

10-06

# SANITARY LANDFILL NO. 1 (TPA LANDFILL) CLOSURE REPORT

## DUPONT CAPE FEAR FACILITY LELAND, NORTH CAROLINA

Date: April 1, 2004

*Dupont - Cape Fear  
Plant*

*Permit No. 10-06*

*Brunswick County*



CORPORATE REMEDIATION GROUP  
*An Alliance between  
DuPont and URS Diamond*

6324 Fairview Road  
Charlotte, North Carolina 28210



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April 1, 2004

Mr. Jim Barber - Solid Waste Permitting Branch Head  
North Carolina Department of Environment and Natural Resources  
Division of Waste Management  
401 Oberlin Road - Suite 150  
Raleigh, NC 27605

**NOTICE OF LANDFILL CLOSURE CERTIFICATION**

DuPont Cape Fear Plant, Leland, North Carolina TPA Landfill

Dear Mr. Barber:

As required by North Carolina regulation E. I. du Pont de Nemours & Co. Inc. (DuPont) is notifying NCDENR of the completion of its TPA landfill cap/closure project at our Cape Fear North Carolina site. Enclosed is a certification report prepared by North Carolina Professional Engineer Brett Berra.

Should you have any further questions, please contact me at (704) 362-6634.

Sincerely,

Andrew F. Alcazar  
Project Director - DuPont Corporate Remediation Group



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6324 Fairview Road  
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I, A. Brett Berra, a Professional Engineer for URS Corporation – North Carolina, hereby certify that I had responsible charge in preparation of the *Landfill No. 1 (TPA Landfill) Soil Cover – Final Design Report*. This report along with the Sedimentation and Erosion Control Plan and two subsequent Sedimentation and Erosion Control Plan revisions approved in writing by Daniel Sams and Carol N. Miller, Division of Land Resources, Land Quality Section, NCDENR on 6 June 2003, 28 July 2003, and 6 October 2003, respectively, were utilized to complete the closure of the TPA Landfill, located at the Dupont Cape Fear Facility, Leland, North Carolina. I certify that I am familiar with the rules and regulations of North Carolina solid waste landfill regulations 15A NCAC 13B.0505 and 13B.0510 pertaining to closure of such facility, and that I personally have made visual inspections of the aforementioned facility, and that the closure of the aforementioned facility has been performed in full and complete accordance with the facility's closure plan (*Final Design Report* and Sedimentation and Erosion Control Plan and revisions) and the rules and regulations of North Carolina solid waste landfill regulations 15A NCAC 13B.0505 and 13B.0510.

A. Brett Berra  
(Signature)

4-1-04  
(Date)

028303  
(Professional Engineering License Number)

1600 Perimeter Park Drive, Morrisville, NC 27560  
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Appendix A Technical Specifications

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## 1.0 INTRODUCTION

This report outlines the technical approach and procedures used during the closure of the Dupont Cape Fear Sanitary Landfill No. 1 (TPA Landfill), located on DuPont property near the former DuPont Cape Fear Plant in Leland. Closure is being performed under North Carolina solid waste landfill regulations 15A NCAC 13B.0505 and 13B.0510. These regulations specify a minimum of two feet of compacted soil cover stabilized with native grasses. No long-term monitoring of the closure is required. These closure requirements have been mutually agreed upon by the North Carolina Department of Environment and Natural Resources (NCDENR) Department of Solid Waste Management and the DuPont Corporate Remediation Group.

Applicable NCDENR and Erosion and Sedimentation (E&S) Control requirements have been incorporated into the design to ensure the long-term performance of the constructed remedy.

## 2.0 BACKGROUND

This section present general information about the site and the TPA Landfill.

### 2.1 Site Location/Description

The former DuPont Cape Fear Plant is located in the far northeastern portion of Brunswick County, on Secondary Road No. 1426, approximately six miles north of Leland, North Carolina, and approximately 15 miles northwest of Wilmington, North Carolina (Figure 1). The terephthalic acid (TPA) landfill is located northwest of the Cape Fear Plant production area and southeast of a major meander of the Cape Fear River.

The TPA Landfill is approximately 7 acres in size. Topography of the area is such that the land surface slopes gently to the north, northeast, and east depending on the location in the landfill. The groundwater monitoring network in the vicinity of the TPA Landfill includes five monitoring wells (MW-01 through MW-03, MW-08, and MW-09) completed in the surficial aquifer.

### 2.2 Site History

The DuPont Cape Fear Plant began operations in 1968 producing *Dacron*® polyester and fiber. The first production line in the *Dacron*® manufacturing plant began operations in July 1968, with the second line operational in December 1968. A *Dacron*® Intermediates Plant was built in 1973 and subsequently modified for production of dimethylterephthalate (DMT) and terephthalic acid.

The TPA Landfill was permitted in 1972 and originally approved to accept site trash (such as paper and boxes), non-hazardous *Dacron*® polyester spun and fiber wastes, DMT, TPA, and incinerator ashes. The landfill permit was updated to ensure compliance with the April 1, 1982, Solid Waste Management Rules. The NCDENR formally accepted the modified permit on August 13, 1984, in accordance with Statue 13B of the general statutes of North Carolina. Dupont had planned on continuing to utilize the landfill until approximately 2016. However, as the landfill had not been utilized in recent years and was not projected to be utilized in the future, DuPont decided to close the landfill. In 2001, DuPont divested the manufacturing area to DAK Americas, which continues polyester production today. DuPont maintains ownership of the land surrounding the DAK Americas manufacturing area. The TPA landfill is located on the DuPont-owned portion of the property.

## 3.0 CLOSURE ACTIVITIES

The proposed cap system for the TPA Landfill consists of natural soil components and was designed to meet NCDENR requirements while serving to protect human health and the environment. Figure 1 represents the TPA Landfill prior to any construction activities associated with the closure. Figure 2 is the as-built TPA Landfill cover based upon a post cover construction survey of the site.

The following sections discuss steps that were taken to satisfy the closure requirements.

### 3.1 Closure Procedures

The following steps were taken to close the TPA Landfill.

#### 3.1.1 Existing Cover Assessment

Prior to completing the cover design, borings were taken with a hand auger across the surface of the TPA Landfill to determine existing cover depths, which range in depth from 3" to 30".

#### 3.1.2 Cover Design

The cover was designed to meet closure requirements under North Carolina solid waste landfill regulations 15A NCAC 13B.0505 and 13B.0510. These regulations specify a minimum of two feet of compacted soil cover stabilized with native grasses. The proposed TPA Landfill design was based on accepted geotechnical and environmental engineering principles and practices. The following support materials for the closure design were included in the design report prepared for this site:

- ❑ *Technical Specifications*  
Materials and construction procedures required to properly construct the design are documented in the Technical Specifications (See Appendix A).
- ❑ *Construction Drawings*  
Construction Drawings detail the cover design (See Appendix B).
- ❑ *Sedimentation and Erosion Control Plan*  
The Sedimentation and Erosion Control Plan describes measures for management of stormwater, mitigation of erosion, and control of sediment migration. This plan was submitted separately to the NCDENR, Land Quality Section (See Appendix C and Figures E-1 through E-5 in Appendix B).
- ❑ *Health and Safety Plan*  
The Health and Safety Plan describes measures for management of all aspects associated with maintaining a safe working environment during the life of the project.

□ *Waste Management Plan*

The Waste Management Plan describes project-specific requirements for waste characterization and handling, spill response and reporting, and waste storage.

### 3.1.3 Sedimentation and Erosion Control Plan Approval

The Sedimentation and Erosion Control Plan and two subsequent revisions to the Plan were approved in writing by NCDENR, Wilmington Regional Office, Division of Land Resources, Land Quality Section on 6 June 2003, 28 July 2003, and 6 October 2003. See Appendix D for copies of these Letters of Approval.

Approved sedimentation and erosion control measures included gravel construction entrances, silt fence, temporary diversions, rock check dams, and temporary sediment basins. Measures were placed in locations where runoff from the construction site was treated before discharging into the existing series of ditches (using sediment basin) or sheet flowing across the adjacent land (using silt fence). No drainage structures or culverts were required.

### 3.1.4 Cover Construction

As seen in Figure 2, the final contours of the landfill cover are higher in elevation but similar in pattern to the original site contours (Figure 1). Because the construction consisted of a cap/cover over existing landfill, the drainage patterns are fairly similar.

During construction, soil was placed as directed in the Technical Specifications above existing grade to achieve the required soil cover thickness of 24-inches. Based on thickness of cover data obtained from pre-construction test borings and the need to meet appropriate slope requirements, cover materials were placed at varying depths across the surface of the landfill. Slope requirements included minimum slopes of 3%, or 33 Horizontal to 1 Vertical [33H:1V], and maximum slopes of 33% [3H:1V]. Overall, the landfill was graded to conform to current conditions and direct storm water to perimeter drainage ditches. A final construction survey (see Figure 2) and verification borings were utilized to ensure the required 24-inch minimum thickness has been met.

Cover materials were obtained from a nearby off-site location. This material consists of appropriate (certified clean) cover materials per the Technical Specifications. These cover soils met stringent requirements (see Technical Specifications) necessary to facilitate the establishment of an appropriate vegetative stand. In addition, appropriate temporal seeding requirements (see Technical Specifications) were utilized to establish the vegetative layer on the cover.

Construction of the cover began on 23 June 2003. The erosion and sedimentation control measures were constructed and in place prior to the initiation of placement of the landfill cover. Clearing and grubbing of the site was completed including the removal of all trees within the areas to be graded. The construction of the soil cover (including placement, grading, compaction, cover soil amendment, and vegetation establishment via seeding and mulching) began on 26 June 2003. The final stage of cover seeding was completed on 5 November 2003.

During construction, additional waste materials were found outside the areas included in the original design, and as such, required the existing design documents be modified. Based upon the presence of these materials two landfill cover redesigns were completed, and two revisions to the Sedimentation and Erosion Control Plan were submitted and approved by NCDENR on 28 July 2003 and 6 October 2003. These waste materials were encountered on the south side of the southernmost landfill lobe and to the north of the main (largest) landfill lobe. Test pits were dug to complete delineation of the extent of waste along the north side of the main lobe.

To complete the cover construction, a total of 41,940 tons (29,956 cubic yards) of soil were utilized as landfill cover. Approximately 207 tons of stone were used in the construction of sedimentation and erosion control measures. In addition, approximately 9,400 square feet of erosion blankets were utilized to control along the bank of a stormwater ditch.

While a majority of the cover has been stabilized with native grasses, DuPont will continue to maintain and repair any erosion and sedimentation control measures to ensure the entire cover is stabilized.

## 4.0 REFERENCES

URS, *Landfill No. 1 (TPA Landfill) Soil Cover-Final Design Report, Former Dupont Cape Fear Plant, Leland, North Carolina*, May 2003.

Dupont Corporate Remediation Group, Drawing – *Thickness of Cover at TPA Landfill*, September 2002.

Dupont Corporate Remediation Group. *TPA Landfill Supplemental Data Collection Work Plan*, August 1999.

**FIGURES**

**APPENDIX A**  
**TECHNICAL SPECIFICATIONS**

**Cape Fear TPA Landfill  
Soil Cover Construction  
Final Design**

**List of Specifications**

**Division 1 – General Requirements**

- 0101 - Summary of Work
- 0102 - Measurement and Payment
- 0103 - Field Engineering
- 0104 - Contractor Quality Control

**DIVISION 1 - GENERAL REQUIREMENTS**  
**SECTION 0101**  
**SUMMARY OF WORK**

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**PART 1 - GENERAL**

**1.1 SCOPE**

This section includes a brief description of the major construction activities included under this contract. Individual activities are more thoroughly described in subsequent sections of the Specifications. The Contractor shall be responsible for ensuring that sufficient equipment, labor, and materials, including health and safety and quality control provisions, are supplied to execute all work activities for final acceptance.

**A. Location of Work.** The Work of this Contract is located near the former DuPont Cape Fear Plant located along State Road 1426 in Leland, North Carolina. A location map is provided with the Drawings.

**B. Glossary**

Contractor – The construction contractor selected to implement the scope of work described herein.

Engineer – URS Corporation – North Carolina.

Dupont Representative – DuPont Corporate Remediation Group (DuPont).

**1.2 GENERAL REQUIREMENTS**

As minimum requirements, the Contractor shall observe and follow all appropriate and relevant procedures identified in applicable federal, state, and local rules and regulations in conducting the work. Other applicable regulations not explicitly included in these Specifications shall be adhered to in conducting the work. The Contractor shall be responsible for contacting and informing the proper federal, state, and local agencies of the nature and timing of work on-site (including, if necessary, transportation of materials off the site for off-site disposal as needed and schedule for hauling of clean fill to the site) and for securing all necessary (and otherwise not obtained by DuPont) and applicable permits required to construct the work covered by this contract.

**A. Existing Features.** The Contractor shall protect and maintain survey and grid stakes, monitoring wells, and any other items as directed in the field by the Dupont Representative against damage from equipment and vehicular traffic. Any damage shall be repaired by the Contractor at no expense to DuPont.

**B. Utilities.** The Contractor shall protect utility lines or appurtenances that are to remain. It is the Contractor's responsibility to locate or verify existing utilities on-site and to coordinate utility location with Cape Fear Plant Personnel. Any damage shall be repaired by the Contractor at no expense to DuPont. The State of North Carolina provides a construction alert system (One-Call) for utilities at 1-800-632-4949.

### **1.3 MATERIALS AND EQUIPMENT**

Materials and equipment shall be provided in sufficient quantities for required construction activities. Materials and equipment shall not be stored or used in such a manner as to create unsafe conditions, and shall meet requirements of applicable codes and the approval of the Dupont Representative and the Design Engineer.

### **1.4 DESCRIPTION OF WORK**

The project generally includes construction of the following: an engineered soil cover for the TPA Landfill; temporary erosion control measures during construction; and vegetative cover establishment.

The Contractor shall be responsible for providing all testing services, temporary facilities and related materials and equipment for the performance of the described work. The Contractor shall be responsible for the construction and installation of all temporary erosion and sediment control structures prior to full-scale earth disturbance or earth moving activities and maintenance of these controls throughout construction. The Contractor shall coordinate with Plant and local government transportation officials and be responsible for coordination of traffic flow resulting from site work and for road repairs as may be deemed necessary by these transportation officials.

The soil cover will be installed, tested, and ready for continuous service. Repairs, replacements, and restoration as a result of damages resulting from construction operations will be performed by the Contractor. All materials, equipment, and incidentals, which are reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the contract documents or not, will be furnished.

### **1.5 WORK TO BE PERFORMED**

The major construction activities included are summarized below.

#### **A. Temporary Site Facilities**

Maintenance of temporary site facilities (as required by the Contractor) including, staging areas, Contractor offices, security and communication operations, personnel and equipment decontamination facilities, project signs during the performance period of the Contract, and removal of same at the completion of construction activities.

#### **B. Temporary Site Utilities**

This provision includes the operation and maintenance of all temporary site utilities (as required by the Contractor) including telephone, electricity, water, and sanitation.

#### **C. Contractor Quality Control Plan**

The Contractor shall develop and implement a Contractor Quality Control Plan, as identified in subsequent sections of the specifications. Four (4) copies of this plan

shall be submitted to the Dupont Representative within 10 days after Notice to Proceed.

The Contractor shall also develop and implement all other plans required under this Contract and under applicable federal, state, and local laws.

**D. Establishment of Temporary and Permanent Erosion and Sediment Control Measures**

This activity includes the installation of soil erosion and sedimentation control measures as identified in Appendix B, Sheet No. E-1 through E-3 (Erosion and Sedimentation Control Plan).

**E. Site Preparation and Clearing and Grubbing**

This includes activities associated with secondary roadway enhancement (e.g. addition of compacted gravel and grading) necessary to complete the project. Also, this includes activities associated with clearing and grubbing of the site, as required for project execution.

**F. Soil Cover Construction – TPA Landfill Area**

This includes the construction of soil cover including placement, grading, compaction, cover soil amendment, and vegetation establishment via seeding and mulching.

**G. Quality Control**

Maintain a quality control program to ensure that all operations performed by the Contractor and all subcontractors are completed in accordance with the provisions of this Contract.

**H. Safety**

Provide required safety as specified in the Health and Safety Plan for both personnel and equipment.

**I. Project Documentation**

Document all work, including work associated with health and safety, quality control, and field engineering.

**J. Project Closeout**

Activities include, but are not limited to: decontamination and removal of all Contractor equipment, removal of all temporary construction facilities as directed by the Dupont Representative, disconnection and restoration of all temporary utilities, and transfer of all records, drawings, and other project-related material to the Dupont Representative.

Verification borings and surveying will be completed by the Dupont Representative to ensure adequate soil cover.

All other activities to satisfactorily complete all work covered by the Technical Specifications, any drawings not specifically discussed but necessary for the project construction and final acceptance.

All other work required by DuPont under the terms of this Contract.

#### **1.6 CONSTRUCTION SEQUENCE**

The major construction sequence (as detailed in the design drawings) shall be adhered to by the Contractor during project execution.

#### **1.7 LIMITATIONS TO CONSTRUCTION SEQUENCE**

Construction under this contract must be coordinated with the Dupont Representative and DuPont and accomplished in a logical order to allow construction to be completed within the schedule time allowed by the contract documents. The following limitations apply to the construction sequence for work under this contract:

- A. Miscellaneous inert debris currently located at the TPA Landfill shall be consolidated in the center of the landfill for disposal beneath the constructed soil cover.
- B. Access to and traffic flow through adjacent roadways shall be maintained throughout construction including Plant gravel and dirt roadways.
- C. Site erosion and sediment control structures shall be constructed prior to initiation of full-scale site disturbance.
- D. Construction activity shall be limited to 6 days a week and 12 hours a day during daylight hours. Work shall not be conducted overnight, unless written approval is provided by the Dupont Representative.

#### **1.8 WORK BY OTHERS**

Health and safety procedures to be adhered to during project execution have been prepared by DuPont and are included in attached documentation. The Contractor shall be responsible for compliance with these procedures.

Verification borings and surveying will be completed by the Dupont Representative to ensure adequate soil cover. In addition, a final survey will be completed by the Dupont Representative to ensure grading specifications have been met by the Contractor and to determine payment for placed materials.

### **PART 2 – MATERIALS**

NOT APPLICABLE.

### **PART 3 – EXECUTION**

NOT APPLICABLE.

**[END OF SECTION]**

**DIVISION 1 – GENERAL REQUIREMENTS**  
**SECTION 0102**  
**MEASUREMENT AND PAYMENT**

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**PART 1 – GENERAL**

**1.1 SCOPE**

- A. All contract prices included on the Bid Form will be full compensation for all labor, materials, tools, equipment and incidentals necessary to complete the Work as shown on the Drawings and specified in the Contract Documents to be performed under this Contract.
- B. The items listed below refer to and are the same pay items listed in the Bid Form. They constitute all of the pay items necessary for the completion of the Work.
- C. Each lump sum and unit bid price will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's indirects, including, but not limited to, all applicable taxes, insurance fees, management and site supervision, overhead and profit for each separately identified item. In addition, each lump sum and unit bid price shall include costs for appurtenant work that is not included in the pay items but required for project execution. Such work shall include, but is not limited to, permits and associated work products; implementation and updating of any special procedures required by the Contractor to complete the work; photographs; Project Safety Analysis (PSA); appropriate medical surveillance program including all required physical examinations; health and safety including a dedicated health and safety site representative (can also serve a supervisor role, but can not be involved in operations); PPE; daily "tailgate meetings"; dust control; odor control; vector control; project meetings and progress reporting; construction scheduling and schedules; work plan/shop drawings/ certification/ test/sample submittals; maintaining and preparing project record documents and drawings; cleanup; and collection and disposal of sanitary sewage wastes.
- D. Restoration of the project area is not a separate pay item, but is considered to be an integral part of the Work under the Contract, and all contract bid prices include the cost of restoration necessitated by the work related to that bid item. Restoration includes existing structures and property, drainage ditches, ground areas, bridges that are altered, removed, or damaged during construction. Cleanup is an integral part of restoration.
- E. Measurement and Payment for work directed by DuPont to be performed beyond the limits specified herein or shown on the Contract Drawings shall be made at the unit bid prices identified in the Bid Form, as applicable.

- F. Submit to DuPont a Schedule of Values allocated to the various portions of the Work as listed in the Bid Form, within 15 days after the effective date of the Agreement.
- G. Upon request of DuPont, support the values with data, which will substantiate their correctness.
- H. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

## **1.2 PAY ITEMS**

### **A. Item 1 - Mobilization/Demobilization**

Work Included: This work includes, but is not limited to; transportation and supply of equipment to and from the site; setup of construction operations; constructing staging areas and facilities; installing, equipping and maintaining all field office trailers (as utilized by the Contractor), site security, safety equipment and clothing, and utility services.

Measurement: Lump Sum.

Payment: The payment shall be based on the completion of the mobilization and demobilization as determined by the Dupont Representative with fifty (50) percent of the payment to follow completion and acceptance of the mobilization and fifty (50) percent to follow the completion and acceptance of the demobilization.

### **B. Item 2 – Site Preparation**

Work Included: This work includes upgrading the secondary roads as necessary, clearing the site of all vegetation as necessary to construct the cover, and preparation of the site for Construction prior to earthwork operations including completing a construction layout grid/survey.

Measurement: Lump Sum.

Payment: The payment shall be made when the work is completed and accepted by the Dupont Representative.

### **C. Item 3 – Erosion and Sediment Control and Maintenance**

Work Included: Work includes, but is not limited to, all labor, equipment, and materials necessary for the construction of temporary and permanent erosion and sediment control measures as detailed in the Erosion and Sedimentation Control Plan and including the maintenance of these control measures through Final

Acceptance of Work. Work also includes seeding and mulching of areas disturbed during construction, which do not require soil amendment. Soil amendment, seeding and mulching of the TPA Landfill cover and Sediment Basin are not included in this item, but are included under separate bid items elsewhere.

Measurement: Lump sum.

Payment: Sixty (60) percent of the payment shall be made when the erosion and sedimentation control measures initial installation has been completed as determined by the Dupont Representative. The remaining 40 percent of the payment shall be made upon Final Acceptance of the Work.

**D. Item 4 – Cover Soil**

Work Included: The work includes all permits and associated work products, royalties, taxes, equipment, materials, and labor required for physical testing, accessing, clearing, grading, hauling, staging, handling, placing, and compacting on-site cover soil in accordance with the Specifications and Drawings.

Measurement: Unit price per cubic yard.

Payment: The payment shall be made on a cubic yard basis, as determined by a survey of the final grades by the Dupont Representative. Final payment shall be made based on a survey of final grades compared to existing grades.

**E. Item 5 – Traffic Control and Haul Road Maintenance and Restoration**

Work Included: This work includes all provisions (labor, equipment, and materials) necessary for traffic control and haul road maintenance including, but not limited to: plant haul road maintenance; management of all truck traffic on plant haul roads; and management of the unloading of trucks. The Contractor shall maintain a safe and usable plant haul road surface during construction activities. Upon completion of construction activities, DuPont will independently restore the plant haul road to pre-construction conditions. The Contractor shall provide adequate, stable, and safe unloading areas. The Contractor shall also provide adequate spotters to manage all truck traffic during transportation and unloading while on-site.

Measurement: Lump Sum.

Payment: The payment shall be made on a progress basis, based on the percentage of work completed as determined by the Dupont Representative.

**F. Item 6 – Gravel Road Construction**

Work Included: This work includes all provisions (labor, equipment, and materials) necessary for replacement and enhancement of the dirt/gravel road that traverses the north side of the landfill. Upon completion of placement and

compaction of the landfill cover over the existing dirt/gravel road, the Contractor shall construct a new gravel roadway as detailed in the specification entitled "Gravel Roadway Construction". This road will consist of an aggregate base course compacted to a minimum thickness of 3 inches.

Measurement: Lump Sum.

Payment: The payment shall be made on a progress basis, based on the percentage of work completed as determined by the Dupont Representative.

#### **G. Item 7 – Soil Amendment, Seeding and Mulching**

Work Included: This work includes all labor, equipment, and material necessary to perform soil amendment, seed, and mulch the TPA landfill surface, and other disturbance areas and establish a stand of grass in accordance with the Specifications.

Measurement: Unit price per acre.

Payment: The payment shall be on a per acre basis, as determined by survey as completed by the Dupont Representative.

#### **H. Item 8 – Contractor Quality Control**

Work Included: This work includes all labor, equipment, and materials required to prepare and implement the Contractor's quality control plan to monitor and control the quality of construction throughout the life of the project.

Measurement: Lump Sum.

Payment: The payment shall be made on a progress basis, based on the percentage of work completed as determined by the Dupont Representative.

### **1.3 FORM AND CONTENT OF SCHEDULE OF VALUES**

- A.** Type schedule of values on an 8½" by 11" or 8½" by 14" white paper; Contractor's standard forms and automated printout will be considered for approval by DuPont upon Contractor's request. Identify the schedule with:

1. Title of Project and Location
2. Engineer and Project Number
3. Name and Address of Contractor
4. Contract Designation
5. Date of Submission

An example schedule of values is provided with this Specification.

- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. At a minimum, the component parts listed in the Bid Form shall be used.
- C. Identify each line item with the number and title of the respective major section of the Specifications.
- D. For each major line item, list sub-values of major products or operations under the item.
- E. For the various portions of the Work:
  - 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
  - 2. No payment shall be made for stored materials.
  - 3. The sum of all values listed in the schedule shall equal the Total Contract Sum.

**1.4 SUBSCHEDULE OF UNIT MATERIAL VALUES**

- A. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
- B. The unit quantity for bulk materials shall include an allowance for normal waste.
- C. The unit values for the materials shall be broken into:
  - 1. Cost of the material, delivered and unloaded at the site, with taxes paid.
  - 2. Copies of the invoices for component material shall be included with the payment request in which the material first appears.
  - 3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.
- D. The installed input value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

**PART 2 - MATERIALS**

NOT APPLICABLE.

**PART 3 - EXECUTION**

NOT APPLICABLE.

**[END OF SECTION]**

**DIVISION 1 - GENERAL REQUIREMENTS**  
**SECTION 0103**  
**FIELD ENGINEERING**

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**PART 1 - GENERAL**

**1.1 SCOPE**

- A. The contractor shall provide certified survey work during execution of the project to ensure adequate cover, appropriate sloping, and erosion and sedimentation control measures placement.
- B. The Contractor shall provide civil, structural, or other professional engineering services specified or required to execute the Contractor's construction methods.
- C. The Dupont Representative shall be responsible for providing certified survey work required to complete a final survey of the grade and areas disturbed for payment purposes.
- D. The Dupont Representative shall complete verification borings upon completion of final grade to ensure adequate (24-inches) soil cover.

**1.2 RELATED WORK**

The following work specified herein is, or may be, related to Field Engineering:

- A. Section 0101: Summary of Work.
- B. Section 0102: Measurement and Payment.

**1.3 QUALIFICATIONS OF SURVEYOR**

All surveyors utilized on this project shall be licensed in the State of North Carolina and meet the project specific health and safety requirements.

**1.4 SUBMITTALS**

- A. The Contractor shall submit documentation to verify the accuracy of field engineering work during project Progress Meetings, and at any time per the request of the Dupont Representative or Engineer.

**PART 2 - MATERIALS**

NOT APPLICABLE

**PART 3 - EXECUTION**

### **3.1 SURVEY REFERENCE POINTS**

- A.** References shall be set and measurements taken using standard accepted surveying methods and equipment.
- B.** The Contractor shall locate and protect control points prior to starting the work and preserve all permanent reference points during construction. The Contractor shall report to the Dupont Representative and Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or interference from construction activities. The Contractor shall not make changes or relocations without prior written notice to the Engineer. The Contractor shall immediately notify the Dupont Representative when a project control points becomes lost or destroyed.

### **3.2 PROJECT SURVEY REQUIREMENTS**

- A.** The Contractor shall make the following surveys of the site:
  - 1. Construction areas prior to initiation of construction activities (including topography). The Contractor may utilize existing site survey information indicated in the Drawings rather than completing this initial survey.
  - 2. Surveys, as necessary, during project progress to ensure cover material is being placed as specified herein.
  - 3. Surveys, as necessary, to ensure erosion control measures are being constructed as specified in the Erosion and Sedimentation Control Plan.
- B.** The Contractor shall lay out his work and shall make all measurements in connection with the project coordinate system indicated on the drawings. The Contractor shall furnish all stakes, templates, platforms, equipment, tools, and materials and labor as may be required in laying out any part of the work. The Contractor shall execute the work to the lines and grades established or indicated and shall maintain and preserve all stakes and other control points until authorized to remove them by the Dupont Representative.
- C.** The Dupont Representative will utilize Donaldson Garret & Associates to survey the TPA Landfill construction areas following the installation of cover soil. The Engineer will use computer software to calculate in-place volumes upon completion of the work. The Engineer shall utilize existing site survey information indicated in the Construction Drawings as the baseline for volume calculations. All information associated with computer-generated quantities shall be provided to the Contractor to prove the accuracy of the in-place volumes.

### **3.3 VERIFICATION BORINGS**

The Dupont Representative shall complete verification borings upon completion of final grade to ensure adequate (24-inches) soil cover. These borings will be completed with a hand auger on a 50-foot grid pattern across the extents of the

landfill. The auger shall be lowered until landfill materials are encountered or a maximum of 3 feet bgs.

**[END OF SECTION]**

**DIVISION 1 - GENERAL REQUIREMENTS**  
**SECTION 0104**  
**CONTRACTOR QUALITY CONTROL**

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**PART 1 – GENERAL**

**1.1 CODES, RULES, PERMITS AND FEES**

**A. General**

1. All construction shall conform to the current editions of the codes, regulations, specifications and standards in Paragraph: **Standards**, as well as applicable federal, state and local laws, regulations, codes, and ordinances.
2. The Contractor shall give all necessary notices, obtain all permits (except as otherwise noted herein) and pay all governmental taxes, fees, and other costs in connection with the work, file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction, obtain all required Certificates of Inspection and Approval for the work and deliver same to the Dupont Representative, except as otherwise noted herein.
3. Contractor Quality Control (CQC). The Contractor shall establish and maintain an effective Quality Control Program. The Contractor shall develop a Contractor Quality Control (CQC) Plan. The Contractor shall submit the CQC Plan to the Dupont Representative within 10 working days of Notice of Award.
4. Sufficient inspections and tests of all items of work, including that of subcontractors, to ensure conformance to applicable Drawings and Specifications and with respect to the quality of materials, workmanship, construction, functional performance, and identification shall be performed as necessary. Contractors shall furnish qualified personnel, appropriate facilities, instruments, and testing devices necessary for the performance of the QC function. The controls shall be adequate to cover all construction operations both on and off site, shall be linked to the proposed construction sequence and shall be coordinated by the Contractor's QC personnel.

**B. Included Items**

The Contractors shall include in the work, without extra cost to the Owner, all labor, materials, services, apparatus, and drawings required to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on the Drawings, and/or specified.

**1.2 RELATED WORK**

The following work specified herein is, or may be, related to the performance of quality control (QC) by the Contractor:

- A. Section 0101: Summary of Work.**

B. Section 0202: Earthwork.

D. Section 0203: Seeding.

### 1.3 SUBMITTALS

The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

### 1.4 STANDARDS

- A. All references to standards in the Contract Documents shall always imply the latest issue in effect, including all amendments and errata at the time bids are taken, of said standards unless otherwise stated.
- B. Abbreviations for various organizations that may be used in these Specifications are as follows:

<u>Abbreviation</u>	<u>Organization</u>
AAN	American Association of Nurseries
AASHTO	American Association of State Highway and Transportation Officials
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
ACS	American Chemical Society
AGA	American Gas Association
AIChE	American Institute of Chemical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials Code Administration
CRSI	Concrete Reinforcing Steel Institute
DOT	Department of Transportation
FS	Federal Specification
IEEE	Institute of Electrical and Electronic Engineers
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NBFU	National Bureau of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association

NFPA	National Fire Protection Association
NICET	National Institute of Certification of Engineering Technicians
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Act of 1970
UL	Underwriters' Laboratories
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey

### 1.5 VERIFICATION OF DIMENSIONS

Contractors shall be responsible for field verification, as necessary, of all dimensions of existing facilities and other items that are shown on the Drawings.

### 1.6 TESTING OF MATERIALS

- A. The Dupont Representative reserves the right to perform tests on materials and equipment.
- B. The Contractor shall identify the source of cover materials upon submittal of the bid. These cover materials will be tested by the Dupont Representative at the source as described in **Section 0202: Earthwork** to ensure the materials are free of environmental contamination.
- C. Contractors shall submit materials for testing, taking into consideration when the materials will be incorporated in the work and the capabilities and capacities of the testing laboratory.

## PART 2 – MATERIALS

NOT APPLICABLE.

## PART 3 – EXECUTION

### 3.1 GENERAL

The Contractor is responsible for QC and shall establish and maintain an effective QC system. The QC system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.

### **3.2 QUALITY CONTROL PLAN**

#### **A. General**

The Contractor shall furnish for review by the Dupont Representative, not later than 10 working days after Notice of Award, the CQC Plan. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. Construction will be permitted to begin only after acceptance of the CQC Plan.

#### **B. Acceptance of Plan**

Acceptance of the CQC Plan is required prior to the start of construction. Acceptance is conditional and will be based on satisfactory performance during the construction. The Dupont Representative reserves the right to require the Contractor to make changes in his CQC plan and operations including removal or addition of personnel, as necessary, to obtain the quality specified at no additional costs to the Owner.

#### **C. Notification of Changes**

After acceptance of the CQC plan, the Contractor shall notify the Dupont Representative in writing a minimum of 5 working days prior to any proposed change. Proposed changes are subject to acceptance by the Dupont Representative.

### **3.3 COORDINATION MEETING**

The Contractor together with the Contractor's QC Contractor shall meet with the Dupont Representative and discuss the QC system after the Preconstruction Conference, before the start of construction, and prior to acceptance of the CQC Plan by the Dupont Representative. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of the Contractor's management and QC Contractor with the Dupont Representative's Quality Assurance.

### **3.4 QUALITY CONTROL ORGANIZATION**

#### **A. QC Supervisor**

The Contractor shall identify an individual within their organization at the site of the work who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. This QC Supervisor shall be on the site a minimum of 1 day per week and attend the pre-construction meeting and all construction progress meetings. The QC Supervisor shall have a minimum of 5 years construction experience on earthwork projects similar to this contract.

## **B. QC Staff**

Following are the minimum requirements for the QC staff. The QC staff will be at the site of work at all times during construction activities and they will have complete authority to take any action necessary to ensure compliance with the contract. Any member of the QC staff shall have a minimum of 2 years construction experience on earthwork projects similar to this contract. These minimum requirements will not necessarily assure an adequate staff to meet the QC requirements at all times during construction. The actual strength of the QC staff may vary during any specific work period to cover the needs of the work period. When necessary for a proper QC organization, the Contractor will add additional staff. This listing of minimum staff in no way relieves the Contractor of meeting the basic requirements of quality construction in accordance with contract requirements. All QC staff members shall be subject to acceptance by the Dupont Representative. A staff shall be maintained under the direction of the QC Supervisor to perform all QC activities. The staff must be of sufficient size to ensure adequate QC coverage of all work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities. The QC plan will clearly state the duties and responsibilities of each staff member.

## **C. Organizational Changes**

The Contractor shall obtain Dupont Representative's written acceptance before replacing any member of the QC staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

## **3.5 CONTROL**

The CQC is the means by which the Contractor assures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and will be linked to the proposed construction sequence.

## **3.6 TESTS**

### **A. Testing Procedure**

1. The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. Table 1 (attached) provides a summary of the minimum QC testing requirements. Table 1 shall not supersede the requirements of each specification and is provided solely to assist the Contractor in preparing the CQC Plan and understanding the general scope of QC testing. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of an offsite industry-recognized testing laboratory. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing

the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.

**B. Testing Laboratories**

1. **Capability Check.** The Dupont Representative reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques.
2. **Capability Recheck.** If the selected laboratory fails the capability check, the Contractor will be assessed the actual cost for the recheck to reimburse the Owner for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

**3.7 COMPLETION INSPECTIONS**

**A. Pre-Final Inspection**

The Contractor's superintendent and QC Supervisor, and other primary management person and the Dupont Representative will be in attendance at this inspection. The pre-final inspection will be formally scheduled by the Dupont Representative based upon written notice from the Contractor. This notice will be given to the Dupont Representative at least 3 working days prior to the pre-final inspection and must include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining contract work, will be complete and acceptable by the date scheduled for the pre-final inspection. Failure of the Contractor to have all contract work completed and accepted prior to this inspection will be cause for the Dupont Representative to bill the Contractor for the Owner's additional inspection costs. At this inspection the Dupont Representative will develop a specific list of incomplete and/or unacceptable work performed under the contract and will furnish this list to the Contractor. Failure of the Dupont Representative to detect and list all incomplete and/or unacceptable work during this inspection will not relieve the Contractor from performing all work required by and in accordance with the Contract Documents.

**B. Final Acceptance Inspection**

The Contractor's QC personnel, his superintendent and other primary management person and the Dupont Representative will be in attendance at this inspection. The final acceptance inspection will be formally scheduled by the Dupont Representative based upon written notice from the Contractor. This notice will be given to the Dupont Representative at least 3 working days prior to the final acceptance inspection and must include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will

be cause for the Dupont Representative to bill the Contractor for the Owner's additional inspection costs.

### **3.8 DOCUMENTATION**

- A.** The Contractor shall maintain current records of QC operations, activities, and tests performed, including the work of subcontractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required QC activities and/or tests have been performed.
  
- B.** These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and 2 copies of these records in report form shall be furnished to the Dupont Representative on the first work day following the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, 2 reports shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the QC Supervisor. The report from the QC Supervisor shall include copies of test reports and copies of reports prepared by all QC personnel.

### **3.9 ENFORCEMENT**

The Contractor shall stop work on any item or feature, pending satisfactory correction of any deficiency noted by his QC staff or by the Dupont Representative. Construction shall not proceed upon any feature of work containing incorrect work. Notations on QC reports will not be acceptable as a substitution for other written reports by the Contractor, if required.

### **3.10 NOTIFICATION OF NONCOMPLIANCE**

The Dupont Representative will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor at the site of the work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Dupont Representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

**[END OF SECTION]**

**TABLE I**  
**SUMMARY TABLE OF SOIL TESTING**

COMPONENT	REQUIRED TEST	MINIMUM QC FREQUENCY	ACCEPTANCE CRITERIA
Amended Cover Soil	Organic Content (ASTM D 2974)	Constr Test: 1 every 3,000 cy	3%<org. content<20%
	pH	Constr Test: 1 every 3,000 cy	6<pH<7.5
	Visual Field Classification (ASTM D 2488)	Constr Test: 1 per 100 ft centers per lift	Maximum particle size of 3 inches
	Grade Verification	Vertical elevations on a 50-foot grid and at all slope changes	3%<slope<33%

**Cape Fear TPA Landfill  
Soil Cover Construction  
Final Design**

**List of Specifications (cont.)**

**Division 2 - Site Work**

- 0201 - Site Preparation
- 0202 - Earthwork
- 0203 - Seeding

**DIVISION 2 - SITE WORK  
SECTION 0201  
SITE PREPARATION**

---

**PART 1 – GENERAL**

**1.1 SCOPE**

The work discussed in this section shall consist of all activities necessary to prepare the site for full-scale earthmoving operations including, but not limited to, clearing, grubbing, utility identification and location, and installation of erosion and sedimentation controls.

**1.2 RELATED WORK**

The following work specified herein is, or may be, related to site preparation:

- A. Section 0101: Summary of Work.
- B. Section 0102: Measurement and Payment.
- C. Section 0202: Earthwork.
- D. Section 0203: Seeding.
- E. Erosion and Sedimentation Control Plan

**1.3 DEFINITIONS**

**A. Clearing**

Clearing, where required to install all project features, shall consist of the felling, trimming, and cutting of trees into sections and the disposal of trees, vegetation, downed timber, snags, brush and debris. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work. Grubbing shall be performed where required to implement TPA Landfill soil cover construction.

**B. Grubbing**

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter and matted roots. Grubbing shall be performed where required to implement TPA Landfill soil cover construction.

**PART 2 - MATERIALS**

NOT APPLICABLE.

## **PART 3 – EXECUTION**

### **3.1 CLEARING**

Trees, shrubs, vegetation, downed timber, snags, brush, and debris in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees and vegetation to be left standing shall be protected from damage due to clearing, grubbing, and construction operations by the erection of barriers or by such other means as required. Existing utilities must be identified, located, and protected by the Contractor.

### **3.2 GRUBBING**

Material to be grubbed together with logs and other organic debris not suitable for foundation purposes shall be removed. Depressions made by grubbing shall be filled with suitable structural fill and compacted as defined in SECTION: EARTHWORK to make the surface conform with the original adjacent surface of the ground.

### **3.3 DISPOSAL OF CLEARED AND GRUBBED MATERIAL**

All felled trees (less than 8-inch diameter), shrubs, downed timber, snags, brush, stumps, roots, logs, rotten wood, and other vegetative refuse shall be chipped or shredded. Chipped and shredded, cleared and grubbed material shall be stockpiled on-site in a location designated by the Dupont Representative. Chipped material may be used as mulch in areas approved by the Dupont Representative. Under no circumstances shall the Contractor or his subcontractors remove from the site or sell grubbed material or material taken from the clearing areas. Felled trees (greater than 8-inch diameter) shall be disposed of at an appropriate off-site location.

### **3.4 PREPARE EXISTING SURFACE FOR SOIL COVER PLACEMENT**

The existing surface of the landfill shall be properly scarified and graded in preparation for placement of cover soils.

### **3.5 EROSION AND SEDIMENTATION CONTROLS**

Prior to any earth disturbing activity, the Contractor shall install erosion and sedimentation control measures in accordance with the attached Erosion and Sedimentation Control Plan (Appendix B, Sheet No. E-1 through E-3). Erosion and sedimentation control measures shall include those described in the Erosion and Sedimentation Control Plan.

**[END OF SECTION]**

**DIVISION 2 - SITE WORK  
SECTION 0202  
EARTHWORK**

**PART 1 - GENERAL**

**1.1 SCOPE**

**A. General**

The work covered by this section consists of furnishing all labor and equipment, and performing all earthwork necessary to place fill and construct the soil cover in accordance with the lines, grades, and dimensions shown on the Drawings and in accordance with these Specifications. The Contractor shall be aware that any excavation into the existing ground surface at the TPA Landfill Area could potentially result in uncovering previously disposed of TPA and/or other landfilled material.

**1.2 RELATED WORK**

The following work specified herein is, or may be, related to earthwork:

- A. Section 0101: Summary of Work.
- B. Section 0102: Measurement and Payment.
- C. Section 0103: Field Engineering.
- D. Section 0104: Contractor Quality Control.
- E. Section 0201: Site Preparation.
- F. Section 0203: Seeding.
- G. Erosion and Sedimentation Control Plan.

**1.3 REFERENCES**

The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM)

ASTM D 422	Method for Particle-Size Analysis of Soils.
ASTM D 2487	Classification of Soils for Engineering Purposes.
ASTM D 2488	Practice for Description and Identification of Soils (Visual-Manual Procedure).

**1.4 SUBMITTALS**

- A. The Contractor shall submit the results of all testing performed in connection with quality control requirements of this Specification and those described in the following sections to the Dupont Representative. The source and sufficient

evidence of appropriateness of cover materials shall be identified and submitted with the bid.

## **PART 2 – MATERIALS**

### **2.1 COVER SOIL**

Final cover material will be obtained from an off-site location to be chosen by the construction contractor. This material will consist of suitable cover material that is reasonably free of rocks larger than 3 inch in diameter, toxic matter, trash, plants, weeds, and roots. Only natural earth materials may be used as borrow material. Soils shall be classified according to ASTM D 2487 and shall not be classified as the following: OL (organic clay or organic silt); CH (fat clay); MH (elastic silt); OH (organic clay or organic silt); PT (peat). Soil classifications including SW, SP, SC, SM, ML, and CL are generally considered acceptable. The Contractor will provide proof of soil classification to the Dupont Representative for approval within 10 days of award of this contract. It is estimated that 17,000 to 20,000 in-place cubic yards of compacted soil will be required.

The Contractor shall provide appropriate certification to the Dupont Representative that all materials are obtained from the identified borrow source and that these materials are free of environmental contaminants. This certification shall be provided to the Dupont Representative prior to mobilization of the cover materials to the site.

To ensure the cover materials are free of contaminants, the off-site borrow source identified by the Contractor shall be inspected by the Dupont Representative, and the materials shall be tested by the Dupont Representative for the following parameters:

- Volatile organic compounds by SW-846 Method 8260B
- Semivolatile organic compounds by SW-846 Method 8270C
- RCRA Metals (i.e., arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by SW-846 Methods 6010B and 7471A
- Polychlorinated biphenyls (i.e., PCB 1016, 1221, 1232, 1242, 1254, and 1260) by SW-846 Method 8082

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

The work to be performed under this Section shall be in accordance with the Drawings and as specified herein. The work under this Section shall include, but not limited to installation of earthwork related erosion control measures as detailed in the Erosion and Sedimentation Control Plan and grading of the TPA Landfill.

**A. Protection of Existing Utilities Structures**

Existing utility lines that are to be retained, the locations of which are made known to the Contractor prior to excavation, shall be protected from damage during excavation and backfilling. If damaged during any construction activity, the existing utilities shall be repaired by the Contractor at no cost to DuPont. In the event that the Contractor damages any existing utility lines that are not shown, or the locations of which have not been made known, the Contractor shall immediately report the damage to the Dupont Representative. If determined that repairs are to be made by the Contractor, such repairs will be made and the contract modified. When utility lines that are to be removed or relocated are encountered within the area of operations, the Contractor shall coordinate removal or relocation with all affected parties and shall acquire all necessary permits.

**B. Landfill Structures**

Landfill structures including, but not limited to, existing monitoring wells shall be carefully maintained and protected during placement of fill. If these structures are damaged during the placement of fill, the Contractor shall repair any damaged structure to the approval of the Dupont Representative at no additional cost to DuPont.

**C. A "Pass" Defined**

A complete pass shall consist of the coverage of the entire lift to be compacted with the roller specified. The equipment shall be operated so that the strip being traversed by the roller shall overlap the rolled adjacent strip not less than 1 foot. Dumping, spreading, sprinkling, and compacting may be performed at the same time at different points along a section when there is sufficient area to permit these operations to proceed simultaneously.

**D. Maintain Drainage**

During construction, embankments and excavations shall be kept shaped and drained. Ditches along the cap shall be maintained in such a manner as to drain effectively at all times. Where ruts occur in the fill, the fill shall be brought to grade, reshaped if required, and recompacted prior to placing additional fill. The storage or stockpiling of materials on the cap will not be permitted.

**E. Finished Surface**

All areas covered by the project, including excavated and filled sections and adjacent transition areas, shall be uniformly smooth graded. The finished surfaces shall be reasonably smooth, compacted, and free from irregular surface changes, vegetation (except topsoil), and debris. The degree of finish shall be ordinarily obtainable from either blade-grader or scraper operations, except as otherwise specified. The finished surface shall be not more than 0.20 foot above or below the established grade or approved cross section and shall be free of depressed areas where water would pond. All areas shall be finished so as to drain readily.

**F. Haul Roads**

Existing and new haul roads shall be enhanced or located, designed and constructed by the Contractor to maintain the intended traffic, to be free draining, and shall be maintained in good condition throughout their use. Haul roads shall not be constructed by cutting into the existing ground surface.

**G. Protection of Existing Monitoring Wells**

Existing monitoring wells are present throughout the site. Any monitoring wells or other structures not shown on the Drawings that are located during construction activities should be reported to the Dupont Representative for evaluation. The existing monitoring wells and any other monitoring wells encountered should not be disturbed in any manner.

**3.2 COVER SOIL PLACEMENT – TPA LANDFILL**

**A. General**

All surface vegetation, such as brush, heavy growth of grass, and all decayed vegetative matter within the area upon which fill is to be placed shall be handled in accordance with SECTION: SITE PREPARATION, prior to fill placement.

**B. Placement**

The cover soil shall be placed at the location and to the lines and grades indicated on the Drawings. Cover soil shall be placed in single lift in order to produce a maximum compacted lift thickness of 12 inches (or less as required in the Drawings). Each lift shall be spread uniformly on the previously compacted surface; broken up; moistened or aerated as necessary.

**C. Compaction**

Each lift of cover soil fill (for areas which exceed 1-foot of new soil thickness) shall be compacted with a minimum of 4 complete passes of a Caterpillar CS-563D vibratory soil compactor or approved equal. For areas, which the installed cover soil will not exceed 1-foot, material will be tracked in place with a minimum of 4 complete passes.

**3.5 COVER SOIL AMENDMENT – TPA LANDFILL**

**A. General**

All ground areas disturbed by construction under this contract, unless otherwise specified, shall be amended to promote vegetative growth. Previously constructed grades shall be repaired, if necessary, so that the areas to be amended shall conform to the section indicated upon completion of the required amendment. The work shall be performed only during periods when beneficial results are likely to be obtained.

**B. Amendment Procedures**

The upper six inches of all disturbed areas within the TPA Landfill construction area shall be amended, if necessary, with an approved organic material (i.e. topsoil, peat moss, manure, or other amendment) to provide a vegetative layer that can produce heavy growths of native grasses or other vegetation. All areas to be amended shall be reasonably free from underlying subsoil, clay lumps, objectionable weeds, rocks, litter, brush, matted roots, toxic substances or any material that might be harmful to plant growth or be a hindrance to grading, planting or maintenance operations. Soils from ditch bottoms, drained ponds, or eroded areas (handled when too wet or soggy) are not acceptable. Amended soil shall have a final pH value of between 6 and 7.5. If the pH is not within the 6 to 7.5 range the Contractor shall add the material required to achieve that pH balance. Amended soil shall contain from 3 to 20 percent organic matter as determined by loss on ignition in accordance with ASTM D 2974. If the organic matter is not within the 3 to 20 range the Contractor shall add sufficient amendments to achieve the required organic content.

### **3.6 QUALITY CONTROL TESTING**

#### **A. General**

1. **Sampling and Testing:** All quality control sampling and testing shall be performed by the Contractor at the Contractor's expense and as specified herein. Soil testing shall be provided by the Contractor's independent testing laboratory. The Dupont Representative shall have the option to select test locations; otherwise, test locations must be approved by the Dupont Representative. The Dupont Representative will require additional tests beyond the minimum required to be performed whenever materials or construction are questionable. The Contractor should note that quality assurance tests for acceptance may be made by and at the expense of DuPont. The Contractor, however, shall not depend on quality assurance tests for his/her control of operations. Discrepancies between test results obtained by the Contractor and the Dupont Representative will be resolved to the Dupont Representative's satisfaction prior to the Contractor performing any further work. Deficiencies in construction shall be corrected by the Contractor at no additional costs to DuPont.
2. **As-Built Surveys:** The Dupont Representative shall complete and submit as-built surveys of the completed TPA Landfill soil cover (amended cover soil) surface to the Contractor for review. The Dupont Representative shall utilize this survey to calculate in-place volumes to determine payment to the Contractor in accordance with the requirements described in SECTION: FIELD ENGINEERING.
3. **Advanced Testing:** The Contractor may choose to complete appropriate Advance testing in advance of delivery from the off-site location to establish borrow source properties and amendment requirements and to establish control parameters for compaction.
4. **Construction Testing:** Construction testing shall be performed during fill placement to verify that the representative cover material is meeting the requirements of this Specification.

**B. Construction Testing Protocols**

The following testing shall be performed for the in-place cover materials:

1. Construction Testing to be completed by the Contractor shall include Organic Content (ASTM D 2974), pH, and Visual Field Classification (ASTM D 2488). This testing shall be done at a rate specified in Table 1 of SECTION: CONTRACTOR QUALITY CONTROL. Samples shall be representative of the material placed and should be taken from the top 6-inches of in-place cover materials. Copies of all Construction Testing shall be furnished to the Dupont Representative upon completion.
2. Grade Verification: The Contractor shall monitor the depth of the compacted layers during placement and verify that the required grades are reached. Final Grade verification shall be performed by the Dupont Representative as indicated and at the rate specified in Table 1 of SECTION: CONTRACTOR QUALITY CONTROL.

**[END OF SECTION]**

**DIVISION 2 - SITE WORK**  
**SECTION 0203**  
**SEEDING**

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**PART 1 – GENERAL**

**1.1 SCOPE**

The work covered by this section consists of furnishing all materials, labor and equipment, and performing all operations necessary to establish and, for a period of one year after written approval of the completed soil cover construction by DuPont, maintain a satisfactory stand of grass over all disturbed areas in accordance with these Technical Specifications.

- A. Permanent seeding shall include the seedbed preparation, seeding, and the establishment of perennial vegetation used to permanently stabilize soil, minimize sediment pollution, reduce runoff by promoting infiltration, and provide stormwater quality benefits offered by dense vegetation.

**1.2 RELATED WORK**

The following work specified herein is, or may be, related to seeding:

- A. Section 0101: Summary of Work.
- B. Section 0102: Measurement and Payment.
- C. Section 0202: Earthwork.
- D. Erosion and Sedimentation Control Plan

**1.3 REFERENCES**

The publication listed below forms a part of this specification to the extent referenced. The publication is referred to in the text by the basic designation only.

State of North Carolina – Sedimentation Control Commission – *Erosion and Sediment Control Planning and Design Manual (Manual)*, September 1, 1988.

**1.4 SUBMITTALS**

The Contractor shall submit the following to the Dupont Representative as indicated.

**A. Seed Certification**

The Contractor shall submit for review certificates or certifying tags indicating seed mixture, seed purity percentage, seed germination percentage and weed seed content percentage to certify conformity with the specifications.

**PART 2 – MATERIALS**

**2.1 SEEDING MATERIALS**

All seeding related materials shall be as specified in Section 6.11 of the *Manual*. State certified seed of the latest season's crop shall be provided in the original sealed packages bearing the producers guaranteed analysis for percentages of germination, pure seed, inert matter, and weed seed. Labels shall be in accordance with the state's requirements. Bulk quantities of seed shall be labeled as described above. Weed seed shall not exceed 1 percent by weight of the total mixture. Wet, moldy or otherwise damaged seed shall be rejected.

The mixing of seed shall be performed by the seed supplier prior to delivery on site. All legume seed shall be inoculated with the required bacterial culture prior to delivery to the site.

**A. Permanent Seed Mixture**

The Contractor shall utilize seed mix in accordance with Table 6.11b (and the required seeding dates) of the *Manual*. Seeding mix No. 1CP or 5CP shall be utilized as appropriate to correspond with the off-site borrow material. All elements of the 1CP or 5CP that are specified in the *Manual* shall apply, with the following exceptions:

For 1CP – Replace “refertilize in the second year,” with “refertilize before the end of 1 year.”. Delete the next sentence.

For 5CP – Delete the “Maintenance” section

**2.2 SOIL AMENDMENTS**

Soil amendments shall be administered, if necessary, and as detailed in Section 6.11 of the *Manual*.

**PART 3 - EXECUTION**

**3.1 GENERAL**

All seeding shall be conducted in accordance with Section 6.11 of the *Manual*.

**A. Soil Amendments**

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk.

**B. Inspection**

The Contractor shall inspect seed as it is delivered to the job site to verify conformity to type and quality of seed specified in accordance with Paragraph: Materials. The Contractor shall inspect soil amendments to verify conformance to specified requirements. Unacceptable materials shall be removed from the job site.

**C. Storage**

Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment materials shall not be stored with other landscape materials.

**D. Material Handling**

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

**3.2 PREPARATION OF SEEDBED**

The Contractor shall place cover soil and establish finish grades in accordance with the SECTION: EARTHWORK and Section 6.11 of the *Manual*.

**3.3 PLANTING SEED**

Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rains, traffic, or other cause shall be reworked to restore the ground condition previously specified. Seed shall be planted at the rate specified in Section 6.11 of the *Manual*.

**3.4 MULCHING**

Mulching shall be performed by the Contractor on the same day as planting seed and conform to Section 6.11 of the *Manual*.

**3.5 MAINTENANCE**

Maintenance operations shall begin immediately after seeding a given area and shall continue through construction. The Contractor shall keep seed continually moist for proper germination and water thereafter as necessary to prevent drying out or burning. The Contractor shall re-seed areas not showing a prompt catch of grass, correct depressions and irregularities and re-seed; repeat until complete (100%) coverage is obtained.

**[END OF SECTION]**

# GRAVEL ROADWAY CONSTRUCTION

## 1 DESCRIPTION.

Perform all work covered by this section to construct a gravel road traversing the north section of the TPA landfill. Upon completion of the placement and compaction of cover material above the TPA landfill, this road shall be constructed to replace the existing dirt/gravel roadway that will be covered. This road shall be composed of an approved aggregate material hauled to the road, placed on the road, mixed, compacted, and shaped to conform to the lines, grades, and depths as specified in this specification and as included in the construction drawings.

## 2 MATERIALS.

Refer to Division 10 of the 2002 NCDOT Standard Specifications for Roads and Structures (2002 NCDOT Standard Specifications):

Aggregate base course..... Sections 1006, and 1010

## 3 METHODS OF PRODUCTION.

### (A) General:

Furnish, at your option, aggregate base course material as described below unless otherwise specified in the special provisions.

### (B) Aggregate:

Aggregate upon which no restrictions are placed on the production or stockpiling except as provided in Sections 1005, 1006, and 1010 of the 2002 NCDOT Standard Specifications; and which have been placed on the roadway, sampled, tested and approved in accordance with the provisions of Subarticle 520-5(B).

## 4 HAULING AND PLACING AGGREGATE BASE MATERIAL.

Place the aggregate material on the compacted landfill cover material with a mechanical spreader capable of placing the material to a uniform loose depth and without segregation except that for areas inaccessible to a mechanical spreader, the aggregate material may be placed by other methods approved by the Dupont Site Representative.

Compact the base material to a minimum thickness of approximately 3 inches. Machine and compact the base within 48 hours after beginning the placing of the base.

Utilize methods of handling, hauling, and placing which will minimize segregation and contamination. Remove and replace all aggregate which is contaminated with foreign materials to the extent that the base course will not adequately serve its intended use at no additional cost to DuPont. The above requirements will be applicable regardless of the type of aggregate placed and regardless of prior acceptance.

## **5 SAMPLING, TESTING, AND ACCEPTANCE.**

Sampling and testing will not be required, however a visual inspection of the aggregate base course will be done prior to and during placement.

Where visual observation indicates the need to do so, the DuPont Site Representative may require the Contractor to road mix areas of nonuniform gradation at no additional cost to DuPont.

## **6 TOLERANCES.**

Construct the base so that the thickness of the base is within a tolerance of plus or minus 1/2 inch of the base thickness required by the plans.

## **7 MAINTENANCE.**

Maintain the surface of the base by watering, machining, rolling, or dragging when necessary to prevent damage to the base by weather or construction traffic.

Where the base or subgrade is damaged, repair the damaged area; reshape the base to required lines, grades, and recompact the base at no cost to DuPont.

**APPENDIX B**

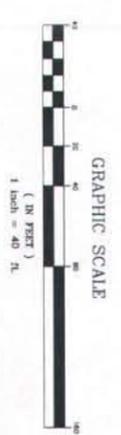
**CONSTRUCTION DRAWINGS**



**LEGEND**

- EXISTING CONTOUR AND ELEVATION
- WOODS LINE
- MONITORING WELL
- ASPHALT PAVEMENT
- SOLID WASTE LIMITS

- NOTES:**
1. THE TOPOGRAPHY SHOWN IS A COMPOSITE OF TOPOGRAPHICAL SURVEYS DATED JANUARY, 2003 BY DONALDSON, GARRETT AND ASSOCIATES, INC. AND DECEMBER, 1995 BY MCKIM AND CREED.
  2. THIS DRAWING HAS BEEN GENERATED FROM ELECTRONIC FILES. THE ORIGINAL DRAWINGS WERE PREPARED AND SEALED BY REGISTERED LAND SURVEYORS LICENSED TO PRACTICE IN NORTH CAROLINA.
  3. THE ENGINEER WHOSE SEAL IS AFFIXED HERETO DOES NOT GUARANTEE THAT ALL EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN HEREON.
  4. THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD83. THE VERTICAL DATUM FOR THIS SURVEY IS NAVD83.
  4. ONE FOOT CONTOUR ELEVATIONS ARE SHOWN.



Certification:  
This project was conducted  
under my direct and  
responsible charge.

A. Brett Barro, PE  
URS Corporation - North Carolina  
Registration No. 028303  
Date 18APR03

PROJECT TITLE		SHEET	
DuPont - CAPE FEAR PLANT		AS SHOWN	
DRAWING TITLE			
Existing Topography and Waste Area TPA Landfill			
DESIGNED BY	DATE	CHECKED BY	DATE
ABB	18APR03	TSH	18APR03
DESIGNED BY	DATE	CHECKED BY	DATE
AJM	24APR03	ABB	25APR03
PROJECT NO.	18983792	SCALE	C-1
DATE	0	BY	0



### LEGEND

- EXISTING CONTOUR AND ELEVATION
- WOODS LINE
- MONITORING WELL
- ASPHALT PAVEMENT
- SOLID WASTE LIMITS
- PROPOSED CONTOUR AND ELEVATION

#### NOTES

1. THE BASELINE TOPOGRAPHY FOR THIS DRAWING HAS BEEN GENERATED FROM ELECTRONIC FILES. THE ORIGINAL DRAWINGS HAVE BEEN PROPERLY SIGNED AND SEALED BY REGISTERED LAND SURVEYORS LICENSED TO PRACTICE IN NORTH CAROLINA.
2. THE TOPOGRAPHY SHOWN IS A COMPOSITE OF TOPOGRAPHICAL SURVEYS DATED JANUARY, 2003 BY DONALDSON, GARRETT AND ASSOCIATES, INC. AND DECEMBER, 1995 BY MCKIM AND CREED.
3. THE ENGINEER WHOSE SEAL IS AFFIXED HERETO DOES NOT GUARANTEE THAT ALL EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN HEREON.
4. THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD83. THE VERTICAL DATUM FOR THIS SURVEY IS NGV028.
5. ONE FOOT CONTOUR ELEVATIONS ARE SHOWN.

#### CONSTRUCTION NOTES

1. EXISTING DIRT AND GRAVEL ROADS SHALL BE IMPROVED AS NECESSARY TO COMPLETE THIS PROJECT INCLUDING BORROW HAULING.
2. ALL EXISTING TREES WITHIN THE GRADED AREAS SHALL BE REMOVED PRIOR TO GRADING.
3. FOR EROSION AND SEDIMENTATION CONTROL DETAILS SEE SHEETS E-1 THRU E-3.
4. PROPOSED GRADES SHOWN ARE THE FINISHED GRADE OR THE TOP OF THE COVER MATERIAL.
5. MINOR EXCAVATION AND GRADING SHALL BE PERFORMED AS REQUIRED TO ENSURE 2 FEET OF COVER AND APPROPRIATE SLOPES NEAR THE HORIZONTAL EDGES OF SOLID WASTE.
6. LIMITS OF PROPOSED GRADING ARE APPROXIMATE ONLY AND SHALL BE ADJUSTED DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE TO COVER ALL THE LIMITS OF WASTES ON THE SITE PER DETAIL "1", SHEET C-3. THIS COVERAGE WILL BE VERIFIED BY SOIL BORINGS PERFORMED BY THE CONSTRUCTION MANAGER.
7. ALL GRADED SURFACES SHALL BE SEEDED WITH NATIVE GRASSES.
8. A DETAILED CONSTRUCTION SEQUENCE IS PROVIDED ON SHEET NO. E-2 THAT INCLUDES ALL EROSION AND SEDIMENTATION CONTROL MEASURES.



Certification:  
This project was conducted  
under my direct and  
responsible charge.

A. Brett Barro, PE  
URS Corporation - North Carolina  
Registration No. 028303  
Date

PROJECT TITLE		SCALE	
DuPont - CAPE FEAR PLANT		AS SHOWN	
CONTRIBUTOR: ALL RIGHTS RESERVED - PROPERTY OF			
DESIGNED BY	DRAWN BY	CHECKED BY	DATE
ABB	18APR03	TSH	18APR03
CREATED BY	DATE	DATE	DATE
AJM	24APR03	ABB	25APR03
SHEET TITLE		SHEET NO.	
Landfill Closure Grading Plan TPA Landfill		18983792	
DATE		SHEET NO.	
18983792		C-2	
DATE		SHEET NO.	
		0	





### LEGEND

- SILT FENCING
- ROCK CHECK DAM
- TEMPORARY DIVERSION DITCH
- GRAVEL CONSTRUCTION ENTRANCE
- TEMPORARY SEDIMENT BASIN
- MONITORING WELL
- EXISTING CONTOURS
- PROPOSED CONTOURS
- ASPHALT PAVEMENT
- SOLID WASTE LIMITS

### NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MEASURES AT THE BORROW SOURCE.
2. PROVIDE TEMPORARY DITCHES AS REQUIRED BY CONSTRUCTION PHASING TO ENSURE THAT SURFACE WATER RUNOFF OUTLETS TO THE TEMPORARY SEDIMENT BASINS.
3. ANY DISTURBED AREAS LEFT EXPOSED FOR A PROLONGED DURATION SHALL BE TEMPORARILY SEEDED AND MULCHED.
4. FOR TEMPORARY SEDIMENT BASINS, CONTRACTOR IS TO ADJUST BASIN DIMENSIONS TO ACHIEVE REQUIRED STORAGE VOLUME BASED ON SITE CONDITIONS.
5. GRAVEL CONSTRUCTION ENTRANCE LOCATION SHALL BE ADJUSTED AS NECESSARY TO CONTRACTOR'S SELECTED HAUL ROUTES.
6. THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD83. THE VERTICAL DATUM FOR THIS SURVEY IS NGVD25.
7. ONE FOOT CONTOUR ELEVATIONS ARE SHOWN.

TOTAL DISTURBED  
AREA = 6.9 ACRES



Certification: was conducted  
under my direct and  
responsible charge.



18122  
Date  
Jeffrey A. Koontz, PE  
URS Corporation - North Carolina  
Registration No.

PROJECT TITLE		SCALE		REVISIONS		DRAWING TITLE	
DuPont - CAPE FEAR PLANT		AS SHOWN		NO. 1	DATE	Temporary Erosion & Sedimentation Control Plan	
CLIENT: NORTH CAROLINA		CONTRACTING: ALL RIGHTS RESERVED - PROPERTY OF URS		MDL	04JUN03	Leland, North Carolina	
PROJECT NO. 18983792		DRAWN BY: JAK		RDG	04JUN03	SHEET NO. E-1	
DATE: 04JUN03		CHECKED BY: JAK		JAK	04JUN03	TOTAL SHEETS: 0	

CONSTRUCTION SEQUENCE

GENERAL CONSTRUCTION SEQUENCE OVERVIEW

1. Obtain grading permit as required by local authority.
2. Initial fill based on shown on plans. Check only as necessary to install these devices.
3. Call State Erosion Control Local Office for on-site inspection. If approved, begin construction.
4. Install temporary diversion ditches and sediment traps in locations as shown on plans.
5. Each stress stripe and bring berms up to grade per clearance plans.
6. Maintain devices as needed. Stabilize site with permanent seeding on areas not brought up to final grade.
7. When construction is complete and all areas are stabilized completely, call for inspection by State Erosion Control Local Office.
8. If site is approved, remove temporary devices and stabilize any remaining bare areas.

SEEDING SPECIFICATIONS (No. 507 from Table 6.119 of NCCESM Erosion Control Manual)

Seeding Method	Rate (lb/acre)
Species	50
Pennsylvanian Brome/Cynodon	10
Seeds: 1/2000 lb/acre	10
Germination: 100%	

- Seeding Notes
1. Where a seed appearance is desired, seed surface.
  2. Use common Bermudagrass only on residual sites where it cannot become a pest. Bermudagrass may be replaced with a B/C/zone centropogon.
- Seeding Dates
- April 1 - July 15

Soil Amendments

Apply lime and fertilizer according to soil tests, or apply 2,000 lb/acre ground agricultural limestone and 500 lb/acre 10-10-10 fertilizer.

Mulch

Apply 4,000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor mulch by broom with tractor string or cover by crumpled non-erect covering tool. A 1/4" thick plastic mulch may be used on slopes up to 1:1. See Appendix 10.1.

Maintenance

Reestablish the following April with 50 lb/acre nitrogen. Based on ground nitrogen. May be repeated any time a year. Where a seed appearance is desired until surface and cover as often as needed.

TEMPORARY SEEDING SPECIFICATIONS (Table 6.106 of NCCESM Erosion Control Manual)

Seeding Method	Rate (lb/acre)
Species	40
Germination: 100%	

Seeding Dates

April 15 - August 15

Soil Amendments

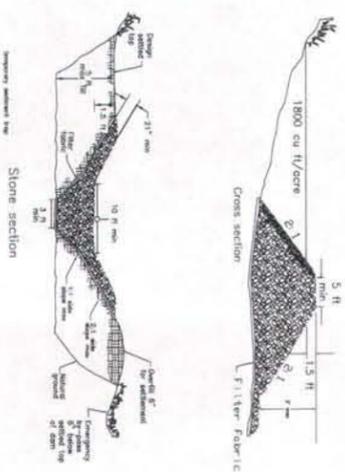
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

Mulch

Apply 4,000 lb/acre straw. Anchor straw by tucking with sphulit, setting of a mulch anchoring tool. A slab with blades set nearly straight can be used on 2:1 mulch anchoring tool.

Maintenance

Reestablish if growth is not fully adequate. Harvest, fertilize and mulch immediately after erosion or other damage.



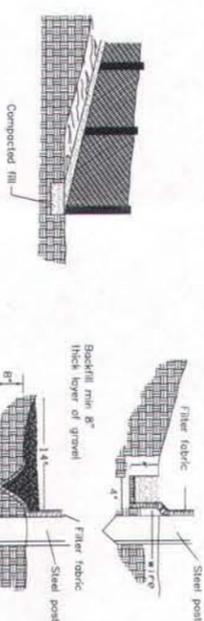
Construction Specifications

1. Check depth and slope of the area under the embankment of all application and root mat. Remove all surface soil containing high amounts of organic matter and stabilize or dispose of it properly. Haul off objectionable material to the designated disposal area.
2. Ensure that all material for the embankment is free of rocks, woody vegetation, stumps, and other debris. The embankment must be free of any material that could impede the flow of water.
3. Construct the outlet section in the embankment. Protect the connection between the stone and the outlet section by using fiber concrete or a keyway cut into the stone. The fiber concrete must be placed in the outlet section and the stone must be placed on top of the fiber concrete.
4. Check the stone and the outlet section. The stone should be at least 2-1/2' deep and 2-1/2' wide with 1:1 side slopes.
5. At cut and fill slopes should be 2:1 or flatter.
6. Ensure that the stone (geotextile) section of the embankment has an minimum bottom width of 3 ft and minimum side slopes of 1:1 that extend to the bottom of the silt fence section.
7. Conduct the minimum finished slope silt fence section with a minimum bottom width of 3 ft and a maximum height of 21 inches. The stone should be placed on top of the fiber concrete. The stone should be placed on top of the fiber concrete.
8. Material used in the stone section should be a well-graded mixture of stone with a diameter of 3/4" to 4" (3/8" to 2" erosion control stone is recommended) and smaller stones worked into the voids of the larger stones. The stone should be hand, angular, and highly weather-resistant.
9. Ensure that the stone silt fence section extends downstream past the toe of the embankment. The stone silt fence section should be placed on top of the fiber concrete for the remaining stone. Keep the edge of the stone outlet section flush with the surrounding ground and shape the center to confine the outflow stream (Refer to Outlet Protection).
10. Direct emergency bypass to natural, stable areas. Locate bypass outlets so that flow will not damage the embankment.
11. Stabilize the embankment and an adjacent area above the sediment pool with vegetation. The vegetation should be placed on top of the fiber concrete. The vegetation should be placed on top of the fiber concrete.
12. Show the distance from the top of the silt fence to the adjacent disposal well (one-half the design depth) on the plans and mark it in the field.

Maintenance

Inspect temporary sediment traps after each period of significant rainfall. Remove sediment from the traps and dispose of it in the designated disposal area. Do not replace the sediment in the traps. Check the structure for damage from erosion or piping. Periodically check the depth of the silt fence to ensure it is a minimum of 18 inches above the ground. If the silt fence is damaged, it should be replaced. Any gaps should be repaired immediately. After all sediment-producing areas have been permanently stabilized, remove the structure and stabilize the area. (Refer to Sediment Stabilization.)

TEMPORARY SEDIMENT BASIN DETAIL



Construction Specifications

- Table 6.62B  
Specifications for  
Sediment Fence Fabric
- | Physical Property         | Requirements                  |
|---------------------------|-------------------------------|
| Filtering Efficiency      | 60% (min)                     |
| Tensile Strength at Break | 30 lb/ft (min)                |
| Unit Weight               | 0.3 gsf/ft <sup>2</sup> (min) |
| Stain Resistance          | None                          |
- CONSTRUCTION
1. Construct the sediment barrier of standard strength or extra strength synthetic fiber fabric.
  2. Ensure that the height of the sediment fence does not exceed 18 inches above the ground. The sediment fence may require staking of extra synthetic fiber to maintain the fabric from a continuous roll and to the length of the barrier to avoid joints. When joints are necessary, securely fasten the fabric with a support post with overlap to the next post.
  3. Construct the filter fabric from a continuous roll and to the length of the barrier to avoid joints. When joints are necessary, securely fasten the fabric with a support post with overlap to the next post.
  4. Support standard strength fiber fabric by wire mesh stakes securely to the upstream side of the posts using heavy duty wire stakes of least 1 inch long, or support posts spaced for greater stability into the ground to a minimum of 18 inches apart. Stakes or wire mesh stakes should be placed at 10 ft intervals.
  5. Where a wire mesh support fabric is used, space posts a minimum of 8 ft apart.
  6. Extra strength fiber fabric with built post spacing does not require wire mesh support posts spaced for greater stability into the ground to a minimum of 18 inches apart. Stakes or wire mesh stakes should be placed at 10 ft intervals.
  7. Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upstream from the barrier (Figure 6.62B).
  8. Backfill the trench with compacted soil or gravel placed over the filter fabric.
  9. Do not attach fiber fabric to existing trees.

Maintenance

Inspect sediment fences at least once a week and after each rainfall. Make any repairs immediately. Remove sediment from the traps and dispose of it in the designated disposal area. Do not replace the sediment in the traps. Check the structure for damage from erosion or piping. Periodically check the depth of the silt fence to ensure it is a minimum of 18 inches above the ground. If the silt fence is damaged, it should be replaced. Any gaps should be repaired immediately. After all sediment-producing areas have been permanently stabilized, remove the structure and stabilize the area. (Refer to Sediment Stabilization.)

SILT FENCE DETAIL

Certification:  
This project was conducted  
under my direct and  
responsible charge.



Jeffrey A. Koontz, PE  
Registration No. 18983792  
PE Date

DUPONT-  
CAPE FEAR PLANT

LELAND, NORTH CAROLINA

URS  
1801 NORTH CAROLINA STREET  
Raleigh, NC 27601

REVISION	DATE	BY	DESCRIPTION
1	04/JUN/03	JAK	ISSUE FOR PERMIT
2	04/JUN/03	JAK	REVISED BY
3	04/JUN/03	JAK	REVISED BY

Temporary Erosion &  
Sedimentation Control Details  
TPA Landfill, Cape Fear Plant  
Leland, North Carolina  
18983792  
E-2  
0

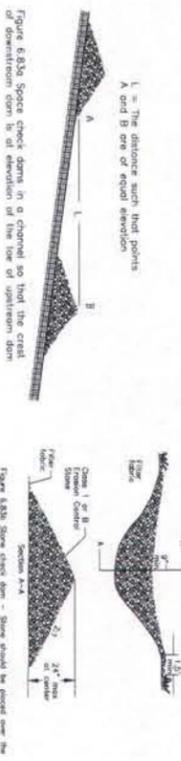


Figure 6.53a: Stone check dam in a channel so that the crest of diversion dam is at elevation of the toe of upstream dam.  
Figure 6.53b: Stone check dam in a channel so that the crest of diversion dam is at elevation of the toe of upstream dam.

**Construction**  
1. Place stone to the lines and dimensions shown in the plans on a filter fabric foundation.  
2. Keep the center stone section at least 9 inches below natural ground level where the dam abuts the channel banks.

- Specifications**
- Extend stone at least 1.5 ft beyond the ditch banks (Figure 6.53b) to keep overflow water from undercutting the dam as it re-enters the channel.
  - Set spacing between dams to assure that the elevation of the top of the lower dam is the same as the toe elevation of the upper dam.
  - Protect the channel downstream from the lowest check dam, considering that water will flow over and around the dam (Practice 6.4.1, Outlet Substation Structure).
  - Make sure that the channel reach above the most upstream dam is stable.
  - Ensure that channel obstructions, such as culvert enclosures below check dams, are not subject to damage or blockage from dispersed stones.

**Maintenance**  
Inspect check dams and channels for damage after each runoff event. Anticipate subsidence and deposition above the check dam and erosion from high flows around the edges of the dam. Correct all damage immediately. If significant erosion occurs between dams, install protective riprap liner in that portion of the channel (Practice 6.3.1, Riprap-Lined and Towed Channels). Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam. Add stones to dams as needed to maintain design height and cross section.

**ROCK CHECK DAM DETAIL**

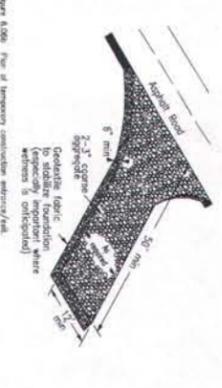


Figure 6.60: Plan of temporary construction entrance/diversion with diversion edge where grade extends 2%.

**Construction**  
1. Build curbs in rock and sleep stone. Remove all vegetation and other obstructions not needed from the foundation area. Grade and crown foundation for positive drainage.

- Specifications**
- If the slope toward the road exceeds 2% construct a ridge, 6 to 8 inches high with 3:1 side slopes, across the foundation approximately 12 ft from the curb to provide a safe way for the truck (see Figure 6.60).
  - Place geotextile fabric on graded foundation to improve stability, especially on slopes.
  - Place stone to dimensions and grade shown on plan. Leave surface smooth.
  - Final all surface runoff and drainage from the slope pad to a sediment trap or trap.
  - Install pipe under pad if needed to maintain proper public road drainage.
- Maintenance**  
Monitor entrance and make repairs as necessary.

**TEMPORARY GRAVEL CONSTRUCTION ENTRANCE**



Temporary Earthen Diversion Dike

**Construction**  
1. Remove and properly dispose of all trees, brush, stumps, and other objectionable material.  
2. Ensure that the minimum constructed cross section meets all design requirements.

- Specifications**
- Ensure that the top of the dike is not lower at any point than the design elevation plus the specified settlement.
  - Provide surfacing from around diversion to permit machine turning and do work.
  - Vegetate the slope immediately after construction, unless it will remain in place less than 30 working days.
- Maintenance**  
Inspect temporary diversions once a week and after every rainfall. Immediately remove sediment from the base and repair the diversion edge. Carefully check outlets and make timely repairs as needed. When the area protected is permanently stabilized, remove the dike and the channel to be built with the natural ground shall and appropriately restored.

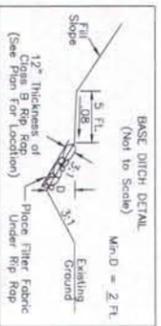
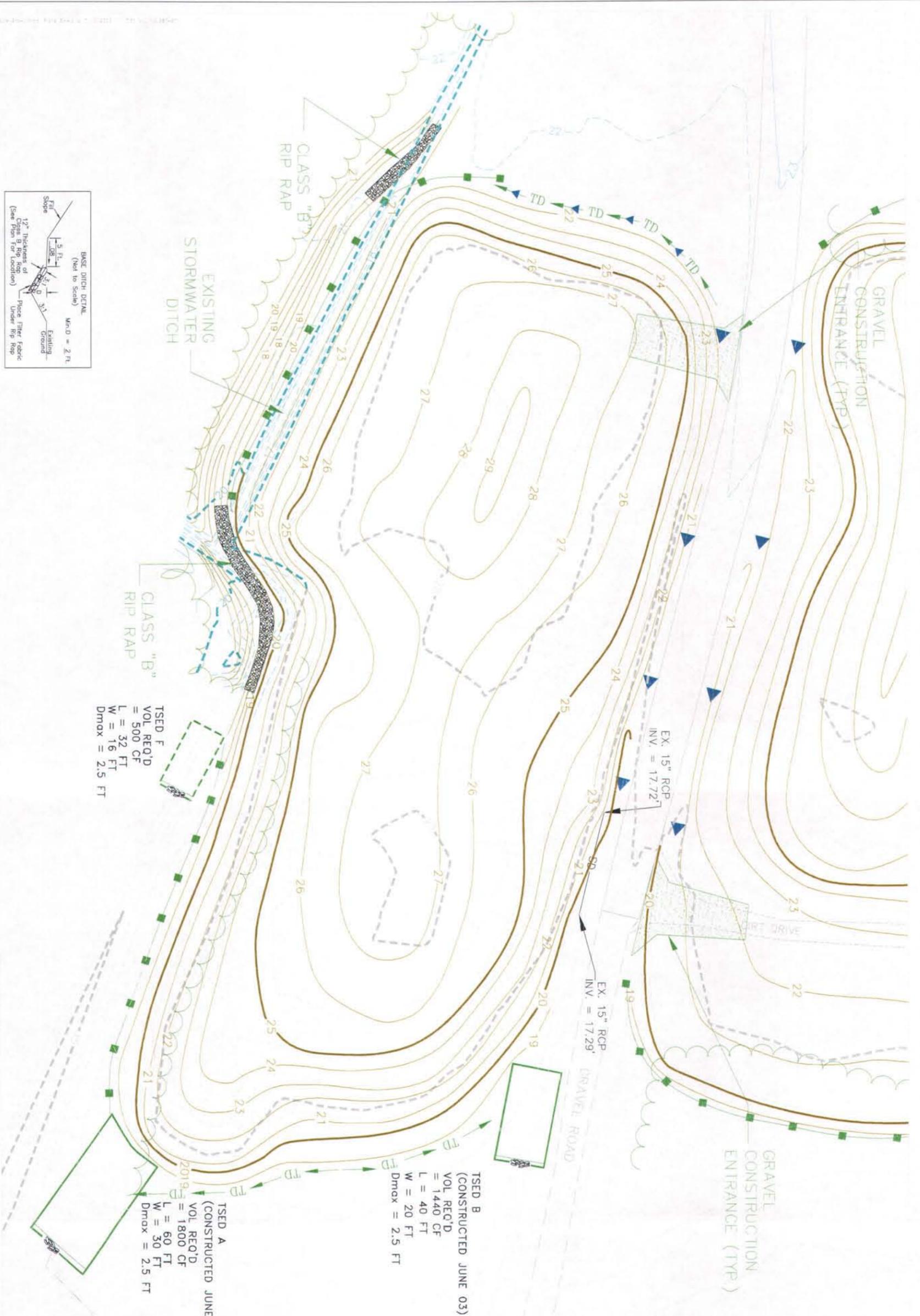
**TEMPORARY DIVERSION DITCH**

18122 Date

Jeffrey A. Koontz, PE  
URS Corporation—North Carolina  
Registration No.

Certification:  
This project was conducted under my direct and responsible charge.

PROJECT TITLE		SCALE	
DuPONT-CAPE FEAR PLANT		N.T.S.	
DESIGNED BY	DATE	APPROVED TITLE	DATE
MDL	18APR03	Temporary Erosion & Sedimentation Control Details	
CHECKED BY	DATE	PROJECT NO.	DATE
RDG	18APR03	TPA Landfill, Cape Fear Plant	
APPROVED BY	DATE	CLIENT NO.	DATE
JAK	21APR03	Leland, North Carolina	
JAK	22APR03	18983792	
		REVISION NO.	REV.
		E-3	0



**TSED F**  
**VOL REQ'D**  
 = 500 CF  
**L = 32 FT**  
**W = 16 FT**  
**Dmax = 2.5 FT**

**TSED A**  
**(CONSTRUCTED JUNE)**  
**VOL REQ'D**  
 = 1800 CF  
**L = 60 FT**  
**W = 30 FT**  
**Dmax = 2.5 FT**

**TSED B**  
**(CONSTRUCTED JUNE 03)**  
**VOL REQ'D**  
 = 1440 CF  
**L = 40 FT**  
**W = 20 FT**  
**Dmax = 2.5 FT**

**EX. 15" RCP**  
**INV. = 17.72'**

**EX. 15" RCP**  
**INV. = 17.29'**



**LEGEND**

- SILT FENCING
- ROCK CHECK DAM
- TEMPORARY DIVERSION DITCH
- GRAVEL CONSTRUCTION ENTRANCE
- EXISTING TEMP SEDIMENT BASIN
- PROPOSED TEMP SEDIMENT BASIN
- EXISTING CONTOURS FROM ORIGINAL SURVEY
- EXISTING CONTOURS FROM SUPPLEMENTAL SURVEY (7/03)
- PROPOSED CONTOURS
- ASPHALT PAVEMENT

**NOTES**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MEASURES AT THE BOTTOM SOURCE.
2. PROPOSED TEMPORARY DITCHES AS REQUIRED BY CONSTRUCTION, SHALL BE EXCAVATED TO EXPOSE THE SURFACE WHITE RIMMOT QUILTS TO THE TEMPORARY SEDIMENT BASINS.
3. ANY DISTURBED AREAS LEFT EXPOSED FOR A PROLONGED DURATION SHALL BE TEMPORARILY SEEDING AND MULCHED.
4. FOR TEMPORARY SEDIMENT BASINS, CONSTRUCTION IS TO AVOID BASIN DIMENSIONS TO ACHIEVE REQUIRED STORAGE VOLUME BASED ON SITE CONDITIONS.
5. GRAVEL CONSTRUCTION ENTRANCE LOCATION SHALL BE ADJUSTED AS NECESSARY TO COMPENSATE FOR SELECTED HOLE NOTES.
6. THE HORIZONTAL DATUM FOR THIS SURVEY IS MADA. THE VERTICAL DATUM FOR THIS SURVEY IS MADA.
7. ONE FOOT CONTOUR ELEVATIONS ARE SHOWN.

**MODIFIED CONSTRUCTION SEQUENCE**

1. CONSTRUCT TEMPORARY SEDIMENT BASIN F.
2. INSTALL SILT FENCE AND DIVERSION DITCHES.
3. EXCAVATE PROPOSED STORMWATER DITCH WHILE MAINTAINING EXISTING DITCH TO ALLOW POSSIBLE USE DURING STORM EVENT.
4. PLACE FILTER FABRIC AND RIP RAP AS SHOWN TO STABILIZE DITCH.
5. PLACE COVER MATERIAL ON EXISTING LANDFILL.

**PROJECT TOTAL DISTURBED AREA = 7.2 ACRES**  
**(REVISED JULY 2003)**

**GRAPHIC SCALE**



**CERTIFICATION NOTE:**  
 THIS DRAWING HAS BEEN GENERATED FROM ELECTRONIC FILES. THE ORIGINAL DRAWINGS HAVE BEEN PROPERLY SIGNED AND SEALED BY THE ENGINEER IN NORTH CAROLINA.



**Certification:**  
 This project was conducted under my direct and responsible charge.

**Jeffrey A. Koenitz, PE**      **PE**      **18122**  
 URS Corporation-North Carolina      Registration No.      Date

<b>PROJECT TITLE</b>		<b>DATE</b>		<b>DATE</b>	
Temporary Erosion & Sedimentation Control Plan		03JUL03		03JUL03	
TPA Landfill, Cape Fear Plant		RDG		07JUL03	
Leland, North Carolina		MDL		07JUL03	
PROJECT NO. 18983792		DATE		09JUL03	
DRAWING NO. E-4		SCALE		0	

**DUPONT-CAPE FEAR PLANT**  
 LELAND, NORTH CAROLINA

**AS SHOWN**  
**URS**  
 1001 NORTH CAROLINA STREET, RALEIGH, NORTH CAROLINA 27609

PROPOSED TSED G  
 VOL REQ'D = 1300 CF  
 L = 52 FT  
 W = 25 FT  
 Dmax = 2.5 FT

EXTEND WITH 12 LF OF  
 36" CSP (UNCOATED)  
 INV. IN = 6.96

INVERT 36" RCP  
 ELEV = 6.48

INVERT 36" RCP  
 ELEV = 5.68

EXISTING SILT FENCE  
 (Installed June 2003,  
 Retain)

EXISTING TSED E  
 (Constructed June 2003)

EXISTING SILT FENCE  
 (Installed June 2003,  
 Retain)



**Seeding Specification No. 1CP**

Species	Rate (lb/acre)
Tall Fescue	80
Pennsylvanian Brome	50
Smooth Bromegrass	30
Koeleria gracilis	10

**Seeding Notes**

- From Sept. 1 - March 1, use uncertified surface seed.
- On poorly drained sites omit surface and increase Koeleria to 20 lb/acre.
- Where a neat opportunity is desired, omit surface and increase Koeleria to 40 lb/acre.

**Seeding Dates**

Best	Possible
Early Spring: Feb 15 - Mar 20	Feb 15 - Apr 30
Fall: Sept 1 - Sept 30	Sept 1 - Oct 31

**Soil Amendments**

Apply lime and fertilizer according to soil tests, or apply 3000-5000 lb/acre ground agricultural limestone (use the lower rate on sandy soils) and 1000 lb/acre 10-10-10 fertilizer.

**Mulch**

Apply 4000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor straw by locking with asphalt, netting, or roving or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

**Maintenance**

If growth is less than fully adequate, reseed in the second year, according to soil tests or topdress with 500 lb/acre 10-10-10 fertilizer. Mow as needed when services are omitted from the mixture. Reseed, fertilize and mulch damaged areas immediately.



**NOTES**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DESIGN CORRECTIONS AT THE DESIGN SOURCE.
- ANY DISTURBED AREAS LEFT EXPOSED FOR A PROLONGED DURATION SHALL BE TEMPORARILY SEEDING AND MULCHED.
- FOR TEMPORARY SEDIMENT BASINS, CONSTRUCTION IS TO AVOID BROWN CONDITIONS TO AVOID REQUIRED STORAGE VOLUMES BASED ON THE DESIGN DATA FOR THIS SITE'S WATERSHED.
- THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD 83. THE VERTICAL DATUM FOR THIS SURVEY IS MGS 83.
- ONE FOOT CONTOUR ELEVATIONS ARE SHOWN.

**MODIFIED CONSTRUCTION SEQUENCE**

- CONSTRUCT TEMPORARY SEDIMENT BASIN G.
- ERECT EXISTING SILT FENCE AND DESIGN OTHERS WHERE OR CLEAN AS NECESSARY.
- INSTALL PROPOSED 36" PIPE EXTENSION.
- PLACE COVER MATERIAL ON EXISTING LANDFILL.
- SEED AND MULCH DISTURBED AREA. (NOTE SEASONAL CHANGE IN SEED MIX)

PROJECT TOTAL DISTURBED  
 AREA = 7.9 ACRES  
 REVISION DISTURBED AREA  
 = 0.7 ACRES

**GRAPHIC SCALE**



**GENERAL NOTE:**  
 THIS DRAWING HAS BEEN GENERATED FROM ELECTRONIC FILES. THE ORIGINAL DRAWINGS REGISTERED AND SURVEYING MONUMENTED TO PRACTICE IN NORTH CAROLINA.

**Certification:**  
 This project was conducted under my direct and responsible charge.

Jeffrey A. Koontz, PE  
 Registration No. 18122  
 Date



**DuPont-CAPE FEAR PLANT**

SCALE: AS SHOWN

CHANGING ALL RIGHTS RESERVED PROPERTY OF URS

DATE	BY	REVISION
17SEP03	JAK	SCALE
08SEP03	TSH	DESIGN
08SEP03	JF	APPROVAL

PROJECT TITLE: Temporary Erosion & Sedimentation Control Plan  
 TPA Landfill, Cape Fear Plant  
 Leland, North Carolina

CONTRACT NO: 18983792  
 SHEET NO: E-5 OF 0

**APPENDIX C**

**SEDIMENTATION AND EROSION CONTROL PLAN**

**Contract No. 811003**

May 1, 2003

Mr. Dan Sams, PE, ME  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive, Ext  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Sams:

URS Corporation is in the process of preparing the closure permit for the DuPont Cape Fear TPA Landfill in Brunswick County (Leland). The landfill contains only non-hazardous material generated by the plant. The total disturbed area is approximately 7 acres, requiring the submission of an erosion and sedimentation control plan. The general scope of the project is to bring in fill material to complete the final cap of two feet of earth cover. Sample borings have taken at various locations to determine the existing cover, which varies from 3" to 30", and the design will bring the entire area up to a two foot minimum depth.

We are including with this letter:

- A completed Financial Responsibility/Ownership Form Application
- 1 Full Size copy of the Erosion Control Plans
- 1 Half Size copy of the Erosion Control Plans
- 1 copy of the Design Calculations
- 1 copy of the Design Narrative
- Erosion and Sedimentation Control Plan Checklist
- Check for \$350.00 for the Permit Fee

Please review the enclosed data and let us know if you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

attachments

**DuPont, Cape Fear Plant, Leland, NC**  
**Non-hazardous Landfill Closure**  
**Erosion & Sediment Control Plan Narrative**

Site Description

The landfill site is on the DuPont Cape Fear Plant property in Leland, NC. The landfill site is divided into two separate areas by a paved road. The landfill limits are approximately 5 acres and the total project area is approximately 6.5 acres.

Drainage for the site is through a series of ditches around the perimeter of the landfill, specifically to the East, North and South. Ditches flow to various off site tributaries of the Cape Fear River. One 15" pipe culvert is utilized on site at the old entrance to the south landfill. The closure design will not affect this pipe and it will remain in service during and after construction.

Closure Design

The closure plan design is to cap the entire site with a total of 2 feet of cover material and revegetate the area. Borings were taken to determine existing cover depths, which range in depth from 3" to 30", and finished grades designed throughout the site to obtain a minimum of 2 feet. Because the landfill contains non hazardous material, no special earth material is required for the cap other than for the vegetation (grass) requirements.

The contract puts the responsibility of locating and using a suitable off-site borrow source with the contractor. Erosion control design measures at the borrow site will be the responsibility of the Contractor.

Erosion Control Design

Proposed contours are similar to the existing contours because the design is a cap over existing landfill, therefore drainage patterns are fairly similar. Sediment and Erosion control measures to be used on site include gravel construction entrance, silt fence, temporary diversions, rock check dams, and temporary sediment basins. Measures are placed in locations where runoff from the construction site can be treated before discharging into the existing series of ditches (using sediment basin) or sheet flowing across the adjacent land (using silt fence). No drainage structures or culverts are required. One existing culvert is within the disturbed area and will be in service during and after completion of the project.

Design computations attached include:

- Temporary Sediment Basins
- Silt Fence
- Temporary Diversion ditches

**Contract No. 811003**  
September 19, 2003

Mr. Daniel Sams, PE, ME  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Sams:

During construction of the project, another area to the north of the original limits was determined to be used for landfill activity and will need to have adequate cover material placed on top of it. A post-construction survey of the entire site was taken and the new area has been designed for the required two feet of cover. The contractor has completed work in all the other areas and stopped construction while this new area is being designed. This design revision will be able to utilize existing erosion control measures previously installed, however it also requires new measures to be designed, which are enclosed with the following for your review:

- Detail sheet E-5 (1"=20') with revised construction sequence for new erosion control measures, including notes for seasonal seeding specifications
- Temporary Sediment Basin G calculation
- Capacity check calculations for existing sediment basins not being covered over by the proposed landfill contours
- A check for \$50.00 for the new 0.7 acres of disturbed area. The total disturbed area increased from 7.2 acres to 7.9 acres. To date, you have received payment of \$400 for the original design and the additional disturbed area on the south end of the landfill (revision date July 10, 2003).

The erosion control measures previously approved for the project have already been established on the site and they are noted and shown as constructed on this detail.

Please continue to mail a copy of any correspondence from your office to me:

Jeff Koontz, PE  
URS Corporation – North Carolina  
1600 Perimeter Park Drive Suite 100

Page 2  
September 19, 2003  
Mr. Daniel Sams, PE ME

If you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

Attachments

cc: Andrew F. Alcazar

**Contract No. 811003**

October 1, 2003

Mr. Kevin Rowland  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Rowland:

We received your *Notice of Receipt of Revised Erosion & Sedimentation Control Plan* letter and have made the required revisions to the attached plan sheet to comply with the request. Please note the following information for the changes:

- The total disturbed area for the revision is 0.7 acres. The boundary of the disturbed area for the revision has been added to the plan. The total disturbed area for the project is 7.9 acres.
- A small map showing the overall project has been added to show where the revised area is located

Please continue to mail a copy of any correspondence from your office to me:

Jeff Koontz, PE  
URS Corporation – North Carolina  
1600 Perimeter Park Drive Suite 100  
Morrisville NC 27560

If you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

**Contract No. 811003**

May 16, 2003

Mr. Kevin Roland  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive, Ext  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Roland:

Per your May 12, 2003 Notice of Receipt letter, the following items are required for completion of the review of the Erosion Control Plan:

- Seed type and rates (both temporary and permanent)
- Fertilizer type and rates
- Mulch type and rates

The project specifications reference Section 6.11 of the *NCDENR Erosion and Sediment Control Planning and Design Manual* for seeding and mulching. There are no soil type or gradation requirements for the cover material other than for vegetative reasons and the Contractor is not required to use a specific borrow source. Because we do not know exactly what type of soil will be used, the specifications require using either Permanent Seeding No. 1CP or No. 5CP for low maintenance vegetation. The decision on which will be per the direction of the construction engineer and material brought to the site. The seeding, fertilizer and mulch types and rates will follow either of these two specifications and the Temporary Seeding, if needed, will follow Section 6.10. I have enclosed the pages from the project specifications for your reference.

If you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

Attachments

cc: Andrew E. Alonzo

**Contract No. 811003**

June 4, 2003

Mr. Daniel Sams, PE, ME  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Sams:

Per your May 30, 2003 Letter of Disapproval, we have made revisions to the Erosion Control Plans to address the three comments and have enclosed one set for your review. The following items were revised:

- Sediment Basin limits are now shown to scale on the plans and construction dimensions added for the Contractor's use. *(Items 1 & 2)*
- Silt fence and diversion ditches are shown closer to where the proposed contours tie to the existing ground (grading limits). It is my understanding that they still must be outside the grading limits in order for the contractor to be able to install these measures prior to the fill operation of the landfill closure. *(Item 1)*
- The appropriate seeding specifications have been added to the Erosion Control Details (Sheet E-2). Shamrock Environmental Corporation has been selected for the project and their borrow source has been identified and tested. The results are attached for your review. Based on the tests, the seeding specification No. 5CP is the appropriate seeding specification to use. *(Item 3)*

Thank you for taking the time to review these plans once again. I appreciate your call telling me of your upcoming administrative hearing and I understand your schedule. Hopefully things will work out that you can complete the review such that we may get the pre-construction meeting scheduled and the project underway soon. If you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

**Contract No. 811003**

July 10, 2003

Mr. Daniel Sams, PE, ME  
North Carolina Department of Environment and Natural Resources  
Wilmington Regional Office  
127 Cardinal Drive  
Wilmington, NC 28405-3845

**Re: DuPont Cape Fear Plant TPA Landfill Closure Project**

Dear Mr. Sams:

During construction of the project, it was discovered that a portion of the south area of the landfill extended approximately 12' farther than originally estimated, requiring a revision to the original design in order to meet the closure requirements of 2 feet of cover over the landfill. This design revision also requires updated erosion control measures, which are enclosed with the following for your review:

- Detail sheet E-4 (1"=20') with revised construction sequence for new erosion control measures
- Temporary Sediment Basin F calculation
- Check #2628 for \$50.00 to cover the additional 0.3 acres of disturbed area. The total disturbed area increased from 6.9 acres to 7.2 acres. You have received payment of \$350 for the original design.

The erosion control measures previously approved for the project have already been established on the site and they are noted and shown as constructed on this detail. A supplemental survey of the adjacent area was done and the new existing ground contours are shown in contrasting colors to the original.

Please note the contractor will continue work on the area of the landfill to the north of the paved road while this detail is in review. If you have any questions or need additional information, please contact me at 919/461-1327.

Sincerely,  
**URS Corporation-North Carolina**

Jeffrey Koontz, PE  
Project Engineer

Attachments

cc: Andrew E. Alcazar

**APPENDIX D**

**SEDIMENTATION AND EROSION CONTROL PLAN  
APPROVAL LETTERS**

State of North Carolina  
Department of Environment  
and Natural Resources  
Wilmington Regional Office  
Division of Land Resources  
Land Quality Section

Michael F. Easley, Governor  
William G. Ross Jr., Secretary



June 6, 2003

**LETTER OF APPROVAL**

E.I. DuPont de Nemours and Company  
Mr. Andrew F. Alcazar, Project Director  
1007 Market Street  
Wilmington, DE 19898

Project Name: Dupont-Cape Fear Plant-Landfill Closure  
Project No.: BR-03257  
Location: SR 1426 - Brunswick County  
River Basin: Cape Fear  
Submitted by: URS Corporation-NC  
Date Received: June 5, 2003  
Revised Submittal

Dear Mr. Alcazar:

This office has reviewed the subject sedimentation and erosion control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The enclosed Certificate of Approval must be posted at the job site. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B.0029.

Please be advised that Title 15A, of the North Carolina Administrative Code, 4B.0018(a) requires that a copy of the approved plan be on file at the job site. Also, you should consider this letter to give the Notice required by GS 113A-01(a) approved plan. The last page(s) which lists approval comments should be copied and attached to the sedimentation and erosion control plan that is maintained on site.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of the natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 thru 66), this office may require revisions to the plan and its implementation to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with federal and state water quality laws, regulations, and rules. In particular, if wetlands are effected by this land disturbing activity, the provisions of the Clean Water Act as mandated by the Environmental Protection Agency must be adhered to. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not

Mr. Andrew F. Alcazar

June 6, 2003

Page Two

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form which you provided . You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project.

We look forward to working with you on this project. If you have any questions, please contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel Sams", written in a cursive style.

Daniel Sams, P.E., M.E.  
Regional Engineer

DES/bfr

cc: Jeffrey A. Koontz, P.E.; URS Corporation-NC  
WIRO-LQS

APPROVAL COMMENTS AND CONDITIONS

<b>PROJECT NAME:</b>	Dupont-Cape Fear Plant-Landfill Closure
<b>PROJECT NUMBER:</b>	BR-03257
<b>LOCATION:</b>	SR 1426- Brunswick County
<b>RIVER BASIN:</b>	Cape Fear
<b>SUBMITTED BY:</b>	URS Corporation-NC
<b>DATE RECEIVED:</b>	June 5, 2003

1. This plan approval shall expire three (3) years following the date of approval, if no land disturbing activity has been undertaken, as is required by Title 15A NCAC 4B.0029.
2. The developer is responsible for the control of sediment on-site. If the approved erosion measures prove insufficient, the developer must take those additional steps necessary to stop erosion from leaving this site. Each sediment storage device must be inspected after each storm event. Maintenance and/or clean out is necessary anytime the device is at 50% capacity.
3. Any and all existing ditches on this project site are assumed to be left undisturbed by the proposed development unless otherwise noted. The removal of vegetation within any existing ditch or channel is prohibited unless the ditch or channel is to be regraded with side slopes of 2 horizontal to 1 vertical or less steep. Bank slopes may be mowed, but stripping of vegetation is considered new earth work and is subject to the same erosion control requirements as new ditches.
4. The developer is responsible for obtaining any and all permits and approvals necessary for the development of this project prior to the commencement of this land disturbing activity. This could include agencies such as the Division of Water Quality's stormwater regulations, their enforcement requirements within Section 401 of the Clean Water Act, the U.S. Army Corps of Engineers' jurisdiction of Section 404 of the Clean Water Act, the Division of Coastal Management's CAMA requirements, the Division of Solid Waste Management's landfill regulations, the Environmental Protection Agency and/or The U. S. Army Corps of Engineers jurisdiction of the Clean Water Act, local County or Municipalities' ordinances, or others that may be required. This approval cannot supersede any other permit or approval; however, in the case of a Cease and Desist Order from the Corp of Engineers, that Order would only apply to wetland areas. All highland would still have to be in compliance with the N.C. Sedimentation Pollution Control Act.
5. If any area on site falls within the jurisdiction of Section 401 or 404 of the Clean Water Act, the developer is responsible for compliance with the requirements of the Division of Water Quality, the Corps of Engineers and the Environmental Protection Agency (EPA) respectively. Any erosion control measures that fall within jurisdictional wetland area must be approved by the aforementioned agencies prior to installation or our Section must be notified of a relocation of the measures in question to the transition point between the wetlands and the highlands to assure that the migration of sediment will not occur. If that relocation presents a problems or contradicts any requirements of DWQ, the Corps

7. This permit allows for a land disturbance, as called for on the application plan, not to exceed seven (7) acres. Exceeding that acreage will be a violation of this permit and would require a revised plan and additional application fee. Any addition in impervious surface, over that already noted on the approved plan, would also require a revised plan to verify the appropriateness of the erosion control measures and stormwater retention measures.
8. Because the sediment retention ponds are shown on the plan as the primary sedimentation & erosion control devices on this project, it is necessary that the ponds and their collection system be installed before any other grading takes place on site. If that proves to be impractical, a revised plan must be submitted and approved that addresses erosion and sediment control needs during the interim period until the ponds are fully functioning.
9. A graveled construction entrance must be located at each point of access and egress available to construction vehicles during the grading and construction phases of this project. Access and egress from the project site at a point without a graveled entrance will be considered a violation of this approval. Routine maintenance of the entrances is critical.
10. The North Carolina Sedimentation Pollution Control Act mandates a shortened time frame in which to reestablish vegetative groundcover. Slopes (including cuts, fills, and ditch banks) left exposed will, within 15 working days or 30 calendar days (whichever is the shorter) after completion of any phase of grading, be planted or otherwise provided with groundcover sufficient to permanently restrain erosion.

JUL-30-03 13:10 From:  
State of North Carolina  
Department of Environment  
and Natural Resources  
Wilmington Regional Office  
Division of Land Resources  
Land Quality Section

T-089 P.02/03 Job-946



Michael F. Easley, Governor  
William G. Ross Jr., Secretary

July 28, 2003

**LETTER OF APPROVAL**

E.I. DuPont de Nemours and Company  
Mr. Andrew F. Alcazar, Project Director  
1007 Market Street  
Wilmington, DE 19898

Project Name: Dupont-Cape Fear Plant-Landfill Closure  
Project No.: BR-03257  
Location: SR 1426 - Brunswick County  
River Basin: Cape Fear  
Submitted by: URS Corporation-NC  
Date Received: July 14, 2003  
Revised Submittal

Dear Mr. Alcazar:

This office has reviewed the subject sedimentation and erosion control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The enclosed Certificate of Approval must be posted at the job site. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B.0029.

Please be advised that Title 15A, of the North Carolina Administrative Code, 4B.0018(a) requires that a copy of the approved plan be on file at the job site. Also, you should consider this letter to give the Notice required by GS 113A-61(a) approved plan. The last page(s) which lists approval comments should be copied and attached to the sedimentation and erosion control plan that is maintained on site.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of the natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 thru 66), this office may require revisions to the plan and its implementation to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with federal and state water quality laws, regulations, and rules. In particular, if wetlands are affected by this land disturbing activity, the provisions of the Clean Water Act as mandated by the Environmental Protection Agency must be adhered to. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

**APPROVAL COMMENTS AND CONDITIONS**

<b>PROJECT NAME:</b>	Dupont-Cape Fear Plant-Landfill Closure
<b>PROJECT NUMBER:</b>	BR-03257
<b>LOCATION:</b>	SR 1426- Brunswick County
<b>RIVER BASIN:</b>	Cape Fear
<b>SUBMITTED BY:</b>	URS Corporation-NC
<b>DATE RECEIVED:</b>	June 5, 2003

1. This plan approval shall expire three (3) years following the date of approval, if no land disturbing activity has been undertaken, as is required by Title 15A NCAC 4B.0029.
2. The developer is responsible for the control of sediment on-site. If the approved erosion measures prove insufficient, the developer must take those additional steps necessary to stop erosion from leaving this site. Each sediment storage device must be inspected after each storm event. Maintenance and/or clean out is necessary anytime the device is at 50% capacity.
3. Any and all existing ditches on this project site are assumed to be left undisturbed by the proposed development unless otherwise noted. The removal of vegetation within any existing ditch or channel is prohibited unless the ditch or channel is to be regraded with side slopes of 2 horizontal to 1 vertical or less steep. Bank slopes may be mowed, but stripping of vegetation is considered new earth work and is subject to the same erosion control requirements as new ditches.
4. The developer is responsible for obtaining any and all permits and approvals necessary for the development of this project prior to the commencement of this land disturbing activity. This could include agencies such as the Division of Water Quality's stormwater regulations, their enforcement requirements within Section 401 of the Clean Water Act, the U.S. Army Corps of Engineers' jurisdiction of Section 404 of the Clean Water Act, the Division of Coastal Management's CAMA requirements, the Division of Solid Waste Management's landfill regulations, the Environmental Protection Agency and/or The U. S. Army Corps of Engineers jurisdiction of the Clean Water Act, local County or Municipalities' ordinances, or others that may be required. This approval cannot supersede any other permit or approval; however, in the case of a Cease and Desist Order from the Corp of Engineers, that Order would only apply to wetland areas. All highland would still have to be in compliance with the N.C. Sedimentation Pollution Control Act.
5. If any area on site falls within the jurisdiction of Section 401 or 404 of the Clean Water Act, the developer is responsible for compliance with the requirements of the Division of Water Quality, the Corps of Engineers and the Environmental Protection Agency (EPA) respectively. Any erosion control measures that fall within jurisdictional wetland area must be approved by the aforementioned agencies prior to installation or our Section must be notified of a relocation of the measures in question to the transition point between the wetlands and the highlands to assure that the migration of sediment will not occur. If that relocation presents a problems or contradicts any requirements of DWQ, the Corps

State of North Carolina  
Department of Environment  
and Natural Resources  
Wilmington Regional Office  
Division of Land Resources  
Land Quality Section

Michael F. Easley, Governor  
William G. Ross Jr., Secretary



October 6, 2003

**LETTER OF APPROVAL**

E.I. DuPont de Nemours and Company  
Mr. Andrew F. Alcazar, Project Director  
1007 Market Street  
Wilmington, DE 19898

Project Name: **Dupont-Cape Fear Plant-Landfill Closure**  
Project No.: **BR-03257**  
Location: **SR 1426 - Brunswick County**  
River Basin: **Cape Fear**  
Submitted by: **URS Corporation-NC**  
Date Received: **September 23, 2003**  
New Submittal

Dear Mr. Alcazar:

This office has reviewed the subject sedimentation and erosion control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The enclosed Certificate of Approval must be posted at the job site. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B.0029.

Please be advised that Title 15A, of the North Carolina Administrative Code, 4B.0018(a) requires that a copy of the approved plan be on file at the job site. Also, you should consider this letter to give the Notice required by GS 113A-61(a) approved plan. The last page(s) which lists approval comments should be copied and attached to the sedimentation and erosion control plan that is maintained on site.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of the natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 thru 66), this office may require revisions to the plan and its implementation to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with federal and state water quality laws, regulations, and rules. In particular, if wetlands are effected by this land disturbing activity, the provisions of the Clean Water Act as mandated by the Environmental Protection Agency must be adhered to. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please be aware that this project will be covered by the enclosed general storm water permit NCG01000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Please note that this approval is based in part on the accuracy of the information provided in the Financial