY001GA - Loamy Rise, Moderately Wet
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Depressions, marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Ly—Lynchburg fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzkm
Elevation: 0 to 280 feet
Mean annual precipitation: 45 to 52 inches
Mean annual air temperature: 64 to 65 degrees F
Frost-free period: 250 to 310 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Lynchburg and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lynchburg

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bt - 7 to 13 inches: sandy clay loam
Btg - 13 to 62 inches: sandy clay loam
BCg - 62 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Goldsboro

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Coxville, drained

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Ocilla

Percent of map unit: 2 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R153AY001GA - Loamy Rise, Moderately Wet

Hydric soil rating: No

Mo—Mouzon fine sandy loam

Map Unit Setting

National map unit symbol: 4d6g
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition

Mouzon and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mouzon

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: fine sandy loam
Eg - 4 to 11 inches: loamy sand
Btg - 11 to 50 inches: sandy clay loam
Cg - 50 to 74 inches: sandy 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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Lumbee

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Johns

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

NoA—Noboco loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 4d6l
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Noboco and similar soils: 95 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Noboco

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
E - 7 to 13 inches: loamy sand
Bt - 13 to 72 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Coxville

Percent of map unit: 2 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

OcA—Ocilla loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 4d6n
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ocilla and similar soils: 97 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ocilla

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

A - 0 to 3 inches: loamy sand

E - 3 to 24 inches: loamy sand
Bt - 24 to 37 inches: sandy clay loam
Btg - 37 to 70 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: R153AY001GA - Loamy Rise, Moderately Wet
Hydric soil rating: No

Minor Components

Pelham

Percent of map unit: 2 percent
Landform: Depressions, marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Pa—Pantego fine sandy loam

Map Unit Setting

National map unit symbol: 4d6s
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pantego and similar soils: 96 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pantego

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

A - 0 to 12 inches: fine sandy loam
Btg1 - 12 to 59 inches: sandy clay loam
Btg2 - 59 to 67 inches: sandy clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Marine terraces, depressions
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

Ra—Rains sandy loam

Map Unit Setting

National map unit symbol: 4d6v
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Rains and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rains

Setting

Landform: Depressions, marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

A - 0 to 5 inches: sandy loam
Eg - 5 to 12 inches: sandy loam
Btg - 12 to 70 inches: sandy 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): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Sa—Stallings loamy sand

Map Unit Setting

National map unit symbol: 4d6x
Elevation: 50 to 400 feet
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 265 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Stallings and similar soils: 96 percent
Minor components: 2 percent

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

Description of Stallings

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy marine deposits

Typical profile

A - 0 to 5 inches: loamy sand
E - 5 to 11 inches: loamy sand
Bt - 11 to 52 inches: sandy loam
Btg - 52 to 68 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Rains

Percent of map unit: 2 percent
Landform: Depressions, marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 4d71
Mean annual precipitation: 44 to 55 inches
Mean annual air temperature: 61 to 70 degrees F

Frost-free period: 225 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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