

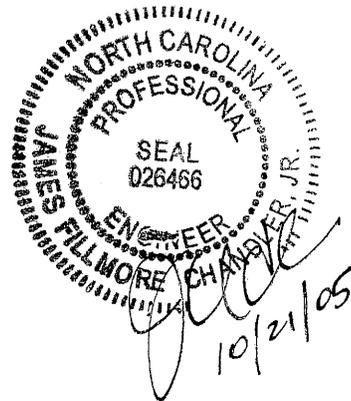
# DESIGN CALCULATIONS

## CIVIL/SITE WORK

### ORGANIC RECYCLING CENTER

FRANKLIN COUNTY, NORTH CAROLINA

OCTOBER 2005



**SEPI**  
ENGINEERING GROUP

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# EROSION AND SEDIMENT CONTROL PLAN NARRATIVE

## ORGANIC RECYCLING CENTER

FRANKLIN COUNTY, NORTH CAROLINA

OCTOBER 2005

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### PROJECT DESCRIPTION:

The Organic Recycling Center is an existing facility located off US-1 in Franklin County. The facility receives clearing debris from storm cleanup sites and construction projects. This raw material is stockpiled in windrows in Area A. This material is then grinded to produce mulch of varying quality. The finished products are then stockpiled in areas B, C and D and are sold to consumers.

This facility is working under an existing permit through your office. However, the facility was recently sold to new ownership, and therefore, we are submitting this package to update the plan and the Financial Responsibility form.

Since this facility is constantly operating, a permanent state will never be achieved, and therefore, the temporary measures will actually serve as permanent measures, needing routine inspection and maintenance. This facility is also being re-permitted through the Division of Solid Waste since it serves as a landfill use. A part of their submittal requirements is an O&M manual for the plants daily operation. A copy of this manual has been included for your review as well.

One of the planned measures for this site is tree protection fencing, to encase the protected riparian buffer on this site. No impacts are planned to this area. Another measure is sediment basins. Three new basins are shown on the plan. There are actually existing basins in these areas as a part of the previous permit. We have provided calculations to show upgrading these basins to meet the new guidelines. Another measure to be used is diversion berms and/or ditches to direct runoff to the sediment basins. Also protective matting will be used on any unused, disturbed area with a slope over 6:1 and silt fence will be used in certain areas such as below the basins in order for them to be installed with no runoff impact to the buffer. Finally, a construction entrance will be installed at the property line of this project. The adjoining tract is also owned and will be used for access. All of the access paths are currently gravel and will help to reduce mud on US-1. The proposed truck turnaround will also be gravel to further assist in removing mud from tires on site.

One last note is that since this facility does create and transport mulch, the exposed ground should consistently be covered with mulch material. This is another measure that will be used by default of the facility process. The mulch naturally covering the ground will assist in runoff control and dust reduction.

### PLANNED EROSION AND SEDIMENT CONTROL PRACTICES:

1. Silt Fence: Silt fence will be utilized to filter sediment laden runoff in locations where the drainage area is less than ¼ acre per 100-ft of fence.
2. Sediment Basins: Sediment basins will be installed to filter concentrated sediment laden runoff prior to discharge from the site.
3. Construction Entrance: Temporary gravel construction entrances will be utilized to minimize soil being tracked off the site by construction traffic.
4. Diversion Ditches: Diversion ditches will be installed to control stormwater runoff and divert it into the sediment trap.
5. Channel & Slope Protection Matting: Straw or excelsior matting will be installed in permanent channels, swales and steep slopes to stabilize the seedbed and promote vegetative growth.

Refer to drawing C2.01 for Construction Sequence and Maintenance Plans.

# **CONTENTS**

**USGS QUAD MAP**

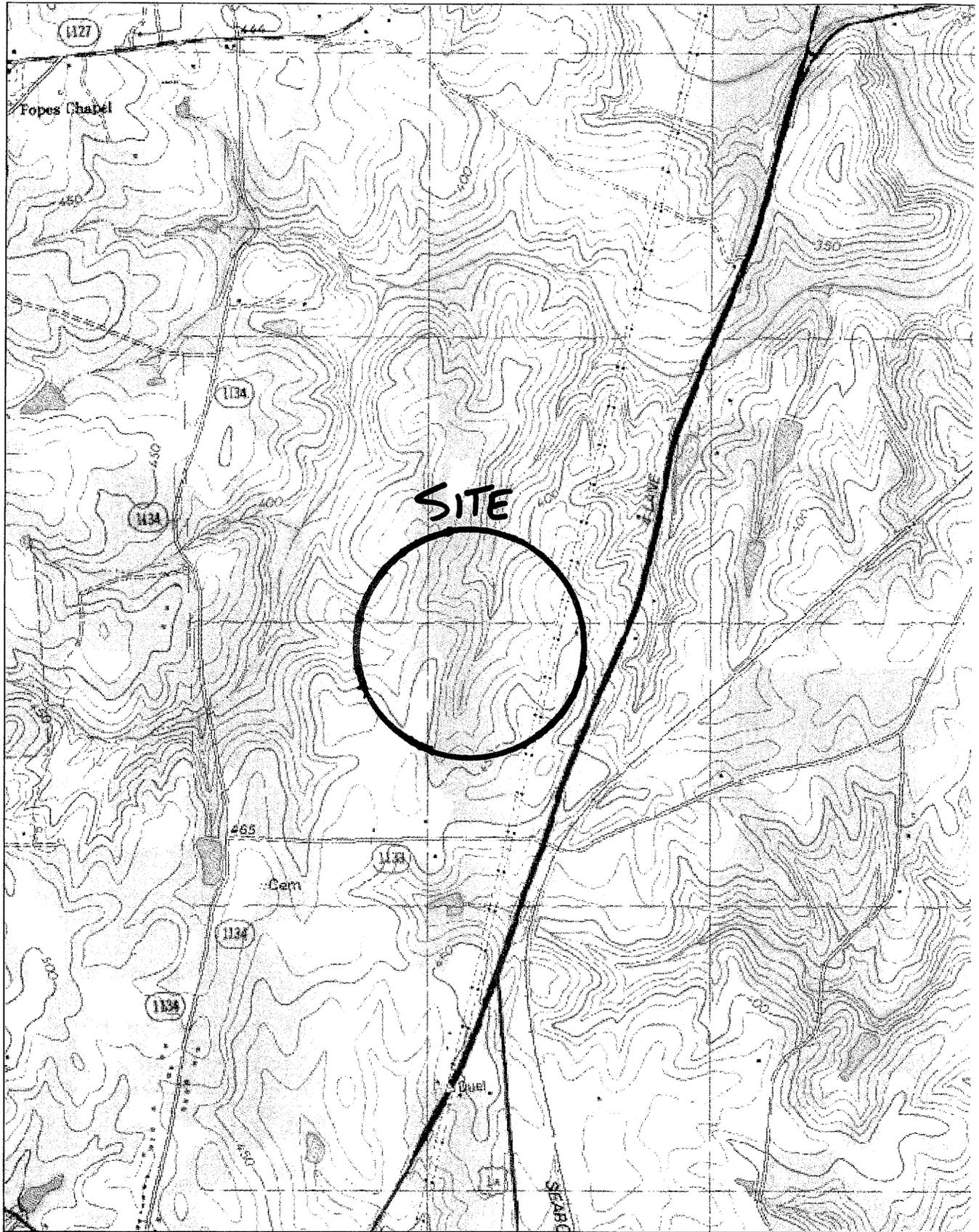
**FRANKLIN COUNTY SOILS MAP**

**TEMPORARY SEDIMENT BASIN DESIGN CALCULATIONS**

**SPECIFICATIONS**

**OPERATION AND MAINTENANCE (O&M) MANUAL**

# USGS QUAD MAP

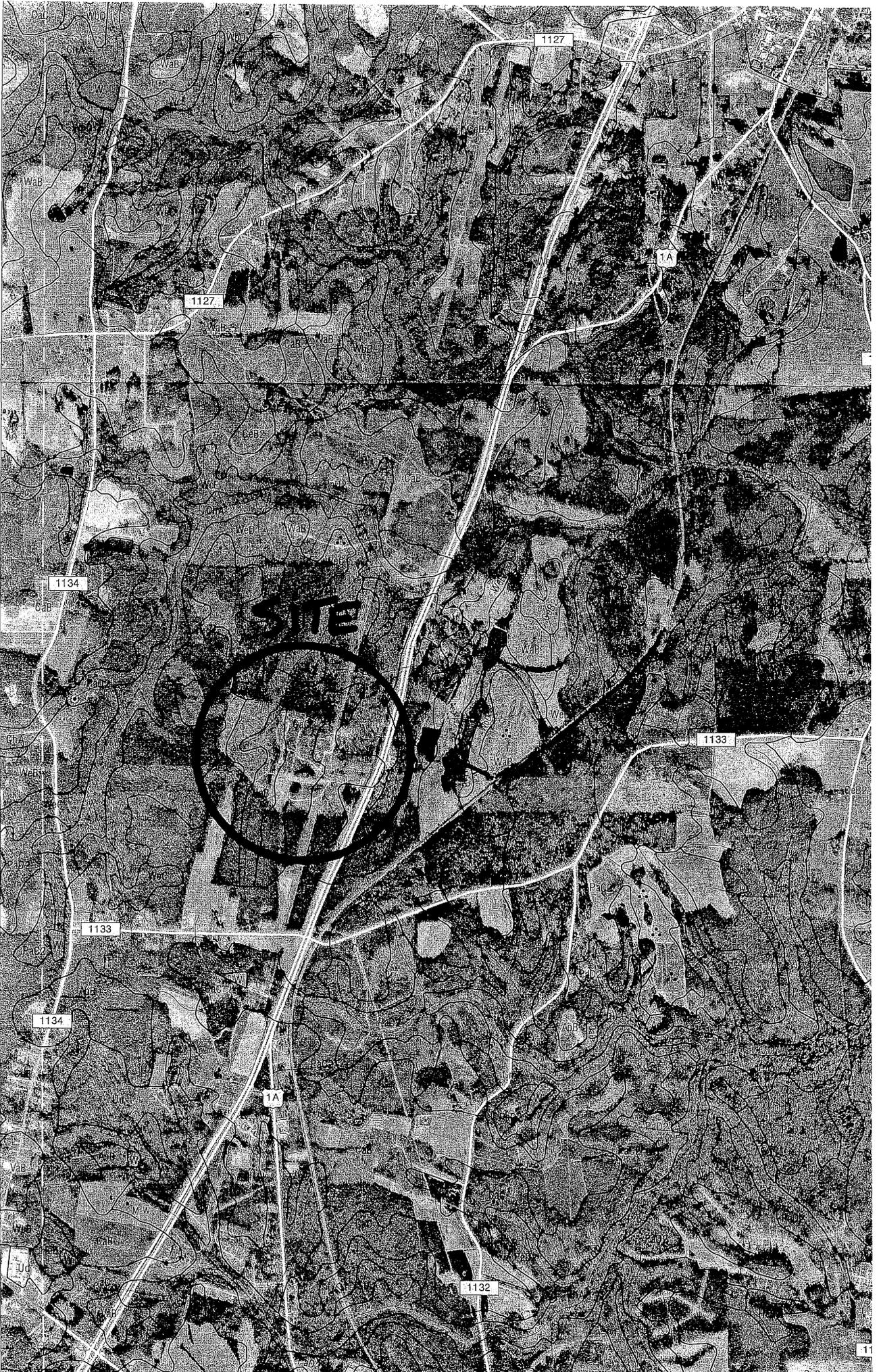


0 0.5 Mi

# FRANKLIN COUNTY SOILS MAP

3997000mN

36° 05' 00"



1134

1127

1127

1A

SITE

3994

1133

3993

1134

1133

1A

3992

1132

36° 02' 30"

11

# **TEMPORARY SEDIMENT BASIN DESIGN**



## POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14



**FRANKLINTON, NORTH CAROLINA (31-3232) 36.105 N 78.4592 W 436 feet**

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 2, Version 2 (draft)

G.M. Bonnin, D. Todd, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland, 2004

Extracted: Fri Oct 21 2005

<b>Precipitation Intensity Estimates (in/hr)</b>																		
<b>AEP* (1-in- Y)</b>	<b>5 min</b>	<b>10 min</b>	<b>15 min</b>	<b>30 min</b>	<b>60 min</b>	<b>120 min</b>	<b>3 hr</b>	<b>6 hr</b>	<b>12 hr</b>	<b>24 hr</b>	<b>48 hr</b>	<b>4 day</b>	<b>7 day</b>	<b>10 day</b>	<b>20 day</b>	<b>30 day</b>	<b>45 day</b>	<b>60 day</b>
<b>2</b>	5.30	4.24	3.55	2.45	1.54	0.91	0.64	0.39	0.23	0.13	0.08	0.04	0.03	0.02	0.02	0.01	0.01	0.01
<b>5</b>	6.57	5.26	4.43	3.15	2.02	1.20	0.86	0.51	0.30	0.18	0.10	0.06	0.04	0.03	0.02	0.02	0.01	0.01
<b>10</b>	7.33	5.86	4.94	3.58	2.33	1.40	1.00	0.60	0.36	0.21	0.12	0.07	0.04	0.03	0.02	0.02	0.01	0.01
<b>25</b>	8.14	6.49	5.49	4.06	2.70	1.65	1.19	0.72	0.43	0.25	0.14	0.08	0.05	0.04	0.02	0.02	0.02	0.01
<b>50</b>	8.69	6.92	5.84	4.40	2.98	1.83	1.34	0.81	0.49	0.28	0.16	0.09	0.06	0.04	0.03	0.02	0.02	0.01
<b>100</b>	9.19	7.31	6.16	4.72	3.25	2.02	1.48	0.90	0.55	0.31	0.18	0.10	0.06	0.05	0.03	0.02	0.02	0.02
<b>200</b>	9.61	7.62	6.41	4.99	3.50	2.19	1.64	1.00	0.61	0.35	0.19	0.11	0.07	0.05	0.03	0.02	0.02	0.02
<b>500</b>	10.09	7.98	6.70	5.33	3.82	2.43	1.84	1.13	0.70	0.39	0.22	0.12	0.08	0.06	0.04	0.03	0.02	0.02
<b>1000</b>	10.41	8.20	6.86	5.56	4.06	2.60	2.00	1.23	0.77	0.43	0.24	0.13	0.08	0.06	0.04	0.03	0.02	0.02

\* These precipitation frequency estimates are based on an annual maxima series. AEP is the Annual Exceedance Probability. Please refer to the [documentation](#) for more information. NOTE: Formatting forces estimates near zero to appear as zero.

**Table 8.07c**  
**Design Table for Vegetated Spillways Excavated in Erosion Resistant Soils**  
 (side slopes—3 horizontal:1 vertical)

Discharge Q CFS	Slope Range		Bottom Width Feet	Stage Feet	Discharge Q CFS	Slope Range		Bottom Width Feet	Stage Feet
	Minimum Percent	Maximum Percent				Minimum Percent	Maximum Percent		
15	3.3	12.2	8	.83	80	2.8	5.2	24	1.24
	3.5	18.2	12	.69		2.8	5.9	28	1.14
20	3.1	8.9	8	.97	90	2.9	7.0	32	1.06
	3.2	13.0	12	.81		2.5	2.6	12	1.84
25	3.3	17.3	16	.70	100	2.5	3.1	16	1.61
	2.9	7.1	8	1.09		2.6	3.8	20	1.45
	3.2	9.9	12	.91		2.7	4.5	24	1.32
	3.3	13.2	16	.79		2.8	5.3	28	1.22
30	3.3	17.2	20	.70	120	2.8	6.1	32	1.14
	2.9	6.0	8	1.20		2.5	2.8	16	1.71
	3.0	8.2	12	1.01		2.6	3.3	20	1.54
	3.0	10.7	16	.88		2.6	4.0	24	1.41
35	3.3	13.8	20	.78	140	2.7	4.8	28	1.30
	2.8	5.1	8	1.30		2.7	5.3	32	1.21
	2.9	6.9	12	1.10		2.8	6.1	36	1.13
	3.1	9.0	16	.94		2.5	2.8	20	1.71
40	3.1	11.3	20	.85	160	2.6	3.2	24	1.56
	3.2	14.1	24	.77		2.7	3.8	28	1.44
	2.7	4.5	8	1.40		2.7	4.2	32	1.34
	2.9	6.0	12	1.18		2.7	4.8	36	1.26
45	2.9	7.6	16	1.03	180	2.5	2.7	24	1.71
	3.1	9.7	20	.91		2.5	3.2	28	1.58
	3.1	11.9	24	.83		2.6	3.8	32	1.47
	2.6	4.1	8	1.49		2.6	4.0	36	1.38
50	2.8	5.3	12	1.25	200	2.7	4.5	40	1.30
	2.9	6.7	16	1.09		2.5	2.7	28	1.70
	3.0	8.4	20	.96		2.5	3.1	32	1.58
	3.0	10.4	24	.89		2.6	3.4	36	1.49
55	2.7	3.7	8	1.57	220	2.6	3.8	40	1.40
	2.8	4.7	12	1.33		2.7	4.3	44	1.33
	2.8	6.0	16	1.16		2.4	2.7	32	1.72
	2.9	7.3	20	1.03		2.4	3.0	36	1.60
60	3.1	9.0	24	.94	240	2.5	3.4	40	1.51
	2.6	3.1	8	1.73		2.6	3.7	44	1.43
	2.7	3.9	12	1.47		2.5	2.7	36	1.70
	2.7	4.8	16	1.28		2.5	2.9	40	1.60
65	2.9	5.9	20	1.15	260	2.5	3.3	44	1.52
	2.9	7.3	24	1.05		2.6	3.8	48	1.45
	3.0	8.6	28	.97		2.4	2.6	40	1.70
	2.5	2.8	8	1.88		2.5	2.9	44	1.61
70	2.6	3.3	12	1.60	280	2.5	3.2	48	1.53
	2.6	4.1	16	1.40		2.5	2.6	44	1.70
	2.7	5.0	20	1.26		2.5	2.9	48	1.62
	2.8	6.1	24	1.15		2.6	3.2	52	1.54
75	2.9	7.0	28	1.05	300	2.4	2.6	48	1.70
	2.5	2.9	12	1.72		2.5	2.9	52	1.62
	2.6	3.6	16	1.51		2.4	2.6	52	1.70
	2.7	4.3	20	1.35		2.5	2.6	56	1.69

**Example of Use**

Given: Discharge, Q = 87 c.f.s. Spillway slope, Exit section (from profile) = 4%.  
 Find: Bottom width and Stage in Spillway.  
 Procedure: Enter table from left at 90 c.f.s. Note that Spillway slope (4%) falls within slope ranges corresponding to bottom widths of 24, 28, and 32 ft. Use bottom width, 32 ft., to minimize velocity. Stage in Spillway will be 1.14 ft.  
 Note: Computations based on: Roughness coefficient, n = .040. Maximum velocity = 5.50 ft. per sec.



**Emergency Spillway Design:**

Spillway Crest Elevation:	398.00 ft
Weir Length [L]:	8.00 ft
Min. Slope:	3.30 %
Max. Slope:	12.20 %
Required Capacity [Q25-Qp]:	N/A cfs
Required Head in Spillway [He]:	0.83 ft [from Tbl. 8.07c,d]
Freeboard:	1.00 ft
Elevation of Embankment Top:	399.83

**Principle Spillway Anchor:**

Total Weight Required [1.1 x Boyancy of Riser]:	1853 lbs
Weight of CMU Riser (35 lbs./sq.ft.):	1260 lbs
Additional Concrete Required [at 82.6-lbs/cf]:	7 cf
Dimensions of Pad:	
Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Volume:	12 cf

**Dewatering:**

Volume of Basin at Riser Crest Elevation:	7,016 sf
Skimmer size:	3 in
Skimmer rate (cf/24 hrs):	8,500 cf
Number of skimmers:	1

**Basin Summary:**

Diameter of Barrel:	24 in
Upstream Invert Elev. of Barrel:	394.00 ft
Lower Invert Elev. of Barrel:	393.00 ft
Length of Barrel:	60 ft
Slope of Barrel:	1.67 %
Riser Length:	3.00 ft
Riser Width:	3.00 ft
Crest Elevation of Riser:	397.00 ft
Height of Riser:	3.00 ft
No. of Skimmers:	1
Skimmer Diameter:	3 in
Conc. Anchor Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Emergency Spillway Crest Elev.	398.00 ft
Width of Emergency Spillway:	8.0 ft
Min. Slope of Emrg. Spillway:	3.30 %
Max. Slope of Emrg. Spillway:	12.20 %
Elevation of Embankment Top:	399.83 ft
Top Width of Embankment:	8 ft



**Emergency Spillway Design:**

Spillway Crest Elevation:	403.10 ft
Weir Length [L]:	24.00 ft
Min. Slope:	2.90 %
Max. Slope:	7.30 %
Required Capacity [Q25-Qp]:	57.29 cfs
Required Head in Spillway [He]:	1.05 ft [from Tbl. 8.07c,d]
Freeboard:	1.00 ft
Elevation of Embankment Top:	405.15

**Principle Spillway Anchor:**

Total Weight Required [1.1 x Boyancy of Riser]:	1297 lbs
Weight of CMU Riser (35 lbs./sq.ft.):	882 lbs
Additional Concrete Required [at 82.6-lbs/cf]:	5 cf
Dimensions of Pad:	
Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Volume:	12 cf

**Dewatering:**

Volume of Basin at Riser Crest Elevation:	36,483 sf
Skimmer size:	6 in
Skimmer rate (cf/24 hrs):	51,840 cf
Number of skimmers:	1

**Basin Summary:**

Diameter of Barrel:	18 in
Upstream Invert Elev. of Barrel:	400.00 ft
Lower Invert Elev. of Barrel:	394.00 ft
Length of Barrel:	60 ft
Slope of Barrel:	10.00 %
Riser Length:	3.00 ft
Riser Width:	3.00 ft
Crest Elevation of Riser:	402.10 ft
Height of Riser:	2.10 ft
No. of Skimmers:	1
Skimmer Diameter:	6 in
Conc. Anchor	
Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Emergency Spillway Crest Elev	403.10 ft
Width of Emergency Spillway:	24.0 ft
Min. Slope of Emrg. Spillway:	2.90 %
Max. Slope of Emrg. Spillway:	7.30 %
Elevation of Embankment Top:	405.15 ft
Top Width of Embankment:	8 ft



**Emergency Spillway Design:**

Spillway Crest Elevation:	421.20 ft
Weir Length [L]:	8.00 ft
Min. Slope:	3.30 %
Max. Slope:	12.20 %
Required Capacity [Q25-Qp]:	2.55 cfs
Required Head in Spillway [He]:	0.83 ft [from Tbl. 8.07c,d]
Freeboard:	1.00 ft
Elevation of Embankment Top:	423.03

**Principle Spillway Anchor:**

Total Weight Required [1.1 x Boyancy of Riser]:	1359 lbs
Weight of CMU Riser (35 lbs./sq.ft.):	924 lbs
Additional Concrete Required [at 82.6-lbs/cf]:	5 cf
Dimensions of Pad:	
Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Volume:	12 cf

**Dewatering:**

Volume of Basin at Riser Crest Elevation:	9,694 sf
Skimmer size:	4 in
Skimmer rate (cf/24 hrs):	18,267 cf
Number of skimmers:	1

**Basin Summary:**

Diameter of Barrel:	18 in
Upstream Invert Elev. of Barrel:	418.00 ft
Lower Invert Elev. of Barrel:	416.00 ft
Length of Barrel:	60 ft
Slope of Barrel:	3.33 %
Riser Length:	3.00 ft
Riser Width:	3.00 ft
Crest Elevation of Riser:	420.20 ft
Height of Riser:	2.20 ft
No. of Skimmers:	1
Skimmer Diameter:	4 in
Conc. Anchor	
Length:	4.83 ft
Width:	4.83 ft
Thickness:	0.5 ft
Emergency Spillway Crest Elev.	421.20 ft
Width of Emergency Spillway:	8.0 ft
Min. Slope of Emrg. Spillway:	3.30 %
Max. Slope of Emrg. Spillway:	12.20 %
Elevation of Embankment Top:	423.03 ft
Top Width of Embankment:	8 ft

## **Faircloth Skimmers Data:**

### **6" Skimmer**

Drains approximately 51,840 cubic feet in 24 hours, 103,680 cubic feet in 2 days, or 362,880 cubic feet in 7 days.

### **5" Skimmer**

Drains approximately 32,832 cubic feet in 24 hours, 65,664 cubic feet in 2 days, or 229,824 cubic feet in 7 days.

### **4" Skimmer**

Drains approximately 18,267 cubic feet in 24 hours, 36,534 cubic feet in 2 days, or 127,869 cubic feet in 7 days..

### **3" Skimmer**

Drains approximately 8,500 cubic feet in 24 hours, 17,000 cubic feet in 48 hours or 59,500 cubic feet in 7 days.

### **2.5" Skimmer**

Drains approximately 5,500 cubic feet in 24 hours, 11,000 cubic feet in 48 hours, or 38,500 cubic feet in 7 days.

### **2" Skimmer**

Drains up to 3,283 cubic feet in 24 hours, 6,566 cubic feet in 2 days , or 22,982 cubic feet in 7 days.

# **SPECIFICATIONS**

## SECTION 02100 - SITE PREPARATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Standards set forth by the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Land Resources, Land Quality Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Removal of trees and other vegetation.
  - 2. Clearing and grubbing.
- B. Related Sections:
  - 1. Division 2 Section "Soil Erosion".

#### 1.3 PROJECT CONDITIONS

- A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - 1. Protect improvements on adjoining properties and on Owner's property.
  - 2. Restore damaged improvements to their original condition, as acceptable to property owners.
  - 3. All erosion control measures shall be in place prior to commencement of clearing operations.
- C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
  - 1. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.
  - 2. Provide protection for roots over 1-1/2 inch (38 mm) in diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt or other acceptable coating formulated to use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
  - 3. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations in a manner acceptable to Architect. Employ a licensed arborist to repair damage to trees and shrubs.
  - 4. Replace trees that cannot be repaired and restored to full-growth status, as determined by arborist.

## PART 2 - EXECUTION

### 2.1 SITE CLEARING

- A. General: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site removal of stumps and roots.
1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
  2. Existing trees within clearing limits may be chipped and stockpiled on-site and re-spread as landscaping mulch. Materials shall be ground to medium coarse (no pieces greater than 4" in any direction). Materials shall be processed through the chipper at least twice (double shredded), tub grinders are not acceptable. Mulch stockpiles shall be turned as necessary to prevent combustion and chemical build-up. Excess mulch shall be removed from the site and recycled.
- B. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing.
1. Completely remove stumps, roots, and other debris protruding through ground surface.
  2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
  3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
    - a. Place fill material in horizontal layers not exceeding 6 inches (150 mm) loose depth, and thoroughly compact each layer to a density equal to adjacent original ground.

END OF SECTION 02100

## SECTION 02220 - SOIL EROSION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following: Soil erosion and sedimentation control for all areas of the site that are graded or disturbed by any construction operations and elsewhere as indicated on the Drawings or specified herein. Erosion control shall be as specified herein and as may be required by actual conditions and governing authorities.
- B. The Contractor is fully responsible for all applicable permits and approvals for off-site borrow and waste areas.
- C. The Contractor shall have full responsibility for the construction and maintenance of erosion control and sedimentation control facilities as shown on the Drawings and as specified herein. The Contractor shall at all times provide the operation and maintenance necessary to operate the permitted sediment and erosion controls at optimum efficiency.
- D. The Contractor shall provide permanent or temporary ground cover as soon as possible over disturbed areas of the site, and shall provide permanent or temporary ground cover in no more than 30 days after construction activities have permanently or temporarily ceased over the disturbed area. Temporary or permanent ground cover shall be provided on slopes within 15 days after construction activities have permanently or temporarily ceased.
- E. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 2 Section "Site Preparation"
  - 2. Division 2 Section "Landscaping"

#### 1.3 PRODUCT HANDLING

- A. Deliver seed, fertilizer and other packaged materials in unopened original packages with labels legible and intact. Seed packages shall bear a guaranteed analysis by a recognized authority.
- B. On-site storage of materials shall be kept to a minimum. Wet or damaged seed or other material shall be removed from the project site immediately.

#### 1.4 MONITORING AND RECORD KEEPING

- A. All sediment and erosion control devices and facilities shall be inspected at least once every seven (7) calendar days and within 24 hours after any storm event of greater than 0.5 inches of rain per 24 hour period.
- B. Stormwater discharges shall be inspected by observation for stormwater discharge characteristics (as listed below) at the above frequency to evaluate the effectiveness of the sediment control facilities, devices or practices. Observations shall be made at all stormwater discharge outfalls and other locations where concentrated stormwater discharges from the site. Observations shall be qualitative, no analytical testing or sampling is required. If any visible off-site sedimentation is leaving the site, corrective action shall be taken to reduce the discharge of sediments.

1. Color.
  2. Odor.
  3. Clarity.
  4. Floating solids.
  5. Suspended solids.
  6. Foam.
  7. Oil sheen.
  8. Other obvious indicators of stormwater pollution.
- C. The contractor shall perform and keep records of the above inspections. Visible sedimentation found off the site shall be recorded with a brief explanation as the measures taken to prevent future releases as well as any measures taken to clean up the sediment that has left the site. This record shall be made available to the Owner, Architect and governmental authorities.
- D. Contractor shall abide by all conditions of the General Permit to Discharge Stormwater under the National Pollutant Discharge Elimination System (NPDES), Permit No. NCG010000, as attached herein.

## PART 2 - PRODUCTS

### 2.1 SOIL AMENDMENTS AND SEED

- A. Refer to Division 2 Section "Landscaping".

### 2.2 MISCELLANEOUS

- A. Gravel for Stone Filters: Washed No. 57 stone or as indicated on the drawings.
- B. Silt Fabric: A synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yarn, which is certified by the manufacturer or supplier as conforming to the following requirements.
1. Filtering efficiency: 85% min.
  2. Tensile Strength at 20% (max) elongation: 30 lb/lin in (min).
  3. Slurry Flow Rate: 0.3 gal/sq-ft/min (min)
  4. Fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected useable construction life.
- C. Filter Fabric (for installation under riprap): Woven geotextile fabric, apparent opening size no larger than US Standard Sieve no. 70, min. grab strength of 120-lbs.

### 2.3 CHANNEL AND SLOPE PROTECTION

- A. Slope and Channel Matting: Erosion Control blankets shall be a machine-produced mat of agricultural straw, a straw and coconut fiber combination, or curled wood fiber (excelsior) as specified below. The blanket shall be of consistent thickness with the fiber evenly distributed over the entire area of the mat. The blanket shall be covered with a photo degradable plastic netting secured to the fiber mat. Slope matting shall be straw excelsior mat unless otherwise indicated. Channel liners shall be as indicated.
1. Straw Mat:
    - a. Straw: 100% (.50 lb/sq. yd.)
    - b. Netting: Top side only, photo-degradable, approx. 1/2" x 1/2" mesh (1.64 lb/1000 sq.ft.).
    - c. Thread: Cotton
  2. Excelsior Mat:

- a. Fiber: Curled wood excelsior of 80% six inch or longer fiber length with a consistent width of fibers evenly distributed throughout the mat. Mat shall be smolder resistant with no chemical additives.
  - b. Top and Bottom Netting: Photo degradable extruded plastic netting with maximum mesh size of  $\frac{3}{4}$ " x  $\frac{3}{4}$ ".
3. Synthetic Mat:
- a. Fiber: UV stabilized polypropylene fiber matrix (0.7-lbs./sq.yd.)
  - b. Top Netting: Extra heavyweight UV stabilized polypropylene (5-lbs/1000-sq.ft. approx. weight.)
  - c. Bottom Netting: Heavyweight UV stabilized polypropylene (3-lbs/1000-sq.ft. approx. weight.)
  - d. P300 by North American Green or approved equal.
4. Wire Staples: 16 gauge steel wire, with minimum of 3" top and 6" long legs. 1.75 staples per square yard of matting minimum.

2.4 RIPRAP

- A. Riprap: Provide riprap of the class and quantity indicated on the Drawings. While no specific gradation is required, the various sizes of the stone shall be equally distributed within the required size range. The size of an individual stone shall be determined by measuring its long dimension. Stone shall meet the requirements of the following table for class and size distribution. No more than 5% of the material furnished can be less than the minimum size specified nor no more than 10% of the material can exceed the maximum size specified.

REQUIRED STONE SIZES - INCHES			
CLASS	MINIMUM	MIDRANGE	MAXIMUM
A	2	4	6
B	5	8	12
1	5	10	17
2	9	14	23

PART 3 - EXECUTION

3.1 GENERAL

A. Existing Structures and Facilities

- 1. Existing structures, facilities, and water courses shall be protected from sedimentation.
- 2. The Contractor shall be responsible for the construction of necessary measures, and all costs shall be at the expense of the Contractor.
- 3. Items to be protected from sedimentation deposits shall include, but are not limited to, all down stream property, natural waterways, streams, lakes and ponds, catch basins, drainage ditches, road gutters, and natural buffer zones.
- 4. Control measures such as the erection of silt fences, barriers, dams, or other structures shall begin prior to any land disturbing activity. Additional measures shall be constructed as required during the construction.
- 5. All facilities installed shall be maintained continuously during construction until the disturbed areas are stabilized. Contractor shall remove all erosion control measures at the end of the project at his expense unless otherwise directed by the Owner or his representative.
- 6. Perform monitoring and record keeping as specified in this section.

3.2 PROTECTIVE MEASURES

- A. Protective measures shall conform to all State and Local requirements.
- B. Construction and maintenance of sediment and erosion control measures shall be in accordance with all applicable laws, codes, ordinances, rules and regulations.
  - 1. Silt Fence: Hog wire or wire mesh fastened to posts as recommended by the Manufacturer, and covered with silt fabric.
  - 2. Berms and Diversion Ditches: These shall be graded channels with a supporting ridge on the lower side constructed across a sloping land surface. Diversion ditches and berms shall be planted in vegetative cover as soon as completed.
  - 3. Mulching: Mulching shall be used to prevent erosion and to hold soil and seed in place during the establishment of vegetation.
  - 4. **Matting: Temporary matting shall be used for temporary stabilization during the establishment of seeded cover in all grassed ditches, channels, long slopes, and steep banks (6:1 or steeper) and additional areas as indicated on plans.** Matting shall be installed on any area on site as needed to provide temporary stabilization whether or not matting is indicated on the plan. Install as indicated or per manufacturer's instructions. The installation of matting may be waived by the Architect if surface stabilization is obtained by other methods within the appropriate and agreed time frames. If adequate stabilization is not obtained, the Contractor shall install matting where required at no additional cost to the Owner.
  - 5. Build Berm, Pits and Gravel Filter as shown on Drawings. Maintain during construction to keep erosion and sedimentation to a minimum. When it is necessary to remove berm, pits, and gravel, return area to required profiles and condition.
  - 6. Construction Entrances: Construct all entrances in accordance with plans. Maintain all ingress/egress points to prevent tracking of soil onto the Owner's, public or private roads. Any soil that is tracked onto the roads shall be removed immediately.
  - 7. Riprap: Stone shall be graded so that the smaller stones are uniformly distributed throughout the mass. Stone may be placed by mechanical methods, augmented by hand placing where necessary, provided that when the riprap is completed it forms a properly graded, dense, neat layer of stone.
  - 8. Other Measures: Other methods of protecting existing structures and facilities, such as vegetative filter strips, diversions, rip-rap, baffle boards, and ditch checks used for reduction of sediment movement and erosion, may be used at the option of the Contractor when approved by the appropriate State or local authorities.

### 3.3 STABILIZATION

- A. Permanently protect stabilized areas prior to the removal of protective devices.
- B. After the final establishment of permanent stabilization, remove temporary sediment control measures. Re-spread accumulated sediments as specified.
- C. Permanently stabilize all areas disturbed by the removal and re-spreading operations immediately.

### 3.4 TEMPORARY SEEDING

- A. In accordance with the schedule as detailed on the drawings.

### 3.5 PERMANENT SEEDING

- A. In accordance with the schedule as detailed on the drawings.

### 3.6 MULCHING AND MATTING

- A. Apply mulch or matting to retain soil and grass.
- B. Mulch areas with slope greater than 5% by spreading a light cover of mulch over seeded area at the rate of not less than 85 lbs. per 1000 sq. ft.
- C. Install temporary matting in all grassed ditches, channels, long slopes, and steep banks (6:1 or steeper) and additional areas indicated on plans or where extra protection from erosion is needed.

END OF SECTION 02220

STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF WATER QUALITY

GENERAL PERMIT

TO DISCHARGE STORMWATER UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by North Carolina Environmental Management Commission and the Federal Water Pollution Control Act as amended,

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All owners or operators of stormwater point source discharges associated with construction activities including clearing, grading and excavation activities resulting in the disturbance of land are hereby authorized to discharge stormwater to the surface waters of North Carolina or to a separate storm sewer system conveying stormwater to the surface waters.

The General Permit shall become effective on October 1, 2001.

The General Permit shall expire at midnight on September 30, 2006.

Signed this day October 1, 2001.

Original signed by Gregory J. Thorpe

Gregory J. Thorpe, Ph.D., Acting Director

Division of Water Quality

By the Authority of the Environmental Management Commission

## PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to discharge stormwater which has been adequately treated and managed in accordance with an approved Erosion and Sedimentation Control Plan by the North Carolina Division of Land Resources, Land Quality Section, or a delegated local program under the provisions and requirements of North Carolina General Statute 113A - 54.1 to the surface waters of North Carolina or to a separate storm sewer system. All discharges shall be in accordance with the attached schedules as follows:

Part I: Monitoring, Controls, and Limitations for Permitted Discharges

Part II: Standard Conditions

Any other point source discharge to surface waters of the state is prohibited unless covered by another permit, authorization or approval. The discharges allowed by this General Permit shall not cause or contribute to violations of Water Quality Standards. Discharges allowed by this permit must meet applicable wetland standards as outlined in 15A NCAC 2B .0230 and .0231 and water quality certification requirements as outlined in 15A NCAC 2H .0500.

This permit does not relieve the permittee from responsibility for compliance with any other applicable federal, state, or local law, rule, standard, ordinance, order, judgment, or decree.

## General Permit Coverage

This General Permit is applicable to point source discharges from construction activities disturbing five acres of land prior to March 10, 2003. As of March 10, 2003, this permit will be applicable to point source discharges of stormwater from construction activities disturbing one or more acres of land. The submission of a proposed Erosion and Sedimentation Control Plan to the Division of Land Resources or delegated local program shall be considered to take the place of a Notice of Intent for coverage under this General Permit for those projects requiring this Permit coverage. Coverage under this General Permit shall become effective upon issuance of an approval for the Erosion and Sedimentation Control Plan by the Land Quality Section of the Division of Land Resources or delegated local program. Prior to the commencement of construction and land disturbing activities approval of the Erosion and Sedimentation Control Plan shall be obtained.

Any owner or operator not wishing to be covered or limited by this General Permit may make application for an individual NPDES permit in accordance with NPDES procedures in 15A NCAC 2H .0100, stating the reasons supporting the request. Any application for an individual permit should be made at least 180 days prior to the time the permit is needed.

This General Permit does not cover activities or discharges covered by an individual NPDES permit until the individual permit has expired or has been rescinded. Any person conducting an activity covered by an individual permit but which could be covered by this General Permit may request that the individual permit be rescinded and coverage under this General Permit be provided.

**PART I**

**MONITORING, CONTROLS, AND LIMITATIONS FOR PERMITTED DISCHARGES**

SECTION A: FINAL LIMITATIONS AND CONTROLS FOR STORMWATER DISCHARGES

During the period beginning on the effective date of the permit and lasting until expiration, the Permittee is authorized to discharge stormwater associated with construction activity. Such discharges shall be controlled, limited and monitored as specified below.

1. Prior to the commencement of construction, the permittee shall submit for approval a Erosion and Sedimentation Control Plan (plan) to the Department of Environment, and Natural Resources, Division of Land Resources, Land Quality Section, (or an approved local program) pursuant to the requirements of NC G.S. 113A-54.1 and in conformity with rules adopted by the North Carolina Sedimentation Control Commission.
2. The Permittee shall implement the plan, which has been approved by the approval authority. The approved plan is considered a requirement or condition of this general permit. Deviation from the approved plan, or approved amendment to the plan, shall constitute a violation of the terms and conditions of this general permit except that deviation from the approved plan will be allowed (1) to correct an emergency situation where sediments are being discharged off the site or (2) when minor modifications have been made for the purpose of improving the performance of the erosion and sedimentation control measures and notification of the minor modification has been made to the Division of Land Resources (or approved local program). Such a deviation from the approved plan shall be noted on the approved plan maintained at the job site. During active construction, a copy of the approved plan shall be maintained on the site.
3. Equipment utilized during the construction activity on a site must be operated and maintained in such a manner as to prevent the potential or actual pollution of the surface or ground waters of the state. Fuels, lubricants, coolants, and hydraulic fluids, or any other petroleum products, shall not be discharged onto the ground or into surface waters. Spent fluids shall be disposed of in a manner so as not to enter the waters, surface or ground, of the state and in accordance with applicable state and federal disposal regulations. Any spilled fluids shall be cleaned up to the extent practicable and disposed of in a manner so as not to allow their entry into the waters, surface or ground, of the state.
4. Herbicide, pesticide, and fertilizer usage during the construction activity shall be consistent with the Federal Insecticide, Fungicide, and Rodenticide Act and shall be in accordance with label restrictions.

5. All wastes composed of building materials shall be disposed of in accordance with North Carolina General Statutes, Chapter 130A, Article 9 - Solid Waste Management, and rules governing the disposal of solid waste (North Carolina Administrative Code Section 15A NCAC 13B).
6. The Permittee shall control the management and disposal of litter and sanitary waste from the site such that no adverse impacts to water quality occur.

SECTION B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

Minimum monitoring and reporting requirements are as follows unless otherwise approved in writing by the Director of the Division of Water Quality.

1. All erosion and sedimentation control facilities shall be inspected by or under the direction of the permittee at least once every seven calendar days (at least twice every seven days for those facilities discharging to waters of the State listed on the latest EPA approved 303(d) list for construction related indicators of impairment such as turbidity or sedimentation\*\*) and within 24 hours after any storm event of greater than 0.5 inches of rain per 24 hour period. A rain gauge shall be maintained on the site and a record of the rainfall amounts and dates shall be kept by the permittee.

(\*\* The latest approved list may be obtained from the Division of Water Quality, or from the following website location: <http://h2o.enr.state.nc.us/su/construction303d>)

2. Once land disturbance has begun on the site, stormwater runoff discharges shall be inspected by observation for stormwater discharge characteristics as defined below at the frequency in #1 above to evaluate the effectiveness of the pollution control facilities or practices. If any visible sedimentation is leaving the disturbed limits of the site, corrective action shall be taken immediately to control the discharge of sediments outside the disturbed limits.

Stormwater Discharge Characteristics	Monitoring Type <sup>1</sup>	Monitoring Location <sup>2</sup>
Clarity		SDO
Floating Solids		SDO
Suspended Solids		SDO
Oil Sheen		SDO
Other obvious indicators of stormwater pollution		SDO

Footnotes:

<sup>1</sup> Monitoring Type: The monitoring requires a qualitative observation of each stormwater outfall. No analytical testing or sampling is required.

<sup>2</sup> Sample Location: Stormwater Discharge Outfall (SDO)

3. The operator shall keep a record of inspections. Visible sedimentation found outside of the disturbed limits shall be recorded and a brief explanation kept with the records as to the measures taken to control future releases. Any measures taken to clean up the sediment that has left the disturbed limits shall also be recorded. These records shall be made available to DWQ or authorized agent upon request.

SECTION C: SCHEDULE OF COMPLIANCE

1. The permittee shall comply with Final Limitations and Controls specified for stormwater discharges once disturbance has begun on the site and until completion of construction or development and the establishment of a permanent ground cover..
2. During construction and until the completion of a construction or development and the establishment of a permanent ground cover, the permittee shall provide the operation and maintenance necessary to operate the storm water controls at optimum efficiency.

**PART II  
STANDARD CONDITIONS**

SECTION A: DEFINITIONS

1. Act or "the Act" or CWA

The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251, et. seq.

2. Best Management Practices (BMPs)

Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operation procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

3. DWQ or Division

The Division of Water Quality, Department of Environment, and Natural Resources.

4. Director

The Director of the Division of Water Quality, the permit issuing authority.

5. EMC

The North Carolina Environmental Management Commission.

6. Permittee

The person who signed as the financially responsible party on the Erosion and Sedimentation Control Plan.

7. Point Source Discharge

Any discernible, confined and discrete conveyance, including but specifically not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or concentrated animal feeding operation from which pollutants are or may be discharged to waters of the state.

8. Administrator

The Administrator of the U. S. Environmental Protection Agency.

SECTION B: GENERAL CONDITIONSI. Duty to Comply.

The permittee must comply with all conditions of this general permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for: enforcement action; certificate of coverage termination, revocation and reissuance, or modification; or denial of a certificate of coverage upon renewal application.

(a) The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

(b) The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$27,000 per day for each violation. The Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

(c) Under state law, a daily civil penalty of not more than ten thousand dollars (\$10,000) per violation may be assessed against any person who violates or fails to act in

accordance with the terms, conditions, or requirements of a permit. [Ref: NC General Statutes 143-215.6A].

(d) Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$11,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$27,500. Penalties for Class II violations are not to exceed \$11,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$137,500.

2. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this general permit which has a reasonable likelihood of adversely affecting human health or the environment.

3. Civil and Criminal Liability

Except as provided in Section C. of this permit regarding bypassing of stormwater control facilities, nothing in this general permit shall be construed to relieve the permittee from any responsibilities, liabilities, or penalties for noncompliance pursuant to NCGS 143-215.3, 143-215.6A, 143-215.6B, 143-215.6C or Section 309 of the Federal Act, 33 USC 1319. Furthermore, the permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

4. Oil and Hazardous Substance Liability

Nothing in this general permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under NCGS 143-215.75 et seq. or Section 311 of the Federal Act, 33 USC 1321. Furthermore, the permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

5. Property Rights

The issuance of this general permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

6. Severability

The provisions of this general permit are severable, and if any provision of this general permit, or the application of any provision of this general permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this general permit, shall not be affected thereby.

7. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the certificate of coverage issued pursuant to this general permit or to determine compliance with this general permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this general permit.

8. When an Individual Permit may be Required

The Director may require any owner/operator authorized to discharge under a certificate of coverage issued pursuant to this general permit to apply for and obtain an individual permit or an alternative general permit. Any interested person may petition the Director to require an individual permit pursuant to 15A NCAC 2H .0127. Cases where an individual permit may be required include, but are not limited to, the following:

- a. The discharger is a significant contributor of pollutants;
- b. Conditions at the permitted site change, altering the constituents and/or characteristics of the discharge such that the discharge no longer qualifies for a General Permit;
- c. The discharge violates the terms or conditions of this general permit;
- d. A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;
- e. Effluent limitations are promulgated for the point sources covered by this general permit;
- f. A water quality management plan containing requirements applicable to such point sources is approved after the issuance of this general permit.
- g. The Director determines at his own discretion that an individual permit is required.

9. When an Individual Permit may be Requested

Any permittee operating under this general permit may request to be excluded from the coverage of this general permit by applying for an individual permit. When an individual

permit is issued to an owner/operator the applicability of this general permit is automatically terminated on the effective date of the individual permit.

10. Signatory Requirements

a. All applications, reports, or information submitted to the Director shall be signed and certified as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (b) the manager of one or more manufacturing production or operating facilities provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the general permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, a position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) The written authorization is submitted to the Director.

c. Any person signing a document under paragraphs a. or b. of this section shall make the following certification:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

11. General Permit Modification, Revocation and Reissuance, or Termination

The issuance of this general permit does not prohibit the Director from reopening and modifying the general permit, revoking and reissuing the general permit, or terminating the general permit as allowed by the laws, rules, and regulations contained in Title 40, Code of Federal Regulations, Parts 122 and 123; Title 15A of the North Carolina Administrative Code, Subchapter 2H .0100; and North Carolina General Statute 143-215.1 et. seq.

SECTION C: OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this general permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this general permit.

3. Bypassing of Stormwater Control Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of stormwater from any portion of a stormwater control facility including the collection system, which is not a designed or established or operating mode for the facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the control facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass Not Exceeding Limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs c. and d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice within 24 hours of an unanticipated bypass as required in Part II, E. 3.(b)(1) of this general permit. (24-hour notice).

d. Prohibition of Bypass

Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary control facilities, retention of stormwater or maintenance during normal periods of equipment downtime or dry weather. This condition is not satisfied if adequate backup controls should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- (3) The permittee submitted notices as required under Paragraph c. of this section.

The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in Paragraph d. of this section.

4. Upsets

a. Definition

"Upset " means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment or control facilities, inadequate treatment or control facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an Upset.

An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph c. of this condition are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
- 2) The permitted facility was at the time being properly operated; and

- (3) The permittee submitted notice of the upset as required in Part II, E. 3. (b) (2) of this general permit.
- (4) The permittee complied with any remedial measures required under Part II, A. 2. of this general permit.

d. Burden of Proof

In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

SECTION D: MONITORING AND RECORDS

1. Representative Sampling

Samples collected and measurements taken, as required herein, shall be characteristic of the volume and nature of the permitted discharge. Samples shall be taken on a day and time that is characteristic of the discharge. All samples shall be taken before the discharge joins or is diluted by any other waste stream, body of water, or substance.

2. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this general permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

3. Records Retention

The permittee shall retain records of all monitoring information and copies of all reports required by this general permit, for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

4. Recording Results

For each measurement, sample, inspection or maintenance activity performed or taken pursuant to the requirements of this general permit, the permittee shall record the following information:

- a. The date, exact place, and time of sampling, measurements, inspection or maintenance activity;
- b. The individual(s) who performed the sampling, measurements, inspection or maintenance activity;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

5. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Director), or in the case of a facility which discharges through a municipal separate storm sewer system, an authorized representative of a municipal operator or the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to;

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this general permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this general permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this general permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring general permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION E: REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29 (b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the general permit, nor to notification requirements under 40 CFR Part 122.42 (a) (1).

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the general permit requirements.

3. Twenty-four Hour Reporting

- a. The permittee shall report to the central office or the appropriate regional office any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances.

The written submission shall contain a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

- b. The following shall be included as information which must be reported within 24 hours under this paragraph:
  - (1) Any unanticipated bypass which exceeds any effluent limitation in the general permit.
  - (2) Any upset which exceeds any effluent limitation in the general permit.
  - (3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the general permit to be reported within 24 hours.
- c. The Director may waive the written report on a case-by-case basis for reports under paragraph b. above of this condition if the oral report has been received within 24 hours.

4. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in any report to the Director, it shall promptly submit such facts or information.

5. Availability of Reports

Except for data determined to be confidential under NCGS 143-215.3(a)(2) or Section 308 of the Federal Act, 33 USC 1318, all reports prepared in accordance with the terms shall be available for public inspection at the offices of the Division of Water Quality. As required by the Act, discharge data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NCGS 143-215.6B or in Section 309 of the Federal Act.

6. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this general permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both.

SECTION F: LIMITATIONS REOPENER

This general permit shall be modified or alternatively, revoked and reissued, to comply with any applicable effluent guideline or water quality standard issued or approved under Sections 302(b) (2) (c), and (d), 304(b) (2) and 307(a) of the Clean Water Act, if the effluent guideline or water quality standard so issued or approved:

- a. contains different conditions or is otherwise more stringent than any effluent limitation in the general permit; or
- b. controls any pollutant not limited in the general permit.

The general permit as modified or reissued under this paragraph shall also contain any other requirements in the Act then applicable.

STORMWATER INSPECTIONS FOR GENERAL PERMIT NCG010000 – LAND DISTURBING ACTIVITIES

PROJECT: \_\_\_\_\_  
 MONITORING FOR THE WEEK BEGINNING: \_\_\_\_\_

RAINFALL:

Date Of Rain	Amount (inches)	Initials

By this signature, I certify (in accordance with Part II Section B, 10 of the NCG010000 permit) that this report is accurate and complete to the best of my knowledge:

\_\_\_\_\_

(Signature of Permittee or Designee)

EROSION AND SEDIMENTATION CONTROL FACILITIES INSPECTED: (At least once [twice, if on 303(d) listed stream for construction related parameters\*] per seven calendar days Or within 24 hours of a rainfall of 0.5 inches per 24 hours)

Facility Identification	Date of inspection	Operating Properly (Y/N)	Describe corrective actions taken (may need to attach additional information)

OBSERVATIONS OF RUNOFF AT STORMWATER DISCHARGE OUTFALLS: (At least once [twice, if on 303(d) listed stream for construction related parameters \*] per seven calendar days Or within 24 hours of a rainfall of 0.5 inches per 24 hours)

Stormwater Discharge Outfall Identification	Date	Clarity	Floating solids	Suspended Solids	Oil sheen	Other obvious indicators of stormwater pollution (list & describe)	Visible sediment leaving the site? (Y/N)	If yes, describe actions taken to prevent future releases (may need to attach additional information)	Describe measures taken to clean up sediment outside of the disturbed limits (may need to attach additional information)

Clarity: Choose the number which best describes the clarity of the discharge where 1 is clear and 10 is very cloudy

Floating Solids: Choose the number which best describes the amount of floating solids in the discharge where 1 is no solids and 10 the surface is covered in floating solids

Suspended Solids: Choose the number which best describes the amount of suspended solids in the discharge where 1 is no solids and 10 is extremely muddy

Oil Sheen: Is there an oil sheen in the stormwater discharge? Y or N

\* 303(d) listed streams for construction related parameters – The latest approved list may be obtained from the Division of Water Quality, or from the following website location: <http://h2o.enr.state.nc.us/sw/construction303d>

## SECTION 02900 - LANDSCAPING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Lawns.
  - 2. Topsoil and soil amendments.
  - 3. Fertilizers and mulches.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 2 Section "Site Preparation" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.

#### 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product certificates signed by manufacturers certifying that their products comply with specified requirements.
  - 1. Manufacturer's certified analysis for standard products.
- C. Certification of grass seed from seed vendor for each grass-seed mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
- D. Samples of each of the following:
  - 1. Sample of imported mulch, if required.
- E. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, at least fifteen names and address of architects and owners, total years of experience and landscape contractor's license number. If the landscape contractor hires a sub-contractor for seeding operations, the same references shall be required from them also.
- F. Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.
  - 1. Analysis of existing topsoil.
  - 2. Analysis of imported topsoil.
- G. Maintenance instructions recommending procedures to be established by Owner for maintenance of landscaping during an entire year. Submit before expiration of required maintenance periods.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that landscaping is in progress.
- B. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- C. Topsoil Analysis: Furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter, inorganic matter (silt, clay, and sand), deleterious material, pH, and mineral and plant-nutrient content of topsoil.
  - 1. Report suitability of on-site topsoil for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site
- B. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

#### 1.6 PROJECT CONDITIONS

- A. Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.
- B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Architect before planting.

#### 1.7 COORDINATION AND SCHEDULING

- A. Coordinate installation of seeding/sprigging materials during normal planting seasons for each type of installation required.

#### 1.8 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to,

and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

## 1.9 LAWN MAINTENANCE

- A. Begin maintenance of lawns immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
  - 1. Seeded Lawns: Until substantial completion.
    - a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established at that time (90% coverage), continue maintenance during next planting season.
- B. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth lawn.
- C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawns uniformly moist to a depth of 4 inches (100 mm). Contractor shall provide own water source at no additional cost to Owner.
  - 1. Supplement natural precipitation to provide a net rate of one inch of water per week or as required to maintain lawn in a thriving condition.
  - 2. Watering shall conform to the time, volume and frequency recommendations of the Town's watering conservation officer.
- D. Mow lawns as soon as there is enough top growth to cut with mower set at specified height for principal species planted. Repeat mowing as required to maintain specified height without cutting more than 40 percent of the grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.
- E. Postfertilization: Apply fertilizer to lawn after first mowing and when grass is dry. Apply only from August through October.
  - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb per 1000 sq. ft. (0.5 kg per 100 sq. m) of lawn area or as required to maintain lawn in a thriving condition. A minimum of 50% of the nitrogen shall be in a slow release form.

## PART 2 - PRODUCTS

### 2.1 GRASS MATERIALS

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.
  - 1. Seed Mixture: Provide seed of grass species and varieties as specified on the drawings.

### 2.2 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, 4 percent organic material minimum, free of stones 1 inch (25 mm) or larger in any dimension, and other extraneous materials harmful to plant growth. Sticks, roots, and clay clumps shall be removed from topsoil prior to spreading.

1. Topsoil Source: Reuse surface soil stockpiled on the site if adequate quantity. Provide additional off-site topsoil as required to supplement. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Clean topsoil of roots, plants, sods, stones greater than 1" diameter in general lawn areas, (2" inches in planting beds), clay lumps, and other extraneous materials harmful to plant growth.

## 2.3 SOIL AMENDMENTS

- A. Lime: ASTM C 602, Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 (2.36 mm) sieve and a minimum 75 percent passing a No. 60 (250 micrometer) sieve.
  1. Provide lime in the form of dolomitic limestone.
- B. Perlite: Horticultural perlite, soil amendment grade.
- C. Peat Humus: Finely divided or granular texture, with a pH range of 6 to 7.5, composed of partially decomposed moss peat (other than sphagnum), peat humus, or reed-sedge peat.
- D. Peat Humus: For acid-tolerant trees and shrubs, provide moss peat, with a pH range of 3.2 to 4.5, coarse fibrous texture, medium-divided sphagnum moss peat or reed-sedge peat.
- E. Sawdust or Ground-Bark Humus: Decomposed, nitrogen-treated, of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
  1. When site treated, mix with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cu. ft. (cu. m) of loose sawdust or ground bark.
- F. Manure: Well-rotted, unleached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.
- G. Herbicides: EPA registered and approved, of type recommended by manufacturer.
- H. Water: Potable.

## 2.4 FERTILIZER

- A. Bonemeal: Commercial, raw, finely ground; minimum of 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium in the following composition:
  1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency and as needed to maintain plant material and lawns in a thriving condition.
- D. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency and as needed to maintain plant material and lawns in thriving condition.

## 2.5 MULCHES

- A. Organic Mulch: Organic mulch, free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
  1. Type: Shredded hardwood and ground bark. From on-site chipping operations, or from off-site if the General Contractor chooses to haul away debris from clearing operations instead of chipping. Materials shall be ground to medium coarse (no pieces greater than 4" in any direction). If the mulch is to be from on-site chipping operations, the General Contractor shall make sure that the subcontractor who is chipping the material meets the specifications for size. Limbs and logs will not be acceptable for mulching. Do not use adjacent to parking areas.
  2. Type: Pine Straw. Provide clean, air dry, clean, mildew and debris free Long Leaf Pine Straw. Straw shall be free from sticks and Cones.

## 2.6 EROSION-CONTROL MATERIALS

- A. Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.
- B. Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, 0.92 lb per sq. yd. (0.5 kg per sq. m) minimum, with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected. Do not seed the site until the Landscape Architect has reviewed the final grades.

### 3.2 LAWN PLANTING PREPARATION

- A. Limit subgrade preparation to areas that will be planted in the immediate future.
- B. Loosen subgrade to a minimum depth of 8 inches. Remove stones larger than 1 inch (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous materials. Remove excess gravel which will inhibit lawn establishment and survival.
- C. Spread topsoil to depth required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.
  1. Place approximately 1/2 the thickness of topsoil required. Work into top of loosened subgrade to create a transition layer and then place remainder of the topsoil.
- D. Preparation of Unchanged Grades: Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare soil as follows:

1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns.
  2. Till surface soil to a depth of at least 6 inches (150 mm). Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches (100 mm) of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.
  3. Clean surface soil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
  4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.
- E. Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Remove trash, debris, stones larger than 1 inch in any dimension, and other objects that may interfere with planting or maintenance operations. Remove all glass, wire or other objects of any size which may cause injury.
- F. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- G. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

### 3.3 MULCHING

- A. Mulch backfilled surfaces of pits, trenches, planted areas, and other areas indicated.
- B. Organic Mulch: Apply the following average thickness of organic mulch and finish level with adjacent finish grades. Do not place mulch against trunks or stems.
1. Thickness: 4 inches. Refer to Landscape Plan for greater thicknesses in areas where excess mulch can be spread.

NOTE: Mulch shall be clean Pine Straw from off-site mulching operations.

### 3.4 SEEDING NEW LAWNS

- A. Sow seed with a spreader or a seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other.
1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
- B. Sow seed at the rates required to achieve 90% coverage prior to substantial completion as determined on a per square yard basis.
- C. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray. Remove surface rocks of greater than 1" diameter.
- D. Protect seeded slopes exceeding 1:3 against erosion with erosion-control blankets installed and stapled according to manufacturer's recommendations.
- E. Protect seeded areas with slopes less than 1:6 against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly at a minimum rate of 2 tons per acre (45 kg per 100 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.

- F. If seeding occurs in summer months, protect seeded areas against hot, dry weather or drying winds by applying peat mulch within 24 hours after completion of seeding operations. Soak and scatter uniformly to a depth of 3/16 inch (4.8 mm) thick and roll to a smooth surface.

### 3.5 HYDROSEEDING NEW LAWNS

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.
  - 1. Mix slurry with nonasphaltic tackifier.
  - 2. Apply slurry uniformly to all areas to be seeded in a 2-step process. Apply first slurry application at the minimum rate of 500 lb per acre (5.5 kg per 100 sq. m) dry weight but not less than the rate required to obtain specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1000 lb per acre (11 kg per 100 sq. m).

### 3.6 RECONDITIONING LAWNS

- A. Recondition existing lawn areas damaged by Contractor's operations, including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required.
- B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.
- C. Where repairable lawn remains, as determined by the Owner, mow, dethatch, core aerate, and rake heavily and deeply. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- D. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of it off the Owner's property.
- E. Till stripped, bare, compacted or otherwise unrepairable areas thoroughly to a depth of 8 inches.
- F. Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches (100 mm) of soil. Provide new planting soil as required to fill low spots and meet new finish grades.
- G. Apply seed and protect with straw mulch as required for new lawns.
- H. Apply sprigs as required for new play area. See Seeding Schedule for application.
- I. Water newly planted areas and keep moist until new grass is established.

### 3.7 CLEANUP AND PROTECTION

- A. During landscaping, keep pavements clean and work area in an orderly condition.
- B. Protect landscaping from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

### 3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property unless an agreement is made with the Owner otherwise.

END OF SECTION 02900

# **OPERATIONS AND MAINTENANCE (O&M) MANUAL**

# **ORGANIC RECYCLING CENTER**

## **WRITTEN REPORT**

**2095 US 1 Hwy  
Franklinton, N.C. 27525  
(919) 562-4950**

**A) Anticipated type, source, and composition of waste to be received.**

This facility will accept untreated wood only from various construction clearing and grubbing activities. Processed mulch will be sold immediately or stored within the designated processed mulch stockpile areas as a temporary measure. There will be no composting material received or processed at this facility.

**B) Provisions to maintain a clean and orderly operation.**

*i. Effective barrier to prevent unauthorized entry and dumping.*

The facility has a fence and gate that is kept locked when the facility is closed. During operation hours, an attendant will visually observe the incoming loads to prevent the dumping of unauthorized materials. In the event, that non-conforming types of debris are detected, or passes through the inspection point, the inert debris shall be routed to the adjacent inert debris landfill. All other waste shall be properly disposed of at the Franklin County Public Landfill.

*ii. Signs posted with name of owner, operator, contact person and number in case of emergency and hours of operation.*

Mulch Facility  
Hours of Operation:  
8:00 a.m. - 6:00 p.m. M-F  
8:00 a.m. - 3:00 p.m. Saturday  
Closed Sunday

In case of emergency contact:  
James Adams, Jr.  
(919) 422-8454

*iii. Dust control measures.*

The existing entrance is constructed with concrete roadway at gate following with asphalt material for approximately 800 feet, then stone material to dump site. Dust will be controlled by the watering down of dusty area.

*iii. Litter control measures.*

Litter will be collected daily by the operator and disposed of off-site at the end of each day. No trash receptacles will be provided in order to discourage truck drivers from emptying trash and litter on the site.

iv. *Fire protection and control measures.*

The Youngsville Volunteer Fire Department will be notified immediately in the case of a fire. The stockpile areas will have proper fire vehicular access on all sides as shown on the Operations Plan. The mulch stockpile area has been designed to accommodate smaller pile sizes, which will minimize any potential for anaerobic conditions, build-up of heat, methane and other gases, and fire due to spontaneous combustion of these gases. The small size of the processed mulch piles will also eliminate the need for turning and aerating the mulch stockpiles. No aeration or turning of the mulch stockpiles will be performed.

v. *Odor control measures and practices.*

The mulch stockpile size will minimize any potential for anaerobic conditions, and the build-up of heat, methane and other gases. Without anaerobic conditions, no odor control will be necessary.

## **Explanation of Daily Operation and Maintenance**

All incoming loads will be inspected prior to unloading or grinding. Only untreated wood will be accepted at this recycling facility. Non-conforming waste will not be accepted. All other waste will be directed to either the adjacent inert debris landfill or to the Franklin County public landfill, depending on the specific type of waste material. The site attendant will conduct visual inspections. After passing the gate attendant, the load will be directed to the windrow storage area by site attendant. The untreated wood will be loaded into the Grinder or appropriate storage windrow by one of the onsite loaders.

After approximately one to two years of drying, wood debris will be ground into mulch and sold or remain on its static pile and pulverized by running over it with a bulldozer. This debris will then be separated in a screener and sold as a soil-like material. The resulting mulch will be piled in the mulch stockpile area for immediate sale or storage until sold. If windrow areas are inaccessible due to inclement weather conditions, incoming trucks will unload within the mulch stockpile area as a temporary measure.

For material pickup, the vehicle will be loaded as requested. The customer will pay the gate attendant per size of truck. If any processed mulch pile remains static for a month, it will be aerated by moving and rotating the pile. A \$50 fine will be imposed for anyone littering on the premises.

Interior travel ways (20' wide) and perimeter drive areas (20' wide) have been provided throughout the overall raw wood debris storage areas and mulch stockpile areas. 20' wide travel ways have been provided at an angle perpendicular to the unprocessed, raw wood debris windrows for easier access and overall circulation. The average, overall length of the raw wood debris windrows varies from 90' to 530'. Trucks and loaders will be able to drive forward into the mulch stockpile and wood debris storage areas, load or unload raw or processed wood/mulch materials, and continue driving forward to access the remainder of the site.

The mulch stockpile area has been designed to accommodate smaller pile sizes. Each proposed mulch windrow is approximately 50' wide by 20' maximum height, which will minimize any potential for anaerobic conditions, build-up of heat, methane and other gases, and fire due to spontaneous combustion of the gases.

The customers will be directed by gate attendant for visual inspections of their vehicle. The site attendant will then direct the customer to the loading area.

**A) Proposed Equipment.**

The facility will be equipped with one (1) wheel loader, two (2) excavators, one (1) grinder, one (1) screener, one (1) bulldozer, and one (1) track hoe.

**B) Person responsible for operation, contact phone number and address of facility.**

Person Responsible for Operation: James Adams, Jr.  
Contact Phone Number: (919) 422-8454  
Address of Facility: 2095 US 1 Hwy  
Wake Forest NC, 27587

**C) Control and inspection of incoming waste.**

A site attendant will be on site during operational hours. The attendant will direct and visually inspect all incoming loads. Only untreated wood will be accepted at this facility. All other wastes will not be accepted. Again, non-conforming waste will be turned away and directed to the Franklin County Landfill. The loader will also visually inspect the load.

**D) Method of measuring incoming waste.**

All loads will be measured by volume in tons by truck size and these measurements will be recorded by the gate attendant.

**E) Vehicle control and unloading.**

All vehicles will be controlled by the site attendant and directional signs located within the facility. The untreated wood will be unloaded on the permitted site as directed by site attendant.

**F) Method and sequence of processing the waste.**

Since only untreated wood will be accepted at this facility, the entire permitted area will be used for processing and recycling of wood debris and the resulting mulch. Initially, only 6 to 10 acres will be used for wood debris/mulch grinding, processing and recycling operations. After this point, approximately 1 acre/year will be utilized until full. The untreated wood will be inspected at arrival; re-inspected during unloading into windrow storage areas, grinded and stored into piles. If debris deteriorates before grinding into mulch product, it will be pulverized in its static windrow using a track hoe and shear. The resulting material will then be placed in a screener separating the soil-like material from the un-deteriorated debris. The resulting mulch and soil-like material will be sold. The exiting mulch volume will be measured and recorded.

**G) Leachate and run-off control measures.**

Only untreated wood will be accepted at this facility. Since no solid waste will be accepted, there will be no leachate generated. The active area of operation will be maintained with the appropriate silt fence and appropriate silt basins to control runoff. Erosion control measures shall be maintained as required to guarantee proper functioning of these measures.

**H) Description of ultimate use for finished compost.**

This facility will be used for wood debris processing and recycling and the sale or disposal of the resulting mulch to the general public. The ultimate use of the mulch is for sale to the general public. There will be no composting at this site.

**I) Plan for back-up system if poor quality product is produced, inclement weather conditions arise, changes in market conditions develop, equipment failure is realized, or in the event of a fire or medical emergency.**

If the design capacity of the facility is reached or if any of the above-mentioned limitations occur, the incoming loads of untreated wood will temporarily not be accepted at this facility. Equipment will be repaired as quickly as possible, and fire/emergency officials will be notified immediately. If inclement weather conditions prevent access to windrows, incoming trucks loaded with wood debris will be directed to the mulch stockpile area for temporary storage. As stated previously, the mulch stockpile area has been designed to accommodate smaller pile sizes, which will minimize any potential for anaerobic conditions, build-up of heat, methane and other gases, and fire due to spontaneous combustion of the gases. The small size of the processed mulch piles will also eliminate the need for turning and aerating the mulch stockpiles. No aeration or turning of the mulch stockpiles will be performed. Roadway maintenance will be performed regularly to provide easy access to all areas.

**J) Design capacity of the facility.**

The facility is designed for a maximum capacity of 500 tons/day (1000-2000 cy/day) to be received and processed. The average capacity is considered approximately 80 tons/day (320 cy/day). In accordance with the Solid waste Section, Policy Memorandum #14, the typical conversion rates are as follows:

Land Waste:	500 lbs/cy
Mulch:	750 lbs/cy
Dirt:	1000 lbs/cy

There are no available records to substantiate the inflow and outflow of tons of materials. Tonnage amounts will be dependent upon variable market conditions. Annual reports will be submitted at the end of each fiscal year, dated from July 1 to June 30, as required.

**K) Recycling time duration, time from initiation of the recycling/mulching process to completion.**

Wood debris will be stored in windrows for approximately 1-2 years to allow for drying. The untreated wood will be chipped into mulch piles to be stored and be ready for immediate sale. After approximately

1-2 years, some deteriorated wood will be pulverized in its static windrow using a track hoe, then placed in a screener to separate soil-like material from dried debris to be chipped or ground into mulch. Both resulting materials will then be sold. There will be no composting at this site.

**L) Typical windrow construction and aeration configurations.**

Unprocessed wood debris will be stored in windrows of 50' maximum base 20' maximum height including 20' travel ways between and around each windrow. A perimeter drive around the entire recycling facility will be 20' wide. Processed mulch piles will be stored in windrows of 50' maximum base at 20' maximum height, allowing for storage and distribution. Travel ways between processed mulch stockpiles will be 20' wide. There will be a 50' buffer or travel way between the Wood Debris and inert Debris Landfill facilities. The resulting mulch will be sold in a timely manner or stored within the processed mulch stockpile area. There will be no composting material received or processed at this facility. The processed mulch stockpiles will not be aerated due to the small size of each mulch stockpile.

**M) Method of aeration, including turning frequency or mechanical aeration equipment and aeration capacity.**

The processed mulch stockpiles will not be aerated. The final mulch material will be predominately for landscaping purposes. The mulch stockpile area has been designed to accommodate smaller pile sizes, which will minimize any potential for anaerobic conditions, build-up of heat, methane and other gases, and fire due to spontaneous combustion of the gases. The small size of the processed mulch piles will also eliminate the need for turning and aerating the mulch stockpiles.

**N) Personnel required and their responsibilities.**

There will be a gate attendant responsible for visual operations. There will be a site attendant directing incoming loads. The site attendant will be responsible for visual inspections of incoming untreated wood products, litter control and grinder operations. There will be two loader operators responsible for loading final mulch product and visually inspecting and unloading untreated wood. They will also be responsible for aeration of mulch piles.

**O) A description and an identification of the surface for proposed site, areas, and depth to season high ground water.**

The site has approximately 50' relief draining mostly towards the north. The permitted area is approximately 28 acres. From on-site soil inspections, ground water was lower than the upper 24 inches of the surface at all tested locations within the Organic Recycling Center.

**P) A description of the recycling pad.**

There will be approximately 28 acres reserved for wood debris storage, processing and recycling. There will be no composting at this site.

**Q) A description of any monitoring that will occur involving the composting process or the site.**

The site will be monitored. Only untreated wood will be accepted at the site. The site attendant will be responsible for visual inspection of incoming untreated wood products. Incoming materials will be inspected for non-conforming waste materials. Debris piles will be inspected by the site attendant for overall drying and fire conditions. All litter will be picked up off the site daily, there will be no compost processing at the site.

**R) Source of waste input.**

Wastes will come from construction clearing and grubbing activities.



