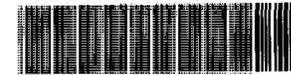


*Draft Work Plan
Time-Critical Removal Action*

Administrative Order on Consent
For Removal Action
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Centredale
02.06
204625

September 2003



SDMS DocID 000204625

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Comm. No. 15RP301

**DRAFT WORK PLAN
TIME-CRITICAL REMOVAL ACTION
Administrative Order on Consent For Removal Action
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island**

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Prepared for

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Prepared by

**LOUREIRO ENGINEERING ASSOCIATES, INC.
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Comm. No. 15RP301

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1. INTRODUCTION

1.1 Terms of Reference

This Draft Work Plan (Draft WP) has been prepared for the Centredale Manor Performing Parties Group at their request, and as required by Paragraph 54 of the Third Administrative Order on Consent for Removal Action (Order). The Order outlines a Time-Critical Removal Action at the so-called former tailrace portion of the “Centredale Manor Restoration Project Superfund Site” located in North Providence, Rhode Island (Site). This Draft WP has been prepared in accordance with the Statement of Work (SOW) provided as Appendix D to the Order and describes all of the activities necessary to meet the requirements and objectives of the removal action as described in the SOW.

1.2 Site Description

As described by the EPA, the Site includes two parcels, 2072 and 2074 Smith Street (Plat 14, Lots 200 and 250), encompassing approximately 9.7 acres, as well as certain sediments and floodplain areas of the Woonasquatucket River from Route 44 southerly to Allendale Dam and further to an area just below Lymansville Dam. The Site consists of certain contaminated areas within this area as well as any other location to which contamination from that area has come to be located, or from which that contamination came.

The 2072 Smith Street parcel is occupied by Brook Village Apartments. This parcel is registered as Plat 14, Lot 200 in the Land Evidence Records of North Providence, Rhode Island. Brook Village Apartments consists of an eleven-story apartment building that houses approximately 135 elderly residents. A series of three paved parking lots extend to the south of this building. The area of the parcel surrounding the building and parking lots includes landscaped areas and a paved driveway accessing Smith Street (Route 44) and located along the eastern property line. The parcel also includes an interim soil cap located adjacent to the Woonasquatucket River. The parcel is bordered to the north by Smith Street, to the west by the Woonasquatucket River, to the east by a drainage ditch (former tailrace), and to the south by the 2074 Smith Street parcel.

Centredale Manor Apartments occupies the 2074 Smith Street parcel and consists of an eight-story apartment building that houses approximately 130 elderly residents. This parcel is registered as Plat 14, Lot 250 in the Land Evidence Records of North Providence, Rhode Island. Two paved parking lots are located on this parcel to the north and west of the building. The apartment building and parking lots are located on the northern end of the parcel. The remaining area of the parcel includes landscaped areas. The parcel also includes an interim soil cap on the

southern end of the parcel, which is bordered by the Woonasquatucket River to the west and south. The parcel is bordered to the east by the former tailrace. The property is bordered to the north by the Brooks Village Apartments property.

The Site is bordered to the north by Smith Street and to the east and southeast by a perennial drainage channel that is the location of the former tailrace. It is bordered to the west by the Woonasquatucket River. The drainage channel (former tailrace) and the Woonasquatucket River converge at the peninsula located immediately south of the Centredale Manor property.

1.3 Previous Removal Actions

Following several preliminary studies and initial removal actions conducted by EPA and its contractors, the Site was placed on the National Priorities List (NPL) in March 2000. These initial removal actions included clearing and grubbing of approximately six acres of the Site, the collection of over six hundred samples, the installation of over a mile of cedar and chain-link fencing, and the installation of an interim soil cap over areas of contaminated soil and sediment. Beginning in April 2000, a Time-Critical Removal Action (TCRA) was implemented by certain potentially responsible parties (PRPs) pursuant to a First Unilateral Administrative Order for Removal Action (UAO 1) for the Site. During this TCRA, the PRPs completed the installation of a second, interim soil cap. This second, interim soil cap was installed on the Brook Village parcel adjacent to the Woonasquatucket River.

In 2001, a Non-Time Critical Removal Action was implemented pursuant to a Second Administrative Order for Removal Action (UAO 2) for the Site. The Non-Time Critical Removal Action included the restoration of Allendale Dam, the delineation of dioxin-impacted soil and sediment in residential-use areas along the eastern embankments of Allendale Pond and Lymansville Pond, and the excavation and off-site disposal of certain dioxin-impacted soil and sediment.

1.4 Time-Critical Removal Action Objectives

The Time-Critical Removal Action objective as described in the Order is to help prevent or reduce the potential for the migration of, and direct contact with, surface soils, sub-surface soils and exposed sediments that may be impacted with dioxin, metals, volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and other constituents in the area of the former tailrace. This objective is to be achieved by constructing a cap over such soil and sediment within the former tailrace and by moderating the impact of flood conditions by managing the storm drain runoff that currently discharges into this area of the Site. Storm drain runoff will be controlled by incorporating a drainage swale as part of the cap.

1.5 Scope of this Work Plan

This Draft WP describes the activities to be performed, as outlined in the SOW provided as Appendix D to the Order. In summary, the SOW includes: (i) management of storm drain runoff and sedimentation entering the former tailrace along the eastern boundary of the Centredale Manor property; and (ii) construction and proposed maintenance of a protective cap over the tailrace area. The activities to be performed in accordance with this Draft WP are consistent with the National Contingency Plan (NCP) found in Title 40, Part 300 of the Code of Federal Regulations (40 CFR Part 300).

This Draft WP includes the engineering design of the protective cap and the associated storm drain runoff controls. This Draft WP includes a Construction Quality Assurance Plan (CQAP) that describes the testing and inspections required to assure that the purchase and installation of specified materials are in conformance with the project plans and specifications. A Post-Removal Site Control Plan describing the actions to be implemented following construction of the cap and drainage swale will be provided upon completing the construction of the cap and swale.

The remainder of this Draft WP is presented as follows:

A description of the general approach to fulfilling the requirements of the SOW is provided in Section 2.

A description of the engineering design for the cap and associated drainage swale is provided in Section 3.

A description of the meetings to be conducted in facilitating the implementation of the Time-Critical Removal Action is provided in Section 4.

A description of the reports to be submitted to EPA during the implementation of this Draft WP is provided in Section 5.

A description of Site management procedures and Site controls to be employed during the implementation of this Draft WP is provided in Section 6.

A description of the waste management procedures to be followed in implementing this Draft WP is provided in Section 7.

The health and safety measures to be employed during the construction activities are presented in a Draft Site Specific Health and Safety Plan (HASP), as referenced in Section 8.

A description of the Construction Quality Assurance (CQA) measures to be employed during the construction activities is provided in Section 9.

The community relations support activities to be provided to EPA during the implementation of the activities performed pursuant to the Order are presented in a Draft Community Relations Support Plan, as referenced in Section 10.

The measures that may be implemented upon the construction of the cap are to be provided in a Post-Removal Site Control Plan, as addressed in Section 11.

A schedule for the implementation of the activities required by the Order is provided in Section 12.

2. GENERAL APPROACH

The general approach to meeting the objective of this Time-Critical Removal Action includes constructing a cap over potentially impacted soil and sediment within the former tailrace. This approach incorporates a drainage swale to control storm drain runoff that discharges into this area of the Site. The approach will require grading certain areas of the former tailrace. In general, soil and sediment will be graded from the western portion of the former tailrace to construct the drainage swale portion of the cap. This material will be placed generally under the soil cap to be constructed on the northeastern portion of the former tailrace.

Storm drain runoff emanating from Smith Street and discharging into the northern end of the former tailrace will be managed by installing a pre-cast modular, storm water control structure at the terminus of the drain pipe. Storm water will flow from this structure into the constructed drainage swale. The drainage swale will also be used to manage storm water runoff emanating from the Brook Village and Centredale Manor properties, as well as the commercial and residential properties east of the former tailrace.



3. ENGINEERING DESIGN AND SPECIFICATIONS

A plan view, profile, and sections of the proposed cap are provided as Drawing 1. Drawing 2 provides details of the planned cap along various sections of the former tailrace. As indicated in the drawings, the limits of the soil and stone caps do not extend onto private properties bordering the east side of the project. However, clearing and loam/seed activities may occur near the cap on some of these properties. As shown in Drawing 1, the general design incorporates the placement of a drainage swale at the downstream side of the pre-cast modular storm water control structure, placed at the northern extent of the former tailrace. From this end of the tailrace, the cap will be constructed such that the swale is placed along the western edge of the area to be capped, and extends over all of the potentially impacted materials to the southern extent of the former tailrace. This part of the cap will consist of 12 inches of clean material placed over the potentially impacted soils and sediments. As designed, the cap materials will consist of approximately six inches of sand placed directly over the potentially impacted soils and sediments. This sand layer will function as a filter and separation layer between the potentially impacted material and the overlying cap materials. A geotextile fabric placed upon the sand layer will provide an additional separation layer between the potentially impacted material and the overlying cap materials. A polyethylene cellular confinement system, having a height of six inches, will be placed upon the geotextile fabric. The polyethylene cells will be filled and covered with approximately six inches of 1.5-inch washed stone. A cross-section of this part of the cap is illustrated on Drawing 1.

The remaining area of the former tailrace to be capped will consist of 24 inches of clean material placed over the potentially impacted soils and sediments. For this area of the cap, a geotextile fabric placed directly upon the potentially impacted soils and sediments will provide a separation layer between the potentially impacted material and the overlying cap materials. A 20-inch layer of bank run gravel (clean fill) will be placed upon this geotextile layer. The cap cover in this area will consist of a four-inch layer of topsoil (loam). Hydroseed will be applied to the topsoil areas. A cross-section of this part of the cap is illustrated on Drawing 1. Specifications for the construction of the cap are provided as Appendix A.

4. MEETINGS

4.1 Overview

To facilitate communication with the On-Scene Coordinator (OSC) and representatives of the Rhode Island Department of Environmental Management (RIDEM) and the Army Corps of Engineers (USACE), weekly progress meetings will be scheduled throughout the implementation of this Draft WP, as required by the Order. In addition to these weekly progress meetings, it will be necessary to conduct additional meetings to facilitate the implementation of the required activities. Descriptions of the implementation-phase meetings are provided in this section.

4.2 Preconstruction Meeting

A preconstruction meeting will be held with the OSC to review the timing and phasing of activities. Critical tasks that will need to be completed prior to initiating field activities will be identified at this time. The limits of the work area will also be identified at this time. Issues regarding security, including the effectiveness of the existing chain-link fence and posted signs to limit access to the portion of the Site where work is proposed in this Draft WP (i.e., former tailrace), hours of operation, and any other issues related to implementation of the planned activities will be discussed at this meeting.

4.3 Progress Meetings

Progress meetings will be held weekly with representatives from EPA, RIDEM, and the USACE to discuss the status of the project and any issues that may affect the progress of implementation activities.

4.4 Pre-Final and Final Inspection

Upon substantial completion of the construction of the cap and drainage swale, EPA will conduct a pre-final inspection to identify any remaining actions that are required to complete the construction required by the Order. Any such remaining actions required by the Order that are identified by EPA will be implemented prior to a final inspection. EPA will conduct a final inspection to confirm that all of the actions identified in the pre-final inspection have been completed and to confirm that all of the requirements and performance criteria associated with this aspect of the Order have been attained.

5. REPORTS

5.1 Overview

During the implementation of this removal action, reports are required to be submitted to EPA to document and record the status of the project. The reports that are required to be submitted include Progress Reports and a Completion of Work Report (CWR). Descriptions of each of these types of reports are provided in this section.

5.2 Progress Reports

Monthly progress reports will be submitted during the implementation of this removal action. A description of all significant developments occurring during the previous month will be provided in each report, including a description of the actions performed and any problems encountered. A summary of all activities planned for the ensuing month will also be provided, along with a description of any anticipated problems that may affect the implementation schedule. The progress reports will be used to document the percentage of construction completed, problems encountered during the previous month, and planned resolutions of past or anticipated problems.

5.3 Completion of Work Report

Upon completion of the work associated with constructing the cap and drainage swale, a CWR summarizing the actions taken to comply with the Order will be submitted to EPA for review and approval. The CWR will conform with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The CWR will include:

- a synopsis of the work performed and a certification that it was performed in accordance with the SOW;
- an identification of any modifications to the SOW and why the changes were necessary to complete the work;
- all field paperwork;
- CQA construction documentation;
- volumes of soil, sediment and waste handled on-Site;
- pre-construction and post-construction photographic surveys; and
- as-built drawings and specifications reflecting any modifications or changes.

In addition, the CWR will include the following certification signed by a person who supervised or directed the preparation of the report:

“Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

An electronic version of the CWR, including “As-Built” drawings, will be provided at the request of EPA.

6. SITE MANAGEMENT

6.1 Access Agreements

The lateral extent of the soil and stone caps do not extend onto private properties bordering the east side of the project. However, some limited clearing and loam/seed activities along the edge of the caps may extend, to a limited extent, onto some of these properties. Where access through or to properties owned by private individuals or organizations is required to implement the planned activities, a request for consent to access the properties will be forwarded to such individuals or organizations. If signed access agreements necessary for the completion of the planned activities are not attainable, then EPA will be notified and a request for EPA's assistance in obtaining the necessary signed access agreements will be made. At a minimum, EPA's assistance is required in obtaining access to the Scott property (Plat 14 / Lot 268), as efforts to obtain access during previous removal actions were unsuccessful.

6.2 Security

Security will be established during the construction activities by maintaining, to the extent practicable, the current chain-link fence and the signs that are in place to limit access to the portion of the Site where construction activities will occur. Sections of the fence along the west side of the former tailrace may be removed at the commencement of the construction activities to allow for the mobilization of equipment, the delivery of materials, and the safe and efficient operation of the construction activities. Signs will be posted along the opening in the fence identifying the construction area to be restricted (the exclusion zone). To further prevent entry by unauthorized individuals, on-site workers will monitor the exclusion zone. At the conclusion of each work day, the site will be secured by erecting a temporary fence lined with caution tape, or by using comparable measures to restrict access to the exclusion zone. Construction equipment that is in-use will be stored within the perimeter of the temporary fence during off hours (i.e., within the work area of the former tailrace). Construction equipment that is not currently in-use will be parked at the southern end of the Centredale Manor property, or on the Centredale Manor north or south parking lot. The sections of the chain-link fence that are removed will be replaced at the completion of the construction activities.

6.3 Photographic Surveys

A pre-construction photographic survey of the portion of the Site where work is proposed in this Draft WP (i.e., former tailrace) will be performed to fully document the Site conditions prior to the initiation of construction activities. A record of the landscape features within and

immediately surrounding the former tailrace will be compiled as part of this pre-construction photographic survey. Photographs will also be taken during construction activities to document the work completed. Upon completion of the construction activities, a post-construction photographic survey of the cap will be performed. This post-construction survey will document the as-built conditions of the cap, as well as any adjacent areas that are disturbed or modified during the removal action. Written descriptions of all photographs will be provided and included in the CWR, as required by the Order.

6.4 Equipment

Heavy equipment will be used on-Site to haul, place, and compact materials brought to the Site to complete the construction of the cap. Some of the equipment that will be used includes tree clearing and chipping equipment, tri-axle dump trucks, bulldozers, and excavators. Various hand tools and equipment will also be used to complete the construction activities.

6.5 Layout and Control

A land surveyor licensed by the State of Rhode Island will provide layout and grade stakes identifying the locations of the planned cap and drainage swale. The layout will be performed given the planned components identified in the design drawings. The land surveyor will also confirm the Site property line boundaries, as well as existing conditions in the field, and will establish elevations requiring material cut and fill across the area of the former tailrace. Upon construction of the cap and drainage swale, the final grade contours will be surveyed so that an “As-Built” drawing of the completed cap may be provided in the CWR.

6.6 Materials and Stockpile Staging

Materials delivered to the Site will be placed in a location as close to the final location as possible. Materials to be used as part of the cap and drainage swale will consist of those specified in Appendix A, or will consist of materials deemed to be of comparable or better quality. Materials will be handled on-Site with the equipment identified above. Materials delivered to the Site that will not be used immediately will be placed in an area that will prevent erosion of the material and sedimentation into the adjacent watercourses. If necessary, hay bales or silt fence will be placed around the stockpiled materials as an erosion and sedimentation control.

6.7 Erosion and Sedimentation Controls

Erosion and sedimentation controls will be installed in accordance with the Rhode Island Soil Erosion and Sediment Control handbook. Silt fence and hay bales will be installed and maintained, as is necessary. A significant component of controlling erosion and sedimentation during the implementation of the removal action will include lowering Allendale Pond. Prior to the onset of the construction activities, the stop logs at Allendale Dam will be removed and the associated sluice gate will be opened to allow the pond backwater and surface water runoff present within the former tailrace to drain. A check dam will then be constructed at the southern end of the former tailrace to minimize the potential for the downstream transport of suspended sediments once construction begins. The check dam will consist of 3/4-inch washed stone with two rows of staked hay bales placed on the upstream side of the stone. If necessary to de-water areas under construction, temporary drainage ditches will be used to direct water so that it flows through the check dam constructed at the southern end of the former tailrace.

6.8 Clearing and Grubbing

As a first step, clearing and grubbing activities will consist of clearing shrubs and brush from the former tailrace. Traditional tree clearing and chipping equipment will be used to clear this vegetation. Once cleared, larger vegetation and trees will be cleared from the work area. To the extent possible, steps will be taken to allow trees to remain. Trees that are cut will be cleared and chipped using traditional clearing and chipping machinery. Trees will be cleared to within approximately six inches from the ground surface. Once cleared, the area of the cap will be grubbed. Grubbing will consist of the removal of tree stumps and/or root systems as is necessary to construct the cap. The stumps will be pressure-washed prior to off-Site disposal at a local facility. Alternatively, stumps will be ground in place to a depth of approximately twelve inches below the ground surface using an *in-situ* stump grinder.

6.9 Decontamination Facilities

To minimize the potential for cross-Site or off-Site tracking of soils and sediments, a combination of dry and wet decontamination procedures will be employed before heavy equipment, hand tools and other hand-held equipment are mobilized from the exclusion zone. Dry decontamination procedures will include scraping and brushing wet and moist soil and sediment from the equipment within the exclusion zone to minimize the amount of rinse wastewater that may be generated. This material will be temporarily isolated within the exclusion zone until it may be placed under the cap material.

If necessary, wet decontamination procedures will be used to clean equipment and vehicles within a contaminant reduction zone after leaving the exclusion zone. Wet decontamination procedures will include the use of brushes and tap water in the event that the equipment requires decontamination beyond plain water washing. The equipment will be washed on a temporary equipment decontamination pad located within the contaminant reduction zone to remove any material not removed by dry decontamination. The temporary equipment decontamination pad will consist of a small pool constructed from 10-mil poly sheeting placed over a perimeter of hay bales. In the event that the wheels or the tracks of the equipment require wet decontamination, planks will be placed into the temporary decontamination pad to prevent puncture of the 10-mil liner. The soil and sediment collected on the decontamination pad will be temporarily isolated until it may be placed under the cap material. The rinse water will be temporarily containerized to allow any suspended sediments to settle before it is discharged on-Site.

If necessary, a temporary tracking pad will be installed at the entrance of the contaminant reduction zone to further minimize the potential for cross-Site or off-Site tracking of contaminants. The temporary tracking pad will consist of a layer of 1½ inch stone placed to a depth of approximately four inches over an area of 12 feet wide by 40 feet long, and will be removed upon the completion of the construction activities.

7. WASTE MANAGEMENT

7.1 Overview

During the implementation of this Draft WP, wastes will be generated that require various handling, storage, transportation, and disposal measures. These wastes include clearing and grubbing debris, decontamination soils and sediments as well as decontamination fluids, and disposable personal protective equipment (PPE). The wastes and the proper handling, storage, transportation, and disposal measures for each are described in this section.

7.2 Clearing and Grubbing Debris

The area of the former tailrace will require significant clearing and grubbing. Clearing will consist of removing trees and shrubs flush to within approximately six inches of the existing grade. Grubbing will consist of the removal of stumps and/or root systems.

The removed trees and shrubs will be chipped on-Site, and the chipped material will be transported to a local recycling facility. Only those stumps or root systems that will impede the construction activities will be removed. In such case, the stump will be ground in place to 18-inches below grade and the ground material will be incorporated under the cap materials or will be transported to a local recycling facility. Any stumps that are excavated will be cleaned of soil and sediment, as is practicable, using a pressure washer and will be transported to a local recycling facility.

7.3 Decontamination Soils/Sediments and Fluids

Soil and sediment generated from wet decontamination of heavy equipment and hand tools that are collected on the decontamination pad will be temporarily isolated until they may be placed under the cap material. Sediments that settle from containerized rinse water will also be placed under the cap material. Rinse water generated from the wet decontamination process will be temporarily containerized to allow any suspended sediments to settle before it is discharged on-Site.

7.4 Disposable Personal Protective Equipment

Disposable PPE will be temporarily stored in drum liner bags and will be deposited in an approved container for solid waste disposal. The waste will be transported for off-Site disposal at an approved solid waste management facility.

8. SITE SPECIFIC HEALTH AND SAFETY PLAN

As required by the Order, a Site-Specific Health and Safety Plan (HASP) has been prepared for the on-Site activities to be implemented in completing the Time-Critical Removal Action. The Draft HASP was submitted to EPA on September 23, 2003. The HASP identifies the procedures, personnel responsibilities, and training necessary to protect on-Site personnel and the general public during the completion of the removal action. The HASP specifically identifies the potential hazards that may be encountered, provides for an assessment of each hazard, and describes procedures and measures, including a description of PPE measures, to be employed in minimizing the potential harm that may result from such hazards.

9. CONSTRUCTION QUALITY ASSURANCE PLAN

The materials that are to be incorporated as part of the cap and drainage swale are to be provided in accordance with this Draft WP and the Construction Specifications provided in Appendix A. Construction quality assurance measures will be implemented to ensure that the purchase and installation of the specified materials are in conformance with this Draft WP and the Construction Specifications (Appendix A). These measures will consist of deliverables in the form of a product sample and a Certificate of Compliance. A sample of the material must be submitted along with a Certificate of Compliance prior to the delivery of the specified materials to the Site. The Certificate of Compliance shall include specifications of the material and a statement attesting to the fact that the materials conform to the specifications provided in Appendix A.



10. COMMUNITY RELATIONS SUPPORT PLAN

A Draft Community Relations Support Plan has been prepared for the on-Site activities to be implemented in completing the TCRA. The Draft Community Relations Support Plan was submitted to EPA on September 23, 2003. This plan specifies the activities that will be taken to support the community involvement efforts of EPA.



11. POST-REMOVAL SITE CONTROLS

As required by the Order, a proposal for post removal Site control, consistent with Section 300.451(l) of the NCP and OSWER Directive No. 9360.2-02, will be submitted to EPA. In fulfillment of this requirement, a Post-Removal Site Control Plan will be prepared and submitted to EPA upon the completion of the construction of the cap.

12. SCHEDULE

An expeditious and detailed draft project schedule, including completion dates for interim activities, is provided in Appendix B. As shown in the Draft WP Schedule, the Site preparation and construction activities to be implemented in accordance with this Draft WP are expected to occur over a period of approximately eight weeks. Placement of loam and seed may occur in the spring of 2004.

The initial activities include obtaining private property access agreements. Consent to access each of the following properties may be required to implement this Draft WP:

- ANPC Associates Limited Partnership & Allendale Mill Associates Limited Partnership (Plat 12/Lot 560);
- Ms. Flora Rotella (Plat 14/Lots 303 and 333);
- Ms. Antoinette Grenier (Plat 14/Lot302);
- Mr. & Mrs. Charles Naber (Plat 14/Lot 272);
- Mr. & Mrs. Anthony Serio (Plat 14/Lot 271);
- Mr. & Mrs. James Scott (Plat 14/Lot 268);
- 2050 Centredale Village, L.P. (Plat 14/Lot 511); and
- Mr. Orlando Andreoni (Plat 14/Lot 516).

Requests for consent to access each of the above-referenced properties has been made. If consent to access each of these properties is not obtained, then implementation of this draft WP may be delayed.

Once the Site preparation and construction activities begin, the EPA OSC will be briefed each morning to identify the tasks that will be conducted for that particular day. Nearing the completion of the construction activities, a pre-final inspection of the cap will be performed by EPA. A "punch list" of remaining activities will be developed and following the completion of these activities, a final inspection will be performed by EPA once all construction activities are completed in accordance with this Draft WP and the Order. The activities performed in accordance with this Draft WP will be summarized in the CWR, as described in Section 6. The CWR will be submitted in accordance with the timeline identified in the Draft WP Schedule in accordance with the Order.

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DRAWINGS

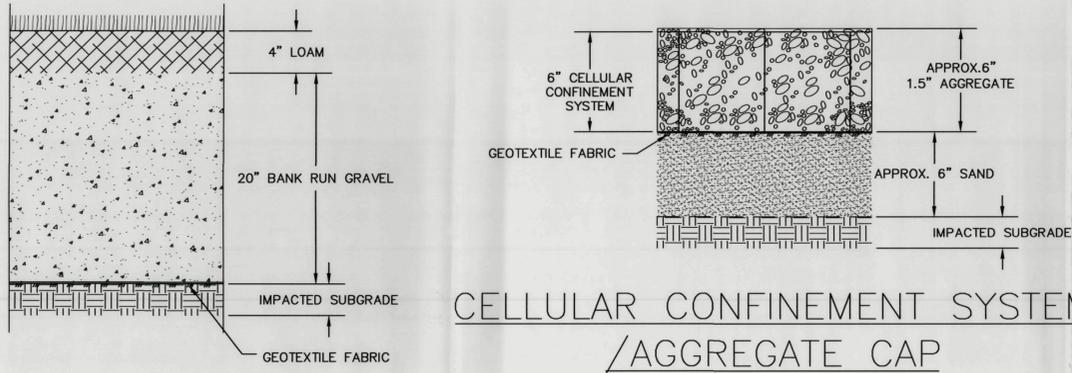
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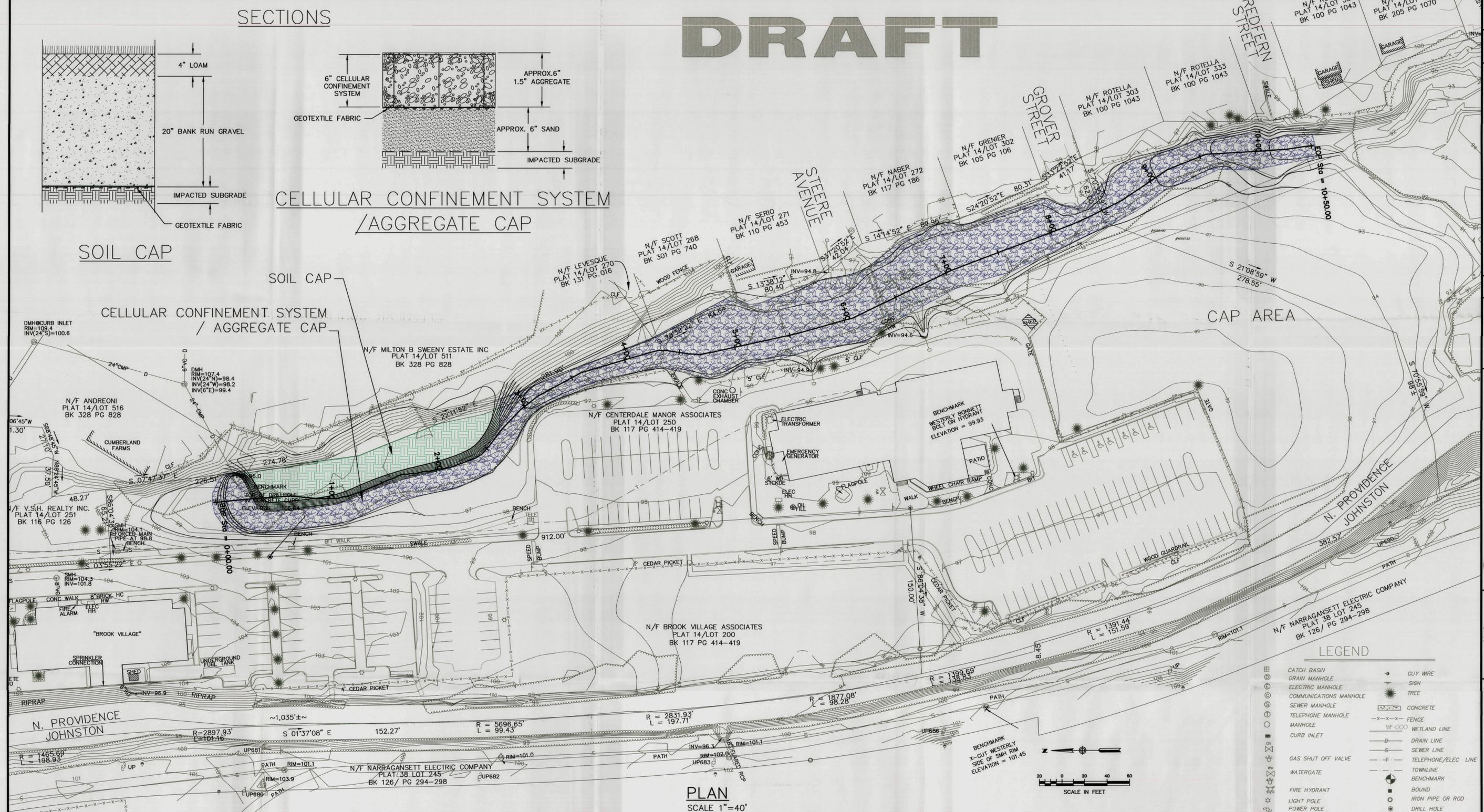
SECTIONS



SOIL CAP

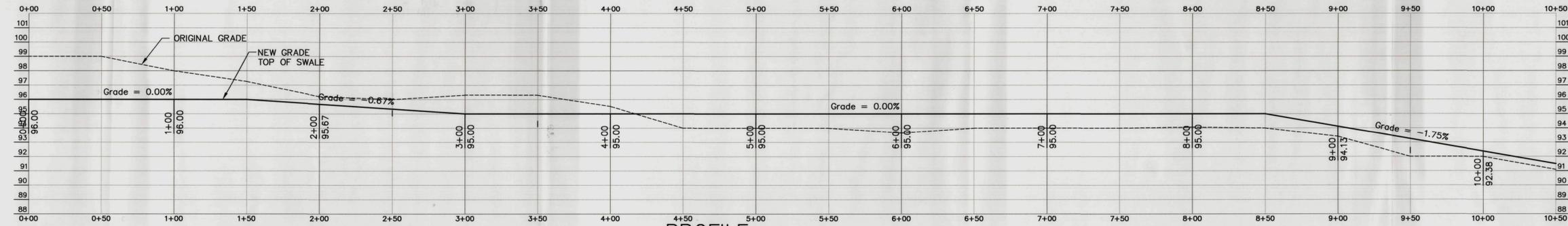
SOIL CAP

CELLULAR CONFINEMENT SYSTEM / AGGREGATE CAP



LEGEND

- ⊕ CATCH BASIN
- ⊖ DRAIN MANHOLE
- ⊕ ELECTRIC MANHOLE
- ⊕ COMMUNICATIONS MANHOLE
- ⊕ SEWER MANHOLE
- ⊕ TELEPHONE MANHOLE
- ⊕ MANHOLE
- ⊕ CURB INLET
- ⊕ GAS SHUT OFF VALVE
- ⊕ WATERGATE
- ⊕ FIRE HYDRANT
- ⊕ LIGHT POLE
- ⊕ POWER POLE
- ⊕ GUY WIRE
- ⊕ SIGN
- ⊕ TREE
- ⊕ CONCRETE
- ⊕ FENCE
- ⊕ WETLAND LINE
- ⊕ DRAIN LINE
- ⊕ SEWER LINE
- ⊕ TELEPHONE/ELEC LINE
- ⊕ TOWNLINE
- ⊕ BENCHMARK
- ⊕ BOUND
- ⊕ IRON PIPE OR ROD
- ⊕ DRILL HOLE



REVISIONS

NO.	DESCRIPTION OF REVISION	DATE	APPR.

SCALE
 1" = 40'
 15RP102

DRAWN BY
 A.C.L.

DATE
 9/26/03

APPR. BY
 D.S.

DATE
 9/26/03

SITE PLAN, PROFILE AND TYPICAL CAP SECTION VIEWS

DRAWING
 1

NO. OF SHEETS
 1

LEA An Employee Owned Company

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Loireiro Engineering Associates, Inc.
 100 Northwest Drive • Plainville, Connecticut 06062
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APPENDIX A
Construction Specifications

**CONSTRUCTION SPECIFICATIONS
TIME-CRITICAL REMOVAL ACTION
Administrative Order on Consent for Removal Action
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island**

September 30, 2003

Prepared for

**Centredale Manor Performing Parties Group
c/o Swidler Berlin Shereff Friedman, LLP
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Prepared by

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Comm. No. 15RP301

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Figure 1 Construction Specifications – Gross Particle Separator



Section 01010

Summary of Work

PART 1 GENERAL

This project consists of constructing a cap that incorporates a drainage swale over potentially impacted sediment within the former tailrace located along the eastern boundary of the Centredale Manor property.

1.1 WORK BY CONTRACTOR

The Contractor shall provide all labor, equipment, and materials to complete the work as described in this Specification and as generally summarized below.

Clearing

Clear all brush and trees within the limit of the work area, defined by the area to be capped and the adjacent areas to the west and east identified for loam and seed. Remove all adjacent structures (i.e., chain link fences, concrete slabs, etc.) as required to progress with the work. Dispose of all materials in accordance with the requirements identified in the Work Plan.

Soil Erosion and Sediment Controls

Provide and install a temporary check dam, at the south end of the former tailrace (work area), as a soil erosion and sediment control measure. Install staked hay bales at the terminus of side streets and point discharges into the former tailrace (work area). Maintain all soil erosion and sediment controls as required throughout the duration of the project. Add additional controls as necessary and/or as directed by the EPA, RIDEM or USACE.

Office, Sanitary, and Personnel Decontamination Facilities

Furnish and install a field office trailer, storage areas, personnel decontamination facilities and sanitary facilities for all employees, subcontractors, EPA, RIDEM and USACE representatives.

01010-1



Temporary Equipment Decontamination Pad

Furnish and install temporary equipment decontamination pads and an equipment tracking pad, as necessary.

Grading

Grade potentially impacted sediments as is necessary to establish the grade for the aggregate and soil caps. Place the graded material under the cap materials.

Dewatering

Lower the elevation of Allendale Pond by removing stop logs and opening the sluice gate at Allendale Dam. Construct a temporary drainage ditch within the area to be capped to allow water within this work area to gravity drain toward the temporary check dam constructed at the south end of the former tailrace.

Waste Disposal

Transport and dispose of all wastes generated at the Site in accordance with the requirements identified in the Work Plan. Materials to be recycled will be transported to a local facility. General trash will be removed from the Site and disposed at a local landfill.

Backfill

Backfill material shall be provided from off-site sources. Backfill will consist of sand, stone, bank run gravel, and topsoil.

Final Restorations

For areas to be capped with topsoil, provide final grading with loam as required and hydroseed. Soil erosion and sediment controls shall be removed as soon as a suitable stand of grass has been established in these areas.

PART 2 PRODUCTS

Not Used

01010-2



PART 3 EXECUTION

Not Used

01010-3



Section 01025

Field Engineering

PART 1 GENERAL**1.1 SCOPE**

The work of this Section includes, but is not limited to, the establishment and maintenance of survey control points, lines, and levels.

1.2 GRADES, LINES, AND LEVELS

Vertical control points (benchmarks), baselines, and horizontal control points and/or coordinate system will be established by a professional surveyor licensed in the State of Rhode Island. The Contractor shall locate all cap and drainage swale limits using these control points, benchmarks, baselines, and levels as is necessary to perform the work in accordance with the Specifications and the Work Plan.

1.3 FIELD RECORDS

The Contractor shall maintain records of all field survey work and mark up and maintain site drawings with salient features of the work as it is performed, including locations of control points, temporary works, grading areas, and boundaries of the cap and associated drainage swale. Record drawings shall be prepared by the Contractor and stamped by a land surveyor licensed by the State of Rhode Island at the completion of the project.

1.4 EXISTING TOPOGRAPHY

The actual existing surface elevations will be found to have minor deviations from the contours shown on the Drawings included in the Work Plan. This shall be verified by the Contractor before work is started.

1.5 SURVEY AND MEASUREMENT DATA

Survey and measurement data shall be obtained in accordance with the following requirements.

- 1) Accuracy

01025-1



Optical survey, tape measurements, and electronic measurements: Minimum accuracy of ± 0.01 feet in horizontal location and ± 0.01 feet in elevation.

2) Tolerances

The Contractor shall grade and place all, topsoil, and all other materials to the lines, grades, slopes, and thickness of the designed elevations within a tolerance of ± 0.10 feet.

Horizontal and vertical control points will be established and provided by the Engineer around the site prior to construction. The Contractor shall be responsible for protecting these points during construction.

1.6 FIELD ENGINEERING

The exact location of the benchmarks to be used as control datum will be identified prior to commencing with the survey work.

Verify and confirm existing conditions, drawing dimensions, and elevations as required to complete the work.

Provide field engineering services. Establish elevations, lines, and levels utilizing recognized engineering survey practices.

1.7 EXAMINATION

Examine and verify that existing site conditions and surfaces are as indicated on the Drawings and are acceptable for subsequent work.

Examine and verify specific conditions described in individual Specification Sections.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

01025-2



Section 01120

Decontamination

PART 1 GENERAL**1.1 SCOPE**

The work of this Section includes, but is not limited to, decontamination procedures for equipment and materials. Decontamination procedures for personnel shall be covered by the Contractor's Health and Safety Plan (HASP).

1.2 GENERAL REQUIREMENTS

To minimize the potential for cross-site or off-site tracking of soils and sediments, a combination of dry and wet decontamination procedures will be employed before heavy equipment, hand tools and other hand-held equipment are mobilized from the exclusion zone. Dry decontamination procedures will include scraping and brushing wet and moist soil and sediment from the equipment within the exclusion zone to minimize the amount of rinse wastewater that may be generated. This material will be temporarily isolated within the exclusion zone until it may be placed under the cap material.

If necessary, wet decontamination procedures will be used to clean equipment and vehicles within a contaminant reduction zone after leaving the exclusion zone. Wet decontamination procedures will include the use of brushes and tap water in the event that the equipment requires decontamination beyond dry decontamination. The equipment will be washed on a temporary equipment decontamination pad located within the contaminant reduction zone to remove any material not removed by dry decontamination.

The temporary equipment decontamination pad will consist of a small pool constructed from 10-mil poly sheeting placed over a perimeter of hay bales. In the event that the wheels or the tracks of the equipment require decontamination in excess of dry decontamination, planks will be placed into the temporary decontamination pad to prevent puncture of the 10-mil liner. The soil and sediment collected on the decontamination pad will be temporarily isolated until it may be placed under the cap material. The rinse water will be temporarily pooled to allow any suspended sediments to settle before it is discharged on-site.

If necessary, a temporary tracking pad will be installed at the entrance of the contaminant reduction zone to further minimize the potential for cross-site or off-site tracking of contaminants. The temporary tracking pad will consist of a layer of 1½ inch stone placed

01120-1



to a depth of approximately four inches over an area of 12 feet wide by 40 feet long, and will be placed under the cap material upon completion of the construction activities.

1.3 EQUIPMENT DECONTAMINATION PAD

Design and Construction

- 1) The Contractor shall be responsible for the design of the temporary decontamination pads, which shall meet the following criteria:
 - a. Dimensions adequate to contain wash water and debris from the largest sized vehicles.
 - b. Impervious membrane required for the temporary decontamination pads to prevent seepage directly onto the ground.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 INSTALLATION OF DECONTAMINATION PAD

Installation of the temporary decontamination pad shall be completed in accordance with the Contractor's design and construction methods.

3.2 MANAGEMENT OF DECONTAMINATION WATER

Rinse water generated from the wet decontamination process will be temporarily containerized to allow any suspended sediments to settle before it is discharged directly onto the ground and the temporary drainage ditch.

-- End of Section --



Section 01200

Coordination and Meetings

PART 1 GENERAL**1.1 SCOPE**

The work of this Section includes, but is not limited to, coordination, preconstruction meeting, and progress meetings.

1.2 COORDINATION

The coordination and scheduling of submittals and work shall be conducted to assure efficient and orderly sequence of interdependent project elements.

1.3 PRECONSTRUCTION MEETING

Prior to the implementation of the Work Plan, a preconstruction meeting will be held with EPA. The meeting will be used to discuss the timing and sequencing of the project work, as well as the actions necessary to be completed prior to beginning with the work. Specific issues to be discussed may include:

- a. Introduction.
- b. Lines of communication and reporting procedures.
- c. Site access, security and procedures.
- d. Project schedule.
- e. Work hours.
- f. Procedures and processing of field decisions, submittals, requests for information, and Change Orders.
- g. Project meetings.
- h. Construction facilities and controls.
- i. Health and safety issues.
- j. Decontamination requirements.
- k. Contractor quality control measures.

01200-1



- l. Spill control requirements.
- m. Environmental protection.
- n. Housekeeping procedures.
- o. Procedures for handling, storage and disposal of materials from the Site.
- p. Procedures for maintaining record documents.

Record minutes and distribute copies in accordance with the schedule identified during the meeting.

1.4 PROGRESS MEETINGS

Progress meetings will be held weekly with representatives from the EPA, RIDEM, and the USACE to discuss the status of the project and any issues that may affect the progress of implementation activities.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --



Section 01330

Submittal Procedures

PART 1 GENERAL

1.1 SCOPE

The work of this Section includes, but is not limited to, preparation and provision of all required submittals which includes all documents such as design drawings, plans, statements and certificates of compliance, and administrative submittals presented for review.

1.2 ACTIONS POSSIBLE

Submittals will be returned with one of the following notations:

Submittals Not Reviewed

Submittals will not be reviewed if the submittal has been previously reviewed and approved, is not required as a submittal, does not have evidence of being reviewed and approved by the Contractor, or is not complete. Such submittals will be returned with an explanation of the reason it is not reviewed. Returned submittals deemed to lack review by the Contractor or to be incomplete shall be resubmitted with appropriate action, coordination, or change.

Submittals Marked “No Exceptions Taken”

Submittals marked “No Exceptions Taken” authorize the Contractor to proceed with the work covered.

Submittals marked “Make Corrections Noted”

Submittals marked “Make Corrections Noted” authorize the Contractor to proceed with the work as noted provided the Contractor takes no exception to the notations.



Submittals Marked “Amend and Resubmit” or “Rejected - see Remarks”

Submittals marked “Amend and Resubmit” or “Rejected - See Remarks” indicate the submittal is incomplete or does not comply with the design intent or the requirements of the Contract Documents and shall be resubmitted with appropriate changes. No work shall commence prior to approval of resubmission.

1.3 FORMAT OF SUBMITTALS

Transmittal

The transmittal shall identify the Contractor, indicate the date of the submittal, and include information prescribed by the paragraph entitled “Identifying Submittals”.

Reviewing Authority

A representative from LEA will be responsible for reviewing and certifying that submittals are in compliance with contract requirements and in conformance with the project design intent. All submittals shall be transmitted to the contact person disclosed at the preconstruction meeting.

Identifying Submittals

Identify submittals with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Contract number (if any).
- c. The Section number of the Specification Section for which the submittal is required.
- d. Transmittal number, consecutive numerical.
- e. For a resubmission, an alphabetic suffix on the submittal description, for example, 10A, to indicate the resubmission.
- f. The name, address, and telephone number of the Subcontractor, supplier, manufacturer or any other-tier Contractor associated with the submittal.

1.4 QUANTITY OF SUBMITTALS



Submit four copies for submittal, unless directed otherwise by EPA, to be marked and returned. One reviewed and marked copy of the submittal will be provided to the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARING SUBMITTALS

Responsibility

The Contractor is responsible for the accuracy of submittals. Actions by LEA are intended only to determine compliance with contract requirements and project design intent. Such actions do not apply to quantities, nor relieve the Contractor of his responsibility for furnishing material, or performing work required by the Work Plan, Drawings, and Specifications. No action by LEA on submittals shall be considered a guarantee of accuracy of measurements or of existing conditions.

Submittals by Subcontractors

All submittals by Subcontractors shall first be sent by the Subcontractors directly to the Contractor, who shall keep a record of the drawing numbers and date of receipt. The Contractor shall check thoroughly all Subcontractor submittals regarding measurements, sizes of members, materials, and details to satisfy himself that they conform to the intent of the Work Plan, Drawings, and Specifications. Submittals found to be inaccurate or otherwise in error shall be returned to the Subcontractor for correction. After the EPA has checked and approved such drawings, EPA shall place thereon the date of approval and signature of the checker.

3.2 CHANGES TO SUBMITTALS

After final action on submittals (“No Exceptions Taken” and “Make Corrections Noted”), no further changes will be considered without written application from the Contractor.

3.3 ERRORS AND OMISSIONS

01330-3



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Action by the LEA on submittals does not relieve the Contractor from responsibility for errors or omissions which may exist, even though work is done in accordance with such submittals. Review of submittals does not convey any responsibility for errors or omissions to LEA. Where such errors or omissions are discovered later, they shall be made good by the Contractor irrespective of any review by LEA.

-- End of Section --

01330-4



Section 01500

Temporary Facilities and Controls

PART 1 GENERAL

1.1 GENERAL CONDITIONS

The Contractor will be responsible for providing all trailers, sanitary facilities, equipment and material storage areas, storage containers, and containment requirements to complete the work in accordance with the specifications and the Work Plan.

1.2 UTILITIES

The Contractor will be responsible for the provision of all utility requirements necessary to complete the work in accordance with the specifications and drawings.

1.3 SANITARY FACILITIES

The Contractor shall provide and maintain sanitary accommodations for use by his employees, subcontractors, appointed representatives of the EPA, RIDEM, USACE, and the Engineer. The Contractor shall be responsible for complying with all applicable local and State codes and requirements.

1.4 CONTRACTOR ASSISTANCE AND AS-BUILT DRAWINGS

The Contractor will be responsible for maintaining and preparing detailed as-built drawings, identifying the extent of the final limits of the cap and associated drainage swale. The Surveyor will be responsible for surveying the extent of the grading areas and the final limits of the cap and associated drainage swale.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

01500-1



Section 01560

Safety and Environmental Controls

PART 1 GENERAL

1.1 SCOPE

This Section presents the environmental and safety regulations and standards to which the Contractor will be held responsible. Additional regulations may be specified elsewhere in this Specification. The Contractor is responsible for complying with all requirements, as applicable, including local, State, and Federal requirements which may not be specifically referenced herein or in the Work Plan or Site-Specific HASP.

1.2 REFERENCES

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

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

1.3 DEFINITIONS

Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.



Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled "Hazardous Materials," resulting from industrial, commercial, and agricultural operations and from community activities.

Debris

Combustible and noncombustible wastes such as tree stumps, leaves, roots, and other waste materials resulting from construction or maintenance and repair work.

Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Water Resources

Surface waters of all types (continuous or intermittent) and designated wetlands.

Spill

Any oil, hazardous material, hazardous substance, or similar material released outside its normal container.

1.4 SUBMITTALS

Submit the following in accordance with Section 01330 "Submittal Procedures".

Records

- a. Waste Manifests or Bill of Lading, if any.
- b. Material Handling and Disposal Reports

Waste Manifests or Bill of Lading

Submit completed manifests or bills of lading, if any, for disposal of waste at permitted facilities.



Material Handling and Disposal Report

Develop and maintain a comprehensive material tracking report for all materials generated or otherwise handled at the Site including, but not limited to, brush, stumps, personal protective equipment for disposal, and any other materials generated or otherwise handled during the duration of the project.

Material handling and disposal reports may include, as necessary, the following data:

- a. Characteristics of the material.
- b. Volume.
- c. Transporter.
- d. Final or intermittent destination.

1.5 CONTRACTOR LIABILITIES FOR ENVIRONMENTAL PROTECTION

The Contractor shall comply with environmental protection laws including but not limited to: the Clean Water Act, the Clean Air Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Resource Conservation and Recovery Act. The Contractor is subject to Federal, State, and local inspections, which may include questioning of Contractor personnel who are working with or have contact with hazardous materials. Contractor shall complete and provide environmental training documentation for training required by local, State, and Federal regulations.

1.6 ENVIRONMENTAL PROTECTION REGULATORY REQUIREMENTS

Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with local, State, and Federal regulations, procedures, and requirements pertaining to the environment, including but not limited to water, waste, air, and noise pollution.

PART 2 PRODUCTS

The Contractor will be responsible for providing all equipment and instrumentation necessary to comply with the safety and environmental requirements of this Specification.

01560-3



PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Confine construction activities to within the limits of the work indicated or specified.

Land Resources

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without approval of LEA.

Protection of Watercourses and Inland Wetlands

The Contractor shall comply with all Soil Erosion and Sediment Control requirements as defined in Section 02272 "Soil Erosion and Sediment Controls", and as otherwise defined in the Work Plan.

Temporary Construction

Remove traces of temporary construction facilities such as work areas, structures, temporary decontamination pads and tracking pads, stockpiles of excess or waste materials, and other signs of construction. Grade temporary roads, parking and access areas, and similar temporarily used areas to conform with surrounding contours.

Burnoff

Burnoff of the ground cover is not permitted.

3.2 CONTROL AND DISPOSAL OF SOLID WASTES

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the Site. Prevent contamination of the site or other areas when handling, storing, and disposing of wastes. At project completion, leave the areas clean.



Disposal of Rubbish and Debris

Remove and dispose rubbish and debris in accordance with the Work Plan.

Petroleum Products

Protect against spills, leaks, and evaporation during storage, fueling, and lubrication of equipment and motor vehicles. Dispose of lubricants and excess oil in accordance with all applicable regulations.

3.3 DUST CONTROL

Dust will be controlled as is necessary applying water with a water truck to the work area, and in accordance with the requirements of the Site-Specific HASP.

3.4 SITE HEALTH AND SAFETY

Furnish safety, health, and accident prevention provisions in accordance with the Site-Specific HASP.

3.5 EXCLUSION ZONE AND CONTAMINATION REDUCTION ZONE

Do not permit personnel not directly involved with the project to enter contaminated work zones, including the exclusion zone and the contamination reduction zone. The exclusion zone shall encompass an area of at least 3 m (10 feet) from the limits of the construction activities. At the perimeter of the exclusion zone, establish a contamination reduction zone. The limits of the contamination reduction zone shall be established by the Contractor. Within the contamination reduction zone, equipment and personnel shall be cleaned as stated in the paragraph entitled "Personnel and Equipment Decontamination". The Contractor's field office, parking area, and other support facilities shall be located outside the exclusion zone and contamination reduction zone. Boundaries of the exclusion zone and contamination reduction zone shall be clearly marked.

3.6 TRAINING

Provide health and safety training in accordance with 29 CFR 1910 prior to starting work. Furnish copies of current training certification statements for all personnel prior to initial entry into the work site.



On-site Training

Prior to starting on-site work, a health and safety meeting shall be held by the Site Health and Safety Officer (SHSO) to discuss the implementation of the Site-Specific HASP.

Training Outline

Provide the following:

- a. Health and safety program organization, including discussion of distribution of functions and responsibilities.
- b. Organization and components of the HASP.
- c. Physical and chemical site hazard identification.
- d. Basic toxicology and toxicity information.
- e. Discussion of the exclusion zone and contamination reduction zone.
- f. Protective clothing.
- g. Respiratory protection program.
- h. Air quality monitoring.
- i. Personnel exposure guidelines.
- j. Decontamination procedures.
- k. Basic first aid review.
- l. Emergency procedures and contingency plan.
- m. Site entry and exit procedures.
- n. *Sampling procedures.*

3.7 PERSONNEL PROTECTION

Furnish appropriate personal safety equipment and protective clothing to personnel and ensure that safety equipment and protective clothing is kept clean and well maintained. Furnish three clean sets of personal protective equipment and clothing per day for use by the Engineer or official visitors as required for entry into the exclusion zone.

3.8 RESPIRATORY PROTECTION PROGRAM

Develop and submit a respiratory protection program, as part of the HASP, addressing respirator usage and training, in accordance with 29 CFR 1910.

3.9 PERSONAL PROTECTIVE EQUIPMENT DECONTAMINATION

Decontaminate or properly dispose of personal protective equipment and clothing worn in contaminated areas at the end of the work day. The SHSO shall be responsible for

01560-6



ensuring that personal protective clothing and equipment are decontaminated before being reissued.

3.10 FIRST AID AND EMERGENCY RESPONSE EQUIPMENT AND PROCEDURES

Provide appropriate emergency first aid equipment for treatment of exposure to site physical and chemical hazards. Provide and post a list of emergency phone numbers and points of contact for the community fire, hospital, police, ambulance, and other necessary contacts. Provide and post a route map detailing the directions to the nearest medical facility.

3.11 IGNITION SOURCES

Do not permit ignition sources in the exclusion zone and the contamination reduction zone. Smoking shall only be permitted in designated areas as approved by LEA.

3.12 PERSONNEL AND EQUIPMENT DECONTAMINATION

Decontaminate personnel and equipment before exiting the work zones per the HASP.

3.13 EMERGENCY RESPONSE REQUIREMENTS

In an emergency, take action to remove or minimize the cause of the emergency, contact emergency response personnel, report to LEA, and institute necessary measures to prevent repetition of the emergency. Equip site-support vehicles with route maps providing directions to the medical treatment facility.

3.14 UNFORESEEN HAZARDS

Immediately notify LEA of any unforeseen hazard or condition which becomes evident during work.

3.15 DEWATERING

Dewatering activities shall be conducted in accordance with Section 02140 "Dewatering".

3.16 EROSION CONTROL

All watercourses and wetlands shall be protected from sedimentation during all operations. Erosion control activities shall be conducted in accordance with Section 02272 "Soil Erosion and Sediment Controls".



3.17 WASTEWATER DISPOSAL

Liquid wastes shall be segregated based on generation sources, unless otherwise directed by LEA. Decontamination wastewater shall be handled in accordance with Section 01120 "Decontamination".

-- End of Section --

01560-8



Section 02110

Clearing and Grubbing

PART 1 GENERAL

1.1 SCOPE

The work of this Section includes clearing and grubbing of the area to be capped and the adjacent areas to the east and west to enable the proper grades to be established.

1.2 DEFINITIONS

Clearing

Clearing shall consist of clearing shrubs, downed timber, snags, and brush from the work area, as a first step.

Grubbing

Grubbing shall consist of the removal of tree stumps and/or root systems as is necessary to construct the cap and drainage swale.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

The area designated for clearing and grubbing includes the area of the former tailrace.

02110-1



3.2 CLEARING

Trees, stumps, roots, brush, and other vegetation in the area to be cleared shall be cut off to within six inches of the ground surface, except trees and vegetation as may be directed to be left standing. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and grading operations by erection of barriers or by other means as the circumstance requires. To the extent possible, steps shall be taken to allow trees to remain. Traditional tree clearing and chipping equipment shall be used in clearing the work area. Once small brush and shrubs are cleared, larger vegetation and trees within the work area shall be felled, trimmed, and cut into section. Trees that are cut shall be cleared and chipped using traditional clearing and chipping machinery. Once cleared, the area of the cap shall be grubbed.

3.3 GRUBBING

Grubbed tree stumps shall be pressure-washed prior to off-site disposal at a local facility. Alternatively, stumps shall be ground in place to a depth of approximately twelve inches below the ground surface using an *in-situ* stump grinder.

3.4 SOLID WASTE DISPOSAL

Chipped materials removed during clearing and grubbing shall remain in the work area to be incorporated under the cap. Alternatively, chipped shrubs, brush, and trees, as well as grubbed tree stumps and root systems, may be disposed or recycled off-site. Solid wastes shall be segregated based on direction from LEA. Equipment shall be provided by the Contractor for transportation and off-site disposal of solid wastes in accordance with the Work Plan.

-- End of Section --



Section 02140

Dewatering

PART 1 GENERAL

1.1 SCOPE

The work of this Section includes, but is not limited to, dewatering within the construction area, as necessary.

1.2 GENERAL REQUIREMENTS

Dewatering shall include lowering the elevation of Allendale Pond by removing stop logs and opening the sluice gate at Allendale Dam. Dewatering shall also include the construction of a temporary drainage ditch within the area to be capped to allow water within this work area to gravity drain toward the temporary check dam constructed at the south end of the former tailrace. Dewatering shall be implemented to accommodate grading and capping activities, as may be required.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 DEWATERING

To dewater the work area, a temporary drainage ditch shall be constructed to direct water so that it flows through the check dam constructed at the southern end of the former tailrace.

-- End of Section --

02140-1



Section 02220

Earthwork

PART 1 GENERAL**1.1 SCOPE**

The work of this Section includes, but is not limited to, grading, stabilizing, and filling activities.

1.2 REFERENCES

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

ASTM C 136	(1993) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1140	(1992) Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(1993) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
USDA 1962	Soil Survey Manual

1.3 SUBMITTALS

Submit the following in accordance with Section 01330 "Submittal Procedures," fourteen days prior to transporting the material to the Site:

Certificates of Material Compliance

- a. Bank Run Gravel
- b. Sand
- c. Stone (Aggregate)
- d. Topsoil

02220-1



Materials

Identify virgin borrow source(s), fourteen days prior to transporting the material to the Site for approval by LEA.

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, frozen, deleterious, unsuitable, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall not exceed one-half the lift thickness at the intended location.

Bank Run Gravel

Process gravel shall meet the following gradation requirements:

Square Mesh Sieve	% Passing by Weight
2"	100
1 1/2"	95-100
3/4"	50-95
#4	20-45
#100	2-10

Sand

Sand shall meet the following gradation requirements:

Square Mesh Sieve	% Passing by Weight
3/4"	100
#4	95-100
#30	25-60
#100	0-10



The results of a sieve analysis performed on a sediment sample obtained from the work area is provided, along with the grain-size distribution for sand from a local supplier, at the end of the Specifications.

Stone (Aggregate)

For the check dam, stone (aggregate) shall consist of 3/4" crushed stone. For the aggregate material to be incorporated as part of the aggregate cap, stone (aggregate) shall consist of 1.5" washed stone.

Topsoil

Topsoil shall meet the USDA textural classification of loam, silty loam, sandy loam or loamy sand and shall include a minimum organic content of 5 to 20 percent based on "loss-on-ignition" laboratory tests. The pH of the soil shall be between 6.0 and 7.5. Topsoil shall be virgin, not manufactured or processed.

2.2 BORROW

Obtain borrow materials required as bank run gravel, sand, stone (aggregate), and topsoil from virgin borrow sources approved by LEA. Submit the virgin borrow source fourteen days prior to transporting material to the Site. If the material is unacceptable, other sources will be required to be submitted to LEA for approval.

PART 3 EXECUTION

3.1 PREPARATION

Unsuitable Material

Remove debris, as is necessary, to place the material components of the cap.

3.2 UTILITIES

Location of the existing utilities indicated is approximate. The Contractor shall physically verify the location and elevation of the existing utilities indicated prior to starting construction. The Contractor shall be responsible for coordinating utility locations with Call-Before-You-Dig or similar service.



3.3 WORK REQUIREMENTS

Grade to the elevations and dimensions as directed by LEA.

Hours of Operation

Work activities shall take place only during the hours specified by EPA, from Monday to Friday. No work will be permitted on Saturday or Sunday unless otherwise approved or directed by LEA and EPA.

Environment Limitations

Grading shall take place when winds are less than 50 mph. Water shall be applied to suppress or prevent fugitive dust in all disturbed areas, as directed by LEA, or as otherwise needed.

Clean-up Responsibilities

At the end of each work day, the Contractor shall be fully responsible for sweeping, picking up, and removing any dust, dirt, or mud from the Centredale Manor paved drive and parking areas that may have been deposited as a result of the construction operations.

3.4 FILLING

Bank Run Gravel Placement

Place bank run gravel to 4 inches below grade to match the surrounding contours. Compact areas with equipment placing material. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.5 GRADING

Finish grade shall be defined as the top of the newly deposited topsoil or aggregate. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed by the Engineer.



3.6 CONSTRUCTION QUALITY ASSURANCE

Construction quality assurance shall consist of the submittal of Certificates of Material Compliance for each of the materials specified in this section. Certificates of Material Compliance shall be submitted fourteen days prior to delivery to the Site. The Certificates of Material Compliance shall assert that the material being supplied conforms to the appropriate specifications provided in this section. In addition, a sample of the material shall be submitted fourteen days prior to delivery of the material to the Site for inspection by the Engineer and EPA.

-- End of Section --

02220-5



Section 02240

Soil Stabilization System

PART 1 GENERAL**1.1 SCOPE**

The work of this Section includes, but is not limited to, the supply, delivery and installation of soil stabilization system materials, including nonwoven geotextiles to be used as a separation layer between components of the cap, and a polyethylene cellular confinement system to be used in the placement of the aggregate cap materials. The Contractor shall supply all equipment, tools, labor, supervision and materials required to complete the work, as provided in the Work Plan, or as directed by LEA.

1.2 QUALITY CONTROL**a. Manufacturer Qualifications**

1. The nonwoven geotextile manufacturer shall be a specialist in the manufacturing of nonwoven polypropylene geotextiles, and shall have produced and manufactured a minimum of 5 million square feet of the respective geotextiles that were used in successful installations.
2. Nonwoven geotextiles produced for this project shall be manufactured by a single manufacturer.
3. The polyethylene cellular confinement system manufacturer shall be a specialist in the manufacturing of polyethylene cellular confinement systems.
4. The polyethylene cellular confinement system used for this project shall be manufactured by a single manufacturer.

b. Material Testing

1. Test materials as set forth in the applicable referenced Specifications and as required herein. Required testing of nonwoven geotextiles and polyethylene cellular confinement systems is set forth herein.

02240-1



2. Geotextiles shall be tested by the manufacturer prior to shipment to ensure that the physical and mechanical properties of the finished product are in accordance with these Specifications. The required material properties for the Mirafi® N-Series Nonwoven Polypropylene Geotextiles and the Webtec TerraCell® cellular confinement system are presented in the Technical Data as Attachment 1 at the end of the Specifications.
- c. Laboratory Testing
1. Unless otherwise indicated, testing shall be performed by the manufacturer.
- d. Inspection Before and During Installation
1. The Contractor shall inspect all geotextile materials delivered to the site. Damaged materials shall be identified by the Contractor and staged for either return to the manufacturer or repaired in accordance with the manufacturer's recommendations. Return or repair will be at LEA's discretion.
 2. During placement of the geotextile materials, the Contractor shall carry out visual inspections of the material surface. Any faulty areas relating to fabric integrity, uniformity, rips or tears, sewing incompleteness, and seam overlap shall be replaced or repaired by the Contractor using pre-approved techniques and in accordance with manufacturer recommendations.

1.3 SUBMITTALS

- a. Certified Test Reports
1. Certified test reports within the requirements of standards and testing methods specified herein shall be made available to LEA, upon request. The material manufacturer(s) and Contractor must satisfy LEA that the material they offer to furnish and install shall meet every aspect of the requirements provided in the Technical Data. Upon request, the Contractor shall transmit to LEA all information given to them by the manufacturer(s) or supplier(s) prior to furnishing and installing any such material.



2. The Contractor shall obtain from the geotextile supplier(s) and submit to LEA, upon request, samples of the proposed geotextile materials.

1.4 DELIVERY, STORAGE, AND HANDLING

- a. Materials shall be delivered to the site in accordance with these specifications and the required approvals. Storage and handling of the geotextile materials shall conform to the manufacturer's recommendations and shall be done in such a manner as to prevent damage to any part of the work. The Contractor shall provide labor and equipment to properly unload material upon arrival at the site. The material shall be stored in a reasonably level, smooth, and well-drained area that is away from sharp objects or rocks that may puncture the geotextile, away from brush, poison oak or ivy, oil, grease, or fuels, and in an accessible area for inspection. Individual rolls shall be stored with safe walking space and clearance between them to allow full view for inspection purposes. To prevent ultraviolet degradation of the material, the protective wrapper on each geotextile roll shall not be removed until the material is ready for use. Any rolls that are delivered without protective wrappers shall be rejected. Any rolls of geotextile that will not be installed within 21 days following delivery to the site shall be covered with tarps to protect the ends of the rolls from the elements.

PART 2 MATERIALS

2.1 SOIL STABILIZATION SYSTEM

- a. Nonwoven Geotextiles
 1. Nonwoven geotextiles shall be provided to meet the minimum physical and mechanical properties outlined in the Technical Data.
- b. Polyethylene Cellular Confinement System
 1. The polyethylene cellular confinement system shall be provided to meet the minimum physical and mechanical properties outlined in the Technical Data.
 2. Polymeric tendons shall be used, if necessary, to anchor the polyethylene cellular confinement system. The polymeric tendons shall be provided by the polyethylene cellular confinement system manufacturer, and installed



according to the manufacturer's recommendations. Any other anchor system components shall be provided and installed in accordance with the polyethylene cellular confinement system manufacturer's recommendations.

PART 3 EXECUTION

3.1 INSTALLATION RESPONSIBILITY

- a. The Contractor shall be responsible for installing the soil stabilization system and all components and details associated with these materials.

3.2 INSTALLATION OF SOIL STABILIZATION SYSTEM

- a. Soil stabilization materials shall be placed by the Contractor at the locations shown on the Drawings after preparation of the subgrade. During periods of high winds, sandbags or other methods approved by the manufacturer shall be used by the Contractor to secure any exposed soil stabilization system materials in place.
- b. Nonwoven geotextiles that have soils placed upon them shall initially have 6 inches (minimum) of the material placed onto the geotextile and spread in advance of construction equipment. Extreme care shall be required by the Contractor so that the equipment operator only pushes the soil materials ahead without damage to the geotextile. At no time shall construction equipment be permitted to track directly on the geotextiles. Any damage to the geotextile or other final cover system geosynthetics shall be repaired by the Contractor using approved methods, or shall be replaced.
- c. Polyethylene Cellular Confinement System
 1. Anchor Terracell[®] sections at crest of slope. Use type of anchor and frequency of anchoring as directed by the Engineer.
 2. Expand Terracell[®] sections down slope. Confirm each Terracell[®] section is expanded uniformly to required dimensions and outer cells of each layer are correctly aligned. Interleaf or overlap edges of adjacent sections in each layer, according to which side wall profiles abut. Ensure upper surfaces of adjoining Terracell[®] sections are flush at joint and adjoining



cells are fully anchored. Anchor with specified anchors in a prescribed pattern throughout slope surface.

3. Feed precut lengths of tendon material through aligned holes in cell walls of Terracell[®] section before expanding individual sections into position. Tie off end of tendons with a knot that cannot pass through hole in cell walls. Tie knots to provide full tendon strength and not slip under tensioning of tendon.
4. Anchor tendons and Terracell[®] section at slope crest and expand down slope surface.
5. Where intermediate anchoring of slope surface is not permitted due to underlying geomembrane, attach specified restraint pins to tendons at predetermined intervals to achieve necessary load transfer.
6. Place infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip. Limit drop height to a maximum of 3 feet. Avoid displacement of Terracell[®] sections by infilling from crest to toe of slope.

3.3 COVERING SOIL STABILIZATION SYSTEM

- a. All soil stabilization system materials shall be covered within 21 calendar days following removal of their protective wrapping and their placement in the field to protect them from ultraviolet degradation. The Contractor shall stage construction activities to accomplish the schedule. Any materials left exposed longer than the 21 calendar days shall, at LEA's discretion, be removed and replaced.

3.4 BRIDGE-LIFT REINFORCEMENT

- a. Panel overlaps shall be a minimum of three feet for both panel edges and end-of-roll edges for the nonwoven geotextile. The Contractor shall provide any and all measures necessary to anchor the geotextile against wind uplift or drag until fill is placed atop the geotextile. Under no circumstances shall construction equipment traverse directly on the geotextile.

-- End of Section -

02240-5



Section 02272

Soil Erosion and Sediment Controls

PART 1 GENERAL

1.1 SCOPE

The work of this Section includes, but is not limited to, furnishing and installing soil erosion and sediment control measures as indicated in the Work Plan, as specified herein, and as necessary for the proper and complete performance of the work.

1.2 REFERENCES

Except as herein specified or as indicated on the Drawings or in the Work Plan, the work of this Section shall be consistent with the practices and policies set forth in the "Rhode Island Soil Erosion and Sediment Control Handbook".

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

Site Evaluation

Prior to the start of work on the site and weekly during construction, the Contractor and the Engineer shall conduct a field evaluation of the erosion and sediment control measures.

02272-1



3.2 SET UP

Grading operations shall be conducted in such a manner to reduce erosion and sedimentation to a practical minimum. Install soil erosion and sedimentation controls as designated in the Work Plan. Additional soil erosion measures shall be taken as work progresses or as directed by LEA.

3.3 MAINTENANCE

Maintain all erosion control measures until a suitable stand of vegetative cover (90 percent cover or as determined by LEA).

3.4 REMOVAL

Care shall be exercised during removal to minimize erosion or sedimentation of watercourses.

Provide protection as follows:

- a. Construction shall be performed in such a manner so as to keep land grading and disturbance adjacent to wetland and watercourse to a minimum.
- b. Construction areas shall be revegetated and/or adequately protected from subsequent erosion. Revegetation/erosion controls shall be made promptly and shall meet or equal those outlined in the Work Plan.
- c. No debris or excess excavated materials shall be stored or disposed of within wetlands or adjacent watercourses.
- d. Construction equipment shall not be serviced within the wetland areas, nor shall any petroleum products be stockpiled therein.

– End of Section –



Section 02631**Storm Sewer System – Gross Particle Separator****PART 1 GENERAL****1.1 DESCRIPTION**

Outside, underground storm sewer systems, complete, ready for operation, including all drainage structures, frames, and covers, connections to existing storm sewer lines and existing drainage structures and all required incidentals. Specifications for the gross particle separator are shown on the attached Figure 1 at the end of this section.

1.2 QUALITY ASSURANCE

Products Criteria:

- a. Nameplates: Nameplate bearing manufacturer's name, or identifiable trademark, securely affixed in a conspicuous place on equipment, or name or trademark cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.

PART 2 PRODUCTS**2.1 PIPING**

Gravity Lines (Pipe and Appurtenances): All gravity stormwater piping shall be concrete or asphalt coated corrugated metal pipe (ACCOMP). These selections may be made by the Contractor.

- a. Concrete:
 1. Reinforced pipe, ASTM C76. Class IV. Joints shall be watertight flexible joints made with rubber-type gaskets conforming to ASTM C443.
- b. ACCOMP:
 2. Corrugated steel pipe ASTM A 760 with a 0.050 in., high purity asphalt coating ASTM A849.

2.2 JOINTING MATERIAL

- a. Concrete Pipe: Rubber gasket ASTM C443.

02631-1



- b. ACCMP: Standard O-ring gaskets ASTM D1056

2.3 GROSS PARTICLE SEPARATOR (GPS)

- a. Precast concrete reinforced sections. Riser rings to match or masonry block:
 - 1. Precast Concrete Segmental Blocks: Blocks shall conform to ASTM C139 and shall not be less than 150 mm (6 inches) thick for manholes to a depth of 12 feet. Blocks shall be shaped so that joints seal and bond effectively with cement mortar. Parge structure interior and exterior with 15 mm (1/2 inch) of cement mortar applied with a trowel and finished to an even glazed surface.
 - 2. Precast Reinforced Concrete Manhole Risers and Tops: Design, material and installation shall conform to requirements of ASTM C478. Top sections shall be eccentric.
 - 3. Precast GPS: Concrete for precast sections shall have a minimum compressive strength of 35 MPa (5,000 psi) at 28 days, ASTM A615, Grade 60 reinforcing steel, rated for AASHTO HS20-44 loading with 30 percent impact, and conform to ASTM C-857.
- b. Mortar:
 - 1. Precast Concrete Segmental Block Structures: By volume, 1 part of Portland cement, 1/4 part lime hydrate, and 3 parts sand.
 - 2. Precast Reinforced Concrete Ring and Riser Structures: By volume, 1 part of Portland cement and 2 parts sand. Water in mixture shall produce a stiff, workable mortar, but shall not exceed 21L (5-1/2 gallons) per sack of cement.
- c. Flexible sealing compound shall be packaged in extruded preformed shape, sized to completely fill the joint between precast sections, and form permanently flexible watertight seal. The sealing compound shall be non-shrink and meet AASHTO M-198B.
- d. Frames and covers shall be gray cast iron conforming to ASTM A48. The frame and cover shall be rated for HS20-44 loading, have a studded pattern on the cover, and the words "storm sewer". The studs and the lettering shall be raised 8 mm (5/16 inch). The cover shall be a minimum of 600

02631-2



mm (24 inches) in diameter and shall have four 19 mm (3/4 inch) vent holes and two lifting slots. The bearing surface of the frame and cover shall be machine finished. The cover shall fit firmly on the frame without movement when subject to traffic.

PART 3 EXECUTION

3.1 EXCAVATION FOR STORM DRAINS AND DRAINAGE STRUCTURES

Excavation of trenches and for appurtenances and backfilling for storm drains, shall be in accordance with the applicable portions of Section 02200, "Earthwork".

3.2 PIPE BEDDING

The bedding surface of the pipe shall provide a firm foundation of uniform density throughout the entire length of pipe. Concrete/ACCMP pipe shall be bedded in a soil foundation accurately shaped and rounded to conform with the lowest one-fourth of the outside portion of circular pipe. When necessary, the bedding shall be tamped. Bell holes and depressions for joints shall not be more than the length, depth, and width required for properly making the particular type of joint. Plastic pipe bedding requirements shall meet the requirements of ASTM D2321. Bedding, haunching and initial backfill shall be $\frac{3}{4}$ inch crushed stone. Backfill immediately ground pipe shall be uniform sand free of stones longer than $\frac{1}{4}$ inch.

3.3 GENERAL PIPING INSTALLATION

- a. Lay pipes true to line and grade. Gravity flow sewer shall be laid with bells facing upgrade.
- b. Do not lay pipe on unstable material, in wet trench or when trench and weather conditions are unsuitable for the work.
- c. Support pipe on compacted bedding material. *Excavate bell holes only large enough to properly make the joint.*
- d. Inspect pipes and fittings, for defects before installation. Defective materials shall be plainly marked and removed from the site. Cut pipe shall have smooth regular ends at right angles to axis of pipe.
- e. Clean interior of all pipe thoroughly before installation. When work is not in progress, open ends of pipe shall be closed securely to prevent entrance of storm water, dirt or other substances.



- f. Lower pipe into trench carefully and bring to proper line, grade, and joint. After jointing, interior of each pipe shall be thoroughly wiped or swabbed to remove any dirt, trash or excess jointing materials.
- g. Do not lay sewer pipe in same trench with another pipe or other utility.
- h. Do not walk on pipe in trenches until covered by layers of shading to a depth of 300 mm (12 inches) over the crown of the pipe.
- i. Install gravity sewer line and distribution pipe in accordance with the provisions of these specifications and the following standards:
 - 1. Polyvinyl Chloride (PVC) Piping: ASTM D2321.
- j. Warning tape shall be continuously placed 12 inches above storm sewer piping.

3.4 CONNECTIONS TO EXISTING PUBLIC UTILITY MANHOLES

- a. Comply with all rules and regulations of the public utility.
- b. The connection to the existing utility shall comply with the standard details and specifications of the public utility company, except as specifically modified on the plans and specifications.

3.5 MANHOLES, INLETS AND CATCH BASINS

General:

- a. Rectangular Structures:
 - 1. Precast concrete structures shall be placed on a 200 mm (8 inch) reinforced concrete pad, or be provided with a precast concrete base section. Structures provided with a base section shall be set on a 200 mm (8 inch) thick aggregate base course compacted to a minimum of 95 percent of the maximum density as determined by ASTM D 698. Set precast section true and plumb. Seal all joints with preform flexible gasket material.
 - 2. Do not build structures when air temperature is 0 degrees C (32 degrees F), or below. Build up with brick and mortar.
 - 3. Install manhole frames and covers on a mortar bed, and flush with the finish pavement. Frames and covers shall not move when subject to

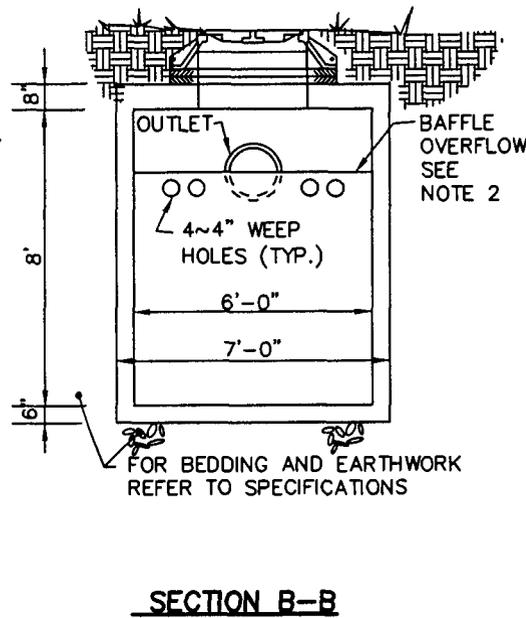
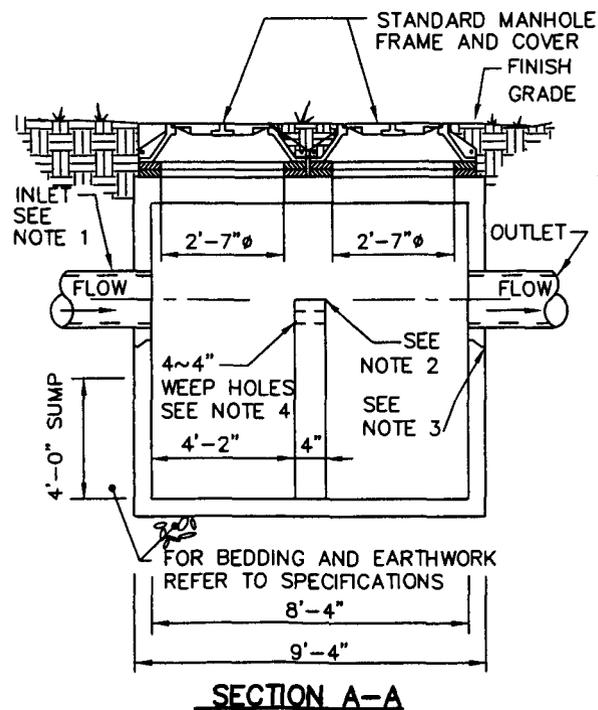
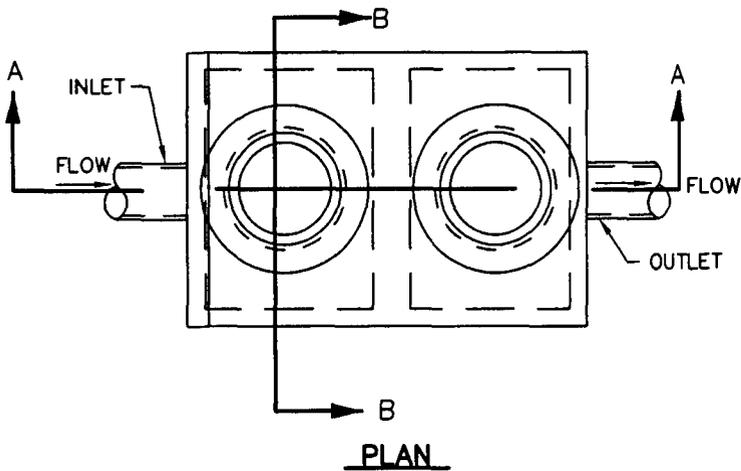


vehicular traffic. Install a concrete collar around the frame to protect the frame from moving until the adjacent pavement is placed. In unpaved areas, the rim elevation shall be 50 mm (2 inches) above the adjacent finish grade. Install a 200 mm (8 inch) thick, by 300 mm (12 inch) concrete collar around the perimeter of the frame. Slope the top of the collar away from the frame.

– End of Section –

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NOTES

1. ACTUAL INLET & OUTLET LOCATIONS TO BE DETERMINED IN FIELD TO ACCOMODATE PLAN.
2. BAFFLE CONSTRUCTION TO BE PROVIDED WITH THROUGH HOLES ABOVE OUTLET FLOW LINE OF MORTARED CEMENT BLOCKS. TOP OF BAFFLE OVERFLOW AT CENTERLINE OF INLET PIPE.
3. CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQUAL. ABOVE OUTLET FLOW LINE OF MORTARED CEMENT BLOCKS.
4. WEEP HOLE INVERTS TO MATCH INLET PIPE INVERT.

DESIGN LOADING:

AASHTO HS20-44
 STEEL REINFORCEMENT: ASTM A-615-75, GRADE 60,
 1" MIN. COVER
 CONCRETE MIN. STRENGTH: 5,000 PSI @ 28 DAYS
 MAXIMUM HEIGHT EACH ADDITIONAL PIECE 4'-0"
 MAXIMUM INSIDE HEIGHT FOR 2 PIECE CHAMBER 8'-0"
 ROOF AND SIDE WALL OPENINGS AS SPECIFIED.

Draft Work Plan Schedule Time Critical Removal Activities		
CONSTRUCTION SPECIFICATIONS GROSS PARTICLE SEPARATOR		
Comm.No. 15RP102	FIGURE 1	

15RP102-GPSeparator.dwg

Section 02900

Landscaping

PART 3 GENERAL

3.1 SCOPE

The work of this Section includes, but is not limited to, furnishing, installing, and maintaining soil erosion and sediment controls and establishing turf.

3.2 REFERENCES

Reference is made to Section 02220 "Earthwork" for topsoil specifications and to Section 02272 "Soil Erosion and Sediment Controls".

Except as herein specified or as indicated in the Work Plan, the work of this Section shall be consistent with the practices and policies set forth in the "Rhode Island Soil Erosion and Sediment Control Handbook".

3.3 COMPLIANCE

Comply with all applicable local, State, and Federal regulations and procedures.

3.4 SOIL EROSION AND SEDIMENT CONTROL RESPONSIBILITY

The Contractor is fully responsible for implementing a soil erosion and sediment control plan which protects the environment from pollution resulting from surface-runoff within the construction area and adjacent areas of this project. The soil erosion and sediment control strategy included in the Work Plan is intended to define the minimum protection necessary based on average weather conditions and an approximate six-month contract duration. The Contractor may need to add to this plan depending on specific site schedule or weather conditions.



3.5 SCHEDULE

Seed shall be applied between April 1 through June 15 or August 15 through September 15. If excessively dry weather occurs during the seeding period it shall be the Contractor's responsibility to apply water, as required, to progress the work.

PART 4 PRODUCTS

4.1 SEED

Grass seed shall be as follows:

Seed Type	% of Mix
Crown Vetch	60
Perennial Rye	40

Grass seed shall be applied as recommended by manufacturer at a rate of 25 pounds per acre (lbs/acre) minimum. Increase seed rate to 30 lbs/acre for hydroseeding applications.

4.2 LIME AND FERTILIZER

As required by EPA, the Contractor shall provide plant nutrient testing certification as specified in Section 02220 "Earthwork" complete with a recommendation for lime and fertilizer needs. In lieu of the plant nutrient test certification, the Contractor may apply a standard 10-10-10 or equivalent fertilizer mix at a rate of 7.5 pounds per 1,000 square feet, and ground limestone at a rate of 135 pounds per 1,000 square feet.

4.3 MULCH

Mulch may be comprised of wood cellulose fiber for hydroseeding operations or ground straw for other applications. Substitutions may be offered by the Contractor for approval by LEA.



PART 5 EXECUTION

5.1 TOPSOIL

Spread topsoil evenly to a four-inch thickness. Comply with the Specifications of Section 02220 "Earthwork".

5.2 FERTILIZER AND PH ADJUSTERS

Apply fertilizer and pH adjusters at rates and analysis as determined by laboratory soil tests, if completed, of the topsoil supplied.

Apply the specified fertilizer at the specified rate, raking lightly into the soil. Apply the specified lime at the specified rate raking lightly into the soil.

5.3 SEEDING

Broadcast Seed Application

Sow seed at the rate of 25 pounds per acre using approved sowing equipment. Sow half of seed in one direction and remainder at right angles to the first sowing. Cover seed to an average depth of 1/2 inch using spike-tooth harrow, cultipacker, or other approved device.

Hydroseeding

Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce a homogenous slurry. Add wood cellulose fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight. When hydraulically sprayed on the ground, material shall form a blotter like cover impregnated uniformly with grass seed. Immediately following the application of the slurry mix, make separate application of wood cellulose mulch at the rate of 1000 pounds, dry weight, per acre. Cover shall allow rainfall or applied water to percolate to underlying soil.

Mulch

If broadcast seeding methods are used, apply ground straw with mulch blower at a rate of 1-1/2 tons per acre (70 pounds per 1000 square feet).



5.4 PROTECTION OF TURF AREAS

Immediately after turfing, protect area against traffic and other use. Water seeded areas as required for germination and subsequent growth.

5.5 RESTORATION

Restore existing turf areas that are adjacent to the cap area and that have been damaged during the construction operations or by temporary soil erosion control structures. Any existing turf areas that have been damaged during the Site operations, and that have not been specifically identified in the Work Plan, shall be restored at the Contractor's expense.

5.6 FIELD QUALITY CONTROL

Final Inspection and Acceptance

Final inspection by the Engineer will be made upon written request from the Contractor. Final acceptance by LEA will be based upon a satisfactory stand of turf (a minimum of 90 percent coverage or as determined by LEA).

-- End of Section --



ATTACHMENT 1

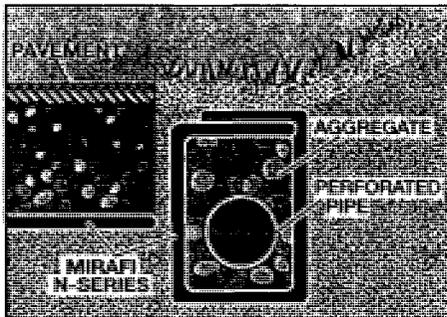
Soil Stabilization System Technical Data

product Mirafi® N-Series Nonwoven Polypropylene Geotextiles for Soil Separation, Filtration, and Protection

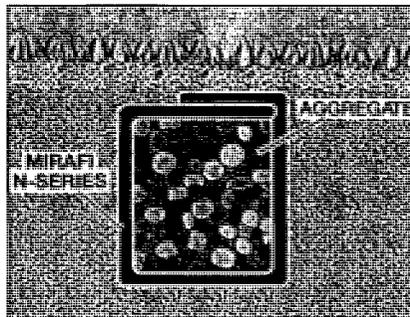
Property / Test Method	Units	140NL	140NC	140N	160N	170N	180N	1100N	1120N	1160N
MECHANICAL PROPERTIES										
Grab Tensile Strength										
ASTM D 4632										
Strength @ Ultimate	kN (lbs)	0.40 (90)	0.45 (100)	0.53 (120)	0.71 (160)	0.80 (180)	0.9 (205)	1.11(250)	1.34 (300)	1.69 (380)
Elongation @ Ultimate	%	50	50	50	50	50	50	50	50	50
Mullen Burst Strength										
ASTM D 3786										
	kPa	1205	1447	1550	2100	2273	2618	3445	4030	5098
	(psi)	(175)	(210)	(225)	(305)	(330)	(380)	(500)	(585)	(740)
Trapezoidal Tear Strength										
ASTM D 4355										
	kN	0.18	0.20	0.22	0.27	0.33	0.36	0.45	0.51	0.62
	(lbs)	(40)	(45)	(50)	(60)	(75)	(80)	(100)	(115)	(140)
Puncture Strength										
ASTM D 4833										
	kN	0.24	0.30	0.30	0.42	0.46	0.58	0.69	0.78	1.05
	(lbs)	(55)	(65)	(65)	(95)	(105)	(130)	(155)	(175)	(235)
UV Resistance after 500 hrs.										
ASTM D 4355										
	% strength	70	70	70	70	70	70	70	70	70
HYDRAULIC PROPERTIES										
Apparent Opening Size (AOS)										
ASTM D 4751										
	US Sieve	60	70	70	70	80	80	100	100	100
	mm	0.25	0.212	0.212	0.212	0.180	0.180	0.150	0.150	0.150
Permittivity										
ASTM D 4491										
	sec ⁻¹	2.0	1.9	1.8	1.4	1.4	1.2	1.0	0.8	0.7
Flow Rate										
ASTM D 4491										
	l/min/m ²	5907	5698	5500	4477	4278	3866	3056	2648	2037
	(gal/min/ft ²)	(145)	(140)	(135)	(110)	(105)	(95)	(75)	(65)	(50)
Packaging										
Roll Width	m(ft)	3.8 (12.5)	3.8 (12.5)	3.8 (12.5)	4.5 (15.0)	4.5 (15.0)	4.5 (15.0)	4.5 (15.0)	4.5 (15.0)	4.5 (15.0)
Roll Length	m(ft)	110 (360)	110 (360)	110 (360)	91 (300)	91 (300)	91 (300)	91 (300)	91 (300)	46 (150)
Est. Gross Weight	kg(lbs)	60 (133)	64 (142)	67 (148)	103 (227)	113 (249)	124 (273)	150 (331)	158(348)	114 (251)
Area	m ² (yd ²)	418 (500)	418 (500)	418 (500)	418 (500)	418 (500)	418 (500)	418 (500)	418 (500)	209 (250)

NOTE: All Mechanical Properties and Hydraulic Properties shown are Minimum Average Roll Values (MARV).

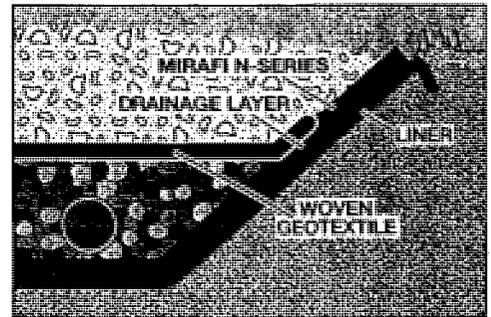
Cut-off/inceptor drain along a roadway or other critical structure



French drain without pipe



Liner protection within a landfill



www.tcnicolon.com

TECHNICAL SERVICES

Complete technical assistance is available from Ten Cate Nicolon and its sales representatives. Service include assistance during design and specification stages as well as initial stages of installation.

WARRANTY

Ten Cate Nicolon warrants that the product that it sells will conform to the specifications published in this literature. For information on limitations to this warranty, contact Ten Cate Nicolon.

CORPORATE OFFICE

365 South Holland Drive • Pendergrass, GA 30567
(888) 795-0808 • (706) 693-2226 • Fax (706) 693-4400



Ten Cate Nicolon

TERRACELL®

Cellular Confinement System

Expanded Dimensions

- Standard Cell Size:**
 8 ft. x 20 ft. x cell height
 Cell Area: 8" x 9.6"
 (38.5 sq. inches nominal)
- Mid Cell Size:**
 8 ft. x 30 ft. x cell height
 Cell Area: 12" x 13.7"
 (82 sq. inches nominal)
- Large Cell Size:**
 8 ft. x 40 ft. x cell height
 Cell Area: 16" x 19.2"
 (154 sq. inches nominal)

Cell Height

8", 6", 4", and 3"

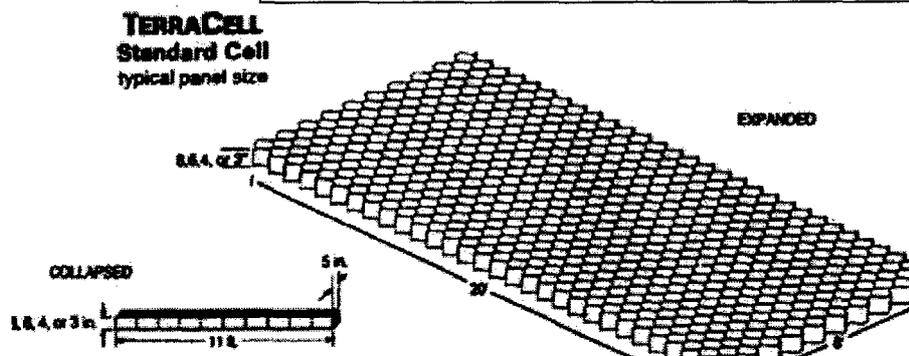
Color

Black

Custom Colors

Tan and Green

TERRACELL PRODUCT SPECIFICATIONS		
TerraCell is manufactured from High Density Polyethylene (HDPE) to the following minimum standards:		
PROPERTY	TEST METHOD	VALUE
Sheet Thickness	ASTM D-5199	50 mils, ± 5%
Density	ASTM D-1505	0.94 grams/cubic cm
Carbon Black Content	ASTM D-1603	2%
Environmental Stress Crack Resistance	ASTM D-1693	4000 hours
Cell joints are ultrasonically spot-welded with three (3) welds per inch uniformly spaced across the height of each strip. Seam strengths are the same across the entire height of the cell joint and meet the following minimum seam peel strengths (per US Army Corps of Engineers Technical Report GL-86-19, Appendix A).		
CELL HEIGHT	SEAM PEEL STRENGTH	APPROXIMATE WEIGHT
8 Inch	640 lbs.	112 lbs.
6 Inch	480 lbs.	84 lbs.
4 Inch	320 lbs.	56 lbs.
3 Inch	240 lbs.	42 lbs.
Seam Hang Strength - A 102 mm (4.0 in.) weld joint supporting a load of 72.5 kg (160 lbs.) for 30 days minimum or a 102 mm (4.2 in.) weld joint supporting a load of 72.5 kg (160 lbs.) for 7 days minimum while undergoing temperature change from 23°C (74°F) to 54°C (130°F) on a 1 hour cycle.		
Installation Temperature Range: 16°F to 110°F		

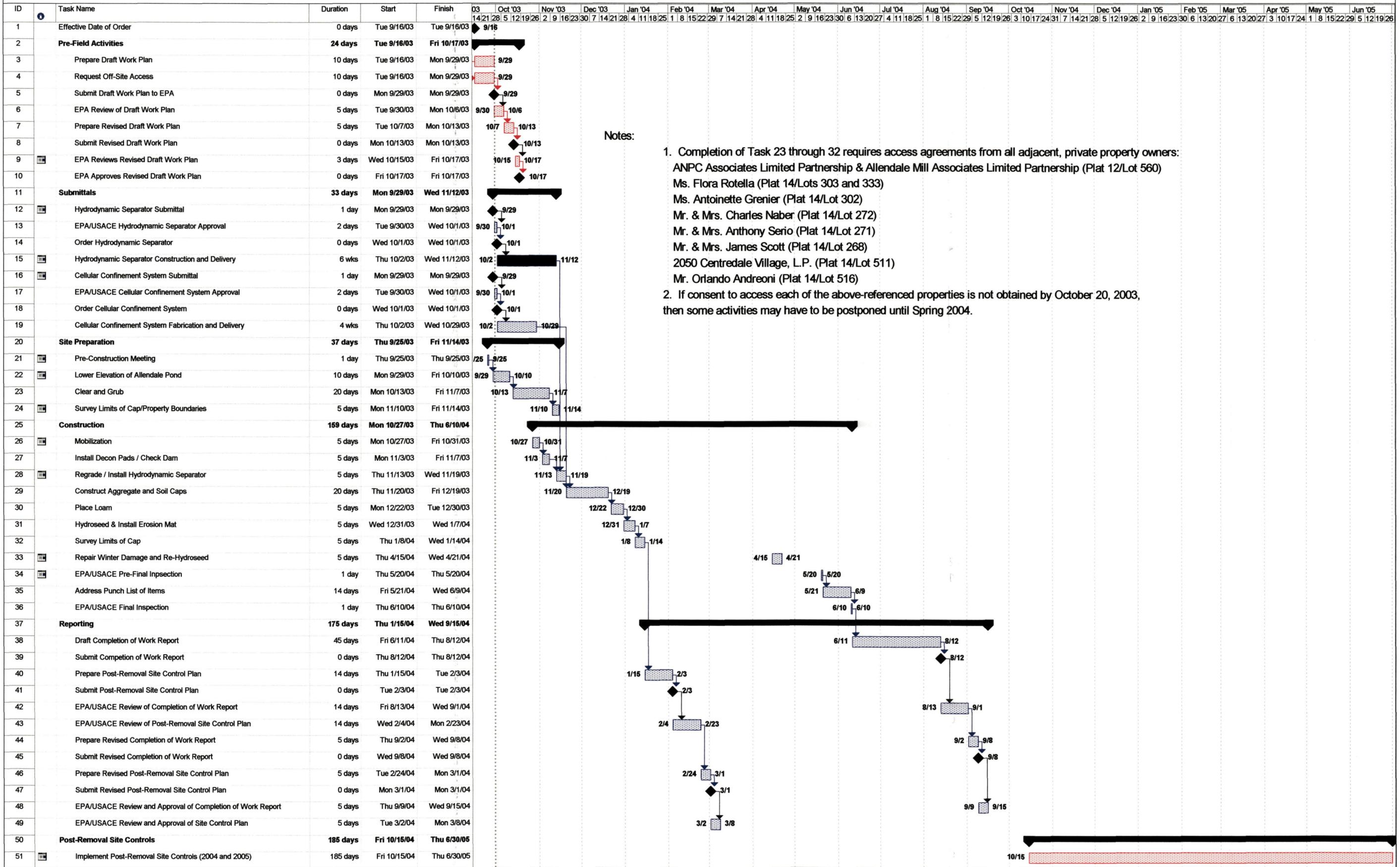


The quality control system used in the manufacturing of TerraCells is in compliance with ISO 9001:2000 standards. TerraCell is licensed from the United States Army under Patent No. 4,797,028.

Site Links

- [Main](#) |
 [TerraCell](#) |
 [TerraTex for Soil Drainage](#) |
 [TerraTex for Soil Stabilization](#) |
 [Erosion Control](#) |
 [TerraTex for Multiple Applications](#) |
 [TerraDrain](#) |
 [TerraTex FilterBag-Barrier Fencing](#) |
 [TerraGrid](#)

**DRAFT WORK PLAN SCHEDULE
TIME-CRITICAL REMOVAL ACTION
Third Administrative Order on Consent for Removal Action
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island**



Notes:

1. Completion of Task 23 through 32 requires access agreements from all adjacent, private property owners: ANPC Associates Limited Partnership & Allendale Mill Associates Limited Partnership (Plat 12/Lot 560)
Ms. Flora Rotella (Plat 14/Lots 303 and 333)
Ms. Antoinette Grenier (Plat 14/Lot 302)
Mr. & Mrs. Charles Naber (Plat 14/Lot 272)
Mr. & Mrs. Anthony Serio (Plat 14/Lot 271)
Mr. & Mrs. James Scott (Plat 14/Lot 268)
2050 Centredale Village, L.P. (Plat 14/Lot 511)
Mr. Orlando Andreoni (Plat 14/Lot 516)
2. If consent to access each of the above-referenced properties is not obtained by October 20, 2003, then some activities may have to be postponed until Spring 2004.

Project: september 29, 2003
Date: Tue 9/30/03

Task		Progress		Summary		Rolled Up Critical Task		Rolled Up Progress		External Tasks		Group By Summary		Deadline	
Critical Task		Milestone		Rolled Up Task		Rolled Up Milestone		Split		Project Summary					