DRAFT REMEDIAL ACTION COMPLETION REPORT
FOR
REMEDIAL ACTION AT OPERABLE UNIT NO. 6 (Sites 3 and 10)

NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Prepared for:

Engineering Field Activity Northeast (EFANE)
10 Industrial Highway
LESTER, PA 19113

Contract Number N62472-99-D-0032
Contract Task Order 40

August 21, 2003

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1. INTRODUCTION

This document is the Draft Remedial Action Completion Report for the Remedial Action conducted at Operable Unit 6 (OU-6) Sites 3 and 10 located at the Naval Weapons Station Earle (NWS Earle) in Colts Neck, New Jersey. This report is considered part of the contract documents for the project as described in Contract Task Order No. 40 under Remedial Action Contract No. N62472-99-D-0032.

1.1 PURPOSE

The purpose of this report is to document and certify that the construction procedures, inspection activities, field and laboratory test results, and as-built survey conducted during the remedial action at Sites 3 and 10 were performed in accordance with the Technical Specifications, Construction Drawings, Design Analysis Report, and the Construction Quality Control Plan.

1.2 BACKGROUND

NWS Earle is located in Monmouth County, New Jersey, approximately 47 miles south of New York City. The station consists of two areas. One area is the 10,248-acre Main Base (Mainside area), located inland. The other area is the 706-acre Waterfront area. The two areas are connected by a Navy-controlled right-of-way. The location of these areas is shown on Figure 1-1.

The facility was commissioned in 1943. The facility's primary mission is to supply ammunition to the naval fleet. An estimated 2,500 people either work or live at the NWS Earle.

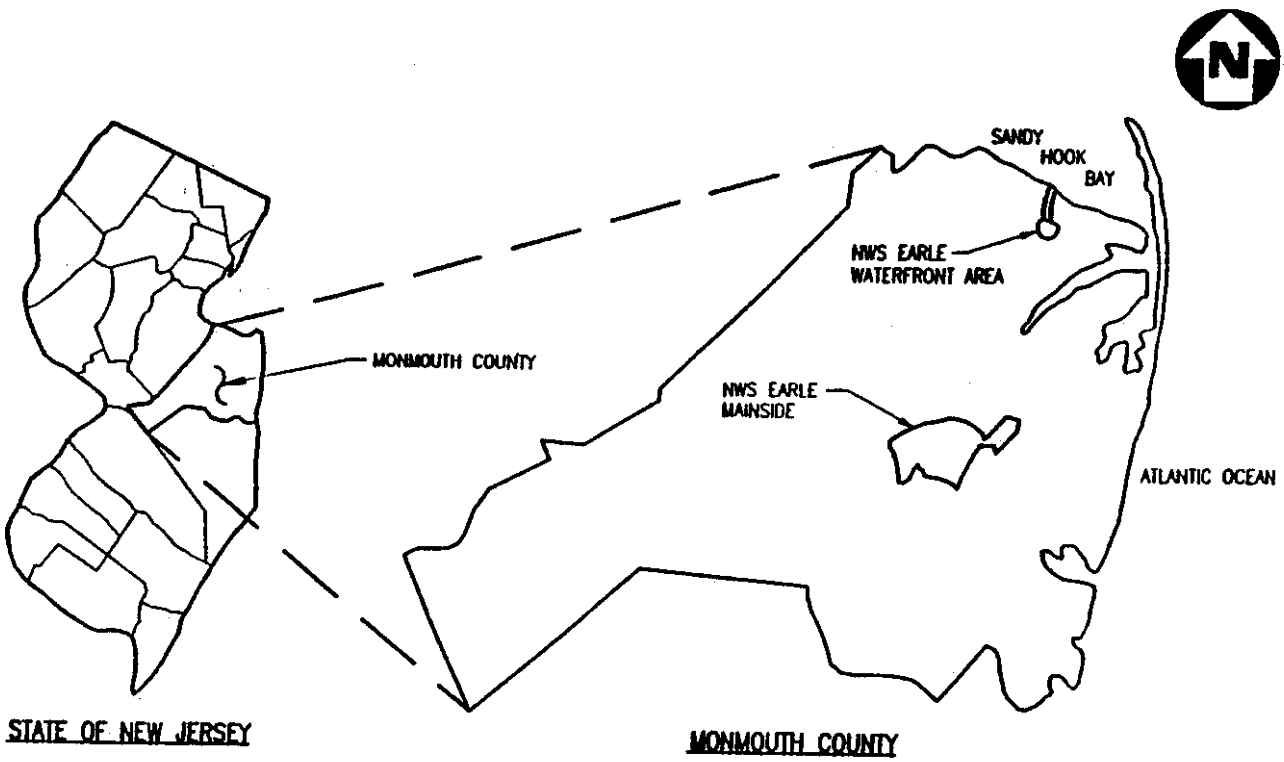
The Mainside area is located approximately 10 miles inland from the Atlantic Ocean at Sandy Hook Bay in Colts Neck Township. Colts Neck Township has a population of approximately 6,500 people. The surrounding area includes agricultural land, vacant land, and low-density housing. The Mainside area consists of a large, undeveloped portion associated with ordnance operations, production, and storage. The Mainside area is encumbered by explosive safety quantity distance (ESQD) arcs. The NWS Earle Master Plan contains maps showing ESQD arcs around weapons handling, maintenance and storage facilities. Land use within the ESQD is typically restricted to transient activities only (e.g., transit or entry for ordnance inspection and maintenance activities). The result of the ESQD policy implementation is that most of the approximately 10,000 acres at the Mainside area (with the exception of the more densely developed Administration area near the main gate) is open in its natural wooded state. The Mainside area also consists of residences, offices, workshops, warehouses, recreational space, open space, and underdeveloped land.

The 706-acre Waterfront area is located adjacent to Sandy Hook Bay in Middletown Township. The population of Middletown Township is approximately 68,200 people. The Waterfront area is located approximately 10 miles north of the Mainside gate. The Mainside and Waterfront areas are connected by a 10-mile railroad and road right-of-way. These roads and railroads are used to transfer the munitions and other supplies destined for U.S. Navy ships from the Mainside area to the Waterfront area and to waiting ships at piers located in the Lower Hudson River Bay.

OU-6 consists of Sites 3 and 10, located in the Mainside area. The location of Site 3 and Site 10 are shown on Figure 1-2. The OU-6 sites were grouped together due to the similarities of the waste volumes, types of contaminants, and the potential for contaminants to migrate to human and/or environmental receptors. Both Sites were former landfills.

1.3 RECORD OF DECISION

The Record of Decision (ROD) for OU-6, which documents the selected remedial alternatives for the site, was developed from the findings of the Feasibility Study (FS) and signed by the Navy in September



U.S. Navy RAC
NWS- Earle, Colts Neck, NJ

Figure 1-1
Site Location Map

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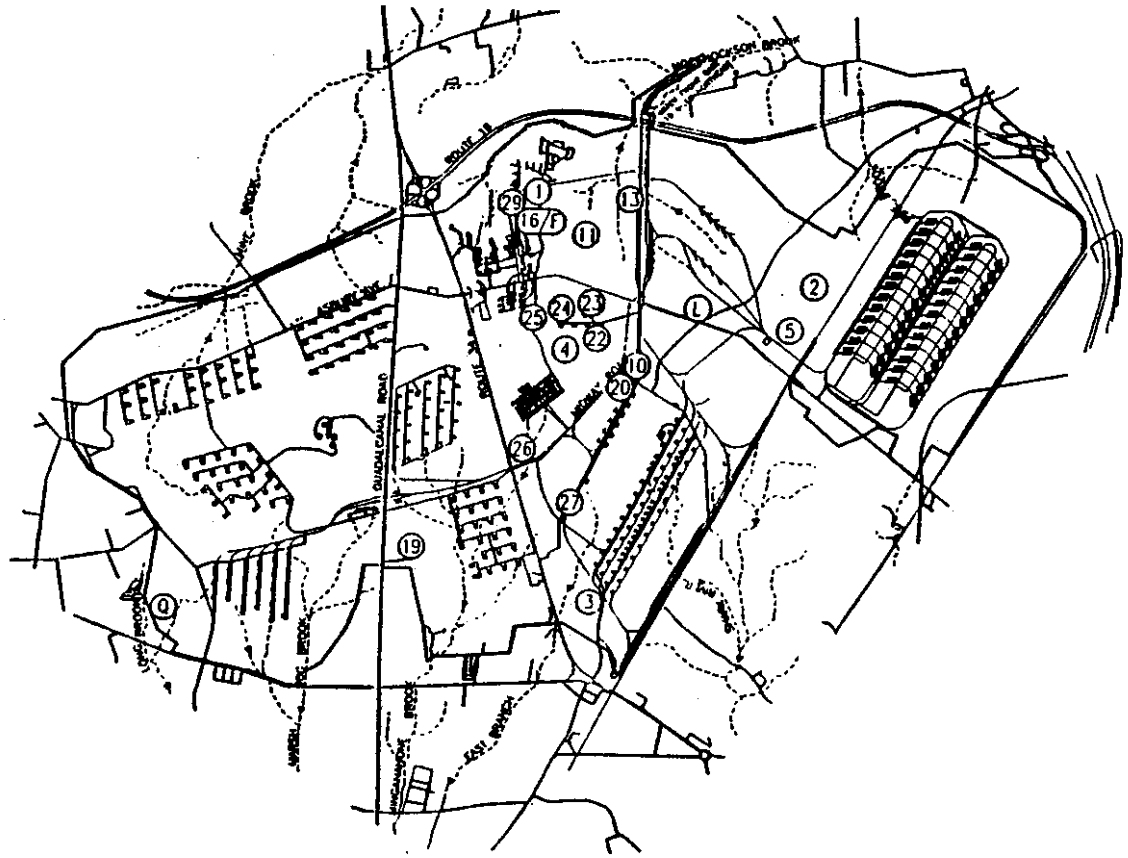

LEGEND

⑤ SITE LOCATION

--►--- STREAM WITH FLOW DIRECTION

0 5,000 10,000

SCALE IN FEET

U.S. Navy RAC
NWS– Earle, Colts Neck, NJ

Figure 1-2

Sites 3 & 10 Mainside Area Locations

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2002. The ROD has not been signed by the United Stated Environmental Protection Agency (USEPA) as of August 2003 due to outstanding institutional control issues between the Navy and the USEPA. The major components of the ROD selected Alternative 2 of the Proposed Remedial Action Plan as the remedial action for Site 3. The major components of Alternative 2 included:

- Limited removal of protruding landfill materials.
- Placement and compaction of on-site soil to establish a suitable subgrade to promote positive drainage.
- Fencing and posting of warning signs on the perimeter of the landfill to limit access to the covered area. (The access restrictions are placed to limit future uses of the site that may result in disturbance of the soil cover or direct contact with contaminated media).
- A Classification Exception Area (CEA) pursuant to N.J.A.C. 7:9-6 established to prohibit use of untreated groundwater as drinking water. [New Jersey Department of Environmental Protection (NJDEP) administers the CEA program to ensure groundwater that temporarily does not meet Groundwater Quality Standards (GWQS) guidelines is not inadvertently used for a potable water source].
- Long-term, periodic monitoring and 5-year reviews that would assess the contaminant status and the potential threats to human health and the environment.

The major components of the ROD selected Alternative 3 of the Proposed Remedial Action Plan as the remedial action for Site 10. The major components of Alternative 3 included:

- The installation of a cover system over the area of former active landfill operations to prevent potential human and animal contact with contaminants in the landfill contents, reduce contaminant leaching to groundwater, and minimize contaminant migration via surface runoff and erosion.
- The placement of access restrictions to limit future uses of the site that may result in disturbance of the soil cover or direct contact with contaminated media.
- The prohibition of using untreated groundwater as drinking water; and
- Routine inspection and maintenance of entire landfill surface to ensure integrity of the existing and new cover systems.

1.4 CERTIFICATION REQUIREMENTS

The construction of the multi-layered cap requires verification of the materials delivered to the landfill, the proper placement of the material, and field and laboratory testing of the construction materials. In accordance with the requirements of Contract No. N62472-99-D-0032, Contract Task Order No. 40, this Report certifies the quality control processes and describes the construction activities by including the following documentation: quality control data provided by manufacturers; laboratory test results; and as-built drawings.

2. PROJECT ORGANIZATION AND STRUCTURE

Several federal and state organizations were involved in carrying out the remedial action at Sites 3 and 10. At times, representatives of the various organizations changed; however, the responsibilities and duties of the organizations and personnel positions remained consistent throughout the construction.

2.1 GENERAL

The organizations involved in the remedial action at Sites 3 and 10 included the regulatory agencies, the Engineering Field Activity Northeast (EFANE) and Foster Wheeler Environmental Corporation (FWENC). The regulatory agencies are the USEPA and the NJDEP. Representatives of the Navy acted as Remedial Project Manager (RPM), Construction Navy Technical Representative (Construction NTR), Design Navy Technical Representative (Design NTR), and Contracting Officer's Technical Representative (COTR). FWENC personnel included a Program Manager, Project Manager, Project Superintendent, Quality Control Engineer (QCE), Quality Control Program Manager (QCPM), and Project Controls Engineer.

2.2 ORGANIZATION AND RESPONSIBILITIES

The following section describes the responsibilities and lines of authority within each organization involved in the project and construction quality control. A project organization list is provided as Table 2-1.

2.2.1 Engineering Field Activity Northeast (EFANE)

EFANE, as facility owner, designated an employee of NWS Earle's office of the Resident Officer In Charge of Construction (ROICC) as the Construction NTR to manage FWENC during the project. EFANE also designated employees of their civil design and environmental groups to act as Design NTR, COTR, RPM, and Environmental Coordinator for the project. EFANE had the authority to select and dismiss organizations charged with design, quality control, and construction activities, and to accept or reject Construction Drawings and Technical Specifications and reports, and the materials and workmanship of FWENC.

2.2.1.1 Design Navy Technical Representative (NTR)

The Design NTR was an employee of EFANE's Civil Design Department and was the Navy's technical point-of-contact for the project. Specifically, the Design NTR was responsible for coordinating the resolution of design engineering issues brought forth by FWENC.

2.2.1.2 Contracting Officer's Technical Representative (COTR)

The Contracting Officer's Technical Representative (COTR) was an employee of EFANE who served as a liaison between EFANE's Contracting Officer and FWENC. The COTR was responsible for reviewing FWENC's scope of work, schedule and budget to ensure that they were adequate to meet the requirements of the project.

2.2.1.3 Remedial Project Manager (RPM)

The RPM was an employee of EFANE's Environmental Department and was the Navy's environmental point-of-contact for the project. In particular, the RPM was responsible for interacting with regulatory agencies (USEPA and NJDEP) and for coordinating the resolution of environmental issues brought forth by FWENC.

2.2.1.4 Construction Navy Technical Representative (NTR)

The Construction NTR was an employee of NWS Earle's ROICC office and was the Navy's local representative for the project. The Construction NTR was responsible for coordinating construction and Construction Quality Assurance (CQA) activities so that they were conducted in accordance with the Construction Drawings and Technical Specifications. He interfaced with the Project Manager, Project

TABLE 2-1

PROJECT ORGANIZATION LIST

REMEDIAL ACTION AT OU-6 (SITES 3 AND 10)

NAVAL WEAPONS STATION EARLE

COLTS NECK, NEW JERSEY

Engineering Field Activity Northeast (EFANE)	
Design Navy Technical Representative (NTR)	Jim Briggs
RAC Contracting Officer Technical Representative (COTR)	Christi Davis
Remedial Project Manager (RPM)	Michelle DiGeambeardino
Department of the Navy, Naval Weapons Station Earle	
Construction Navy Technical Representative (NTR)	Dan Zari/Jim Davis
Environmental Coordinator	Larry Burg
Regulatory Agencies	
USEPA, Region II	Jessica Mollin
NJDEP	Robert Marcolina
FWENC	
Program Manager	Carl Tippmann
Project Manager	Rick Woodworth
Project Superintendent	Jon Cary/Bob Olson
Quality Control Engineer (QCE)	Jim Lisic
Quality Control Program Manager (QCPM)	Tom Kelly
Project Controls Engineer	Janis Hottinger

Superintendent and QCE regarding daily operations and conformance of construction activities with the Construction Drawings and Technical Specifications. His responsibilities included the following:

- Ensuring that the project scope and objectives were defined and that procedures, schedules, budgets, and manpower requirements were established.
- Establishing project procedures, instructions, including lines of communication, working relationships, controls, and reporting requirements within the project.
- Providing direction and guidance to the site project team with respect to their individual project responsibilities.
- Processing submittals, Requests for Information (RFIs) and Change Request Forms (CRF) generated by FWENC.
- Reviewing Construction Quality Control (CQC) documentation to verify that corrective action had been satisfactorily completed when deviations were made from the Construction Drawings and Technical Specifications.

2.2.1.5 Environmental Coordinator

The Environmental Coordinator was a member of NWS Earle's base environmental office. The Environmental Coordinator was responsible for providing pertinent information to FWENC regarding environmental issues at NWS Earle and for assisting FWENC in resolving any such issues. The Environmental Coordinator would conduct routine inspections of the work being performed during the project, and would attend the weekly progress meeting. He interfaced with the Project Manager, Project Superintendent and QCE regarding daily operations and conformance of construction activities with the Construction Drawings and Technical Specifications.

2.2.2 Regulatory Agencies

The regulatory agencies involved with the project were the USEPA and the NJDEP. Representatives from these agencies would contact EFANE's RPM to request updates on the progress of the project and to relay any questions or comments regarding the overall activities at Sites 3 and 10.

2.2.3 Foster Wheeler Environmental Corporation (FWENC)

FWENC was responsible for ensuring that construction activities were implemented in strict accordance with design criteria, Construction Drawings, and Technical Specifications using the necessary construction procedures and techniques. FWENC was also responsible for formulating and implementing the Construction Quality Control (CQC) Plan, which addressed the rules and responsibilities of CQC personnel, and outlined inspection and testing procedures to be conducted by CQC personnel and/or subcontractors.
Other responsibilities of FWENC included:

- Preparing and submitting to the Construction NTR monthly status reports containing information regarding:

    1) Percentage of work completed.
    2) Unresolved delays (encountered or anticipated) that could affect the schedule and a description of efforts made to mitigate those delays or anticipated delays.
    3) Revisions to the construction schedule.
    4) A list of activities scheduled for the next month.
    5) Other information relating to the progress of construction.

- Initiating, maintaining, and supervising all health and safety procedures and programs in connection with the work.

- Notifying the Construction NTR in writing of any subsurface or latent physical conditions encountered that differed materially from those specified or indicated.
- Implementing the CQC Plan and establishing the chain of command.
- Assigning the Project Superintendent, who was responsible for the field construction operations, and the QCE who was responsible for the implementation of the CQC Plan.
- Furnishing or utilizing materials or equipment, specific means, methods, techniques, sequence, or procedure of construction as required by the contract documents or a substitute acceptable to EFANE, if needed.
- Preparing Daily Reports and submitting them to the ROICC for review and transmission to the Construction NTR.
- Procuring subcontractor services; submitting the proposed vendors to the Navy for acceptance prior to commencing work.
- Maintaining at the site two record copies of all construction drawings, one copy of specifications, addenda, written amendments, change orders, work directive changes, field test records, field orders, and written interpretations and clarifications.

2.2.3.1 Project Manager

The responsibility of the Project Manager was to provide general oversight of all facets of the project. The Project Manager allocated the necessary resources to the project, monitored the construction schedule and budget, and provided oversight of the quality control activities for the duration of the project. The Project Manager was responsible for monitoring all of the testing and inspection performed by the QCE as outlined in the CQC Plan. Additionally, the Project Manager performed random testing and inspection to verify the results obtained by the QCE during the routine QC testing and inspection. The Project Manager was also responsible for reviewing and approving the technical submittals and CRFs prepared by the QCE, monitoring the progress of the construction drawings, participating in routine inspections conducted during critical phases of construction, and providing technical assistance to the QCE throughout the project. The Project Manager reported directly to the Program Manager.

2.2.3.2 Project Superintendent

The Project Superintendent was responsible for all on-site construction activities including supervising craft labor and subcontractors, and monitoring construction materials and equipment. The Project Superintendent reported to the Project Manager and interfaced with the Construction NTR and the QCE.

2.2.3.3 Quality Control Engineer (QCE)

The Quality Control Engineer was independent of FWENC's project chain of command, and worked in conjunction with the Construction NTR and the QCPM. The Quality Control Engineer was responsible for coordinating inspection and surveillance activities on a full-time basis. The results of inspections and surveillance were documented in the Daily Reports. The Quality Control Engineer was also responsible for:

- Implementing the CQC Plan.
- Performing CQC inspection and field tests and preparing inspection and testing reports.
- Collecting samples for CQC laboratory testing and reviewing the test results.
- Maintaining the latest applicable copy of the Construction Drawings and Technical Specifications with amendments and/or approved modifications at the job site and ensuring that they were used for shop drawings, fabrication, construction, inspections, and testing.
- Maintaining the red-line drawings at the site to depict the as-built conditions of the project.
- Maintaining the Submittal Register for the duration of the contract.

- Reviewing shop drawings and/or other submittals for compliance with the contract requirements prior to their submission to the Project Manager for review, action and transmission to the Construction NTR.
- Establishing and maintaining a Rework Item List for work that did not conform to the Construction Drawings and/or Technical Specifications.
- Tracking and monitoring items on the rework list to ensure the rework inspection and testing activities and frequencies were in accordance with the contract requirements.
- Attending and assisting the Construction NTR at the pre-final inspection and final acceptance inspection.

2.2.3.4 Project Controls Engineer

The Project Controls Engineer was responsible for monitoring the schedule and budget of the project using the Resource Planning and Control System for costing and Primavera Scheduling software. Other responsibilities included preparing budgetary cost analyses, submitting monthly project updates to EFANE, and providing monthly budget and schedule forecasts to track the progress of the project. The Project Controls Engineer reported to the Project Manager.

2.2.4 Subcontractors

FWENC employed various subcontractors to complete the construction activities at Sites 3 and 10. It was the responsibility of FWENC to ensure that each subcontractor met the technical requirements of the Construction Drawings, Technical Specifications, and CQC Plan applicable to their scope of work. The QCE conducted daily inspections of the work performed by subcontractors to ensure compliance with the Technical Specifications and Construction Drawings.

2.3 PROJECT MEETINGS

Bi-weekly progress meetings were held throughout the project to review current project status and enhance coordination and communication among all parties. The bi-weekly progress meetings were coordinated and facilitated by the Project Manager and attended by the Project Superintendent, QCE, Design NTR, RPM, the Construction NTR and occasionally by various other parties involved with the project. The Project Manager prepared and distributed the minutes of the weekly progress meetings to all parties involved with the project. Weekly progress meetings included discussions of the following, as applicable:

- Review of the previous week's activities and accomplishments.
- Review of the planned activities for the upcoming week.
- Discussion of any potential problems associated with the project.
- Review of the current schedule versus the baseline schedule.
- Update the cost status of the project.
- Discussion of quality issues related to the construction activities.
- Discussion of the status of submittals, RFIs, and CRFs.
- Notification to USEPA and NJDEP of upcoming construction activities.
- Revisions to previous meeting minutes.

2.4 DAILY SUMMARY REPORTS

Daily summary reports were prepared by FWENC during construction activities at Sites 3 and 10. The reports were submitted to the Construction NTR for review and verification of their contents. Information in the reports included:

- Description of the work performed.
- Equipment used during the day.
- Labor hours of the field crew and FWENC's subcontractors.
- Quality control documentation.
- Summary of the quality control testing and inspection performed.
- Rework items that had been identified or corrected.

3. CONSTRUCTION DOCUMENTS

As part of the remedial activities at Sites 3 and 10, several documents were developed to specify the procedures and materials to be used during the construction of the landfill cover systems. These documents were maintained at the site and were readily available for reference.

3.1 DESIGN ANALYSIS REPORT

The Design Analysis Report was prepared by FWENC and submitted to EFANE on August 5, 2002. The report included a summary of the geologic and hydrogeologic information for each of the landfill sites, detailed geotechnical evaluations of slope stability and settlement, and other design calculations related to the basis of design for Sites 3 and 10. Conclusions drawn from the Design Analysis Report were used to generate the project Technical Specifications and Construction Drawings.

3.2 TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS

The 100% design Technical Specifications and Construction Drawings for the remedial action at Sites 3 and 10 were prepared by FWENC and submitted to EFANE on August 5, 2002. The Technical Specifications and Construction Drawings were used by FWENC to perform construction activities at the Sites 3 and 10. A copy of the updated red-line drawings was kept on site by the QCE, and periodically reviewed by the Project Manager, to document all changes to the Construction Drawings.

3.3 SOIL EROSION AND SEDIMENT CONTROL PLAN

The Soil Erosion and Sediment Control Plan was prepared by FWENC and submitted to the Navy on August 5, 2002. The Soil Erosion and Sediment Control Plan provides details regarding the erosion and sediment controls that were utilized during the construction of the landfill caps at Sites 3 and 10. The plan also includes calculations that estimate the storm water runoff from the two landfill sites, calculations that size the stormwater outlet protection areas, and other miscellaneous erosion and sediment control calculations.

3.4 REMEDIAL ACTION WORK PLAN

The Remedial Action Work Plan was prepared by FWENC and submitted to the Navy on August 5, 2002. The Remedial Action Work Plan provides an overview of the personnel involved in the construction of the landfill caps, the tasks, equipment, and manpower required to complete the project, and a general approach as to how the construction would be performed. In addition to the Remedial Action Work Plan, the Final Site Health and Safety Plan was submitted on November 13, 2001.

3.5 CONSTRUCTION QUALITY CONTROL (CQC) PLAN

The CQC Plan was prepared by FWENC and submitted to EFANE on August 5, 2002. The CQC Plan identified the testing and inspection methods used to document that the cap construction materials were manufactured and installed as specified in the Technical Specifications and Construction Drawings. The plan also outlined the frequency of testing and inspection for each construction material to be performed by the CQC personnel to assure compliance with the Technical Specifications. The CQC Plan also provided a description of the roles and responsibilities of each party involved with the project.

3.6 OPERATION AND MAINTENANCE (O&M) USER MANUAL

The O&M User Manual was drafted by FWENC and submitted in draft version to the Navy and Regulators on June 11, 2003. The O&M User Manual serves to explain the associated components of the landfill caps at Sites 3 and 10. The O&M User Manual also includes a detailed explanation of the function of each main component of the cap, provides material specifications, provides maintenance guidelines, and inspection forms.

4. LANDFILL CAP CONSTRUCTION ACTIVITIES

Construction activities at Sites 3 and 10 were completed in several stages, beginning in mid September 2002, with mobilization, and concluding during the week of June 4, 2003, with completion of the landfill caps construction. In early January 2003 the site was demobilized for the winter and re-mobilized again on April 21, 2003. The construction of the landfill caps at Site 3 and 10 were concurrent. The stages of construction at Sites 3 and 10 included site preparation, subgrade preparation, final cover system construction, storm water management system installation, and revegetation. FWENC conducted construction activities concurrently at both sites to effectively utilize the construction resources and to accelerate the construction schedule.

4.1 SITE PREPARATION

Site preparation activities were conducted by FWENC in mid September 2002. The following sections provide a description of the site preparation activities.

4.1.1 Mobilization

FWENC mobilized to Sites 3 and 10 in mid September 2002 to begin site preparation activities for construction of the landfill cover systems. Mobilization activities included installation of temporary facilities (office trailers, electrical service, telephone service, etc.), delivery of heavy equipment, construction of site entrances, installation of temporary erosion and sediment controls, and posting of the appropriate warning signs at all site entry points. As construction activities progressed, additional equipment and personnel were mobilized to the project to meet the demands of the schedule.

4.1.2 Site Access Road

The site access roads were constructed at Site 3 and Site 10 in order to gain construction access during the cap installations. The site access roads were constructed in accordance with the Contract Drawings and Technical Specifications. 1.5-inch stone was used to construct the access roads. The 1.5-inch stone was supplied by Harrod Enterprises, Inc. located in West Chester, Pennsylvania. Approximately 704.12 tons of stone was placed to construct the site access roads.

4.2 FINAL COVER SYSTEM DESIGN – SITE 3

The cap system for the Site 3 landfill as described in the ROD included the following components in ascending order:

- Placement and compaction of on-site soil to establish a suitable subgrade to promote positive drainage.
- Placement and compaction of 30 inches of cover soil material; and
- Placement of 6 inches of top soil to support final seeding and vegetation.

4.2.1 Demolition of Existing Structures

Prior to the landfill cap installation, two (2) existing small wooden structures located on-site were demolished. Three (3) roll-off containers were utilized for the transportation and disposal of these structures. Disposal documentation is included in Appendix A.

4.2.2 Landfill Subgrade Preparation/Excavation

The landfill subgrade was prepared prior to the cap installation. Additionally, the placement and compaction of fill subgrade materials within the limits of the existing landfill material was performed to achieve the appropriate subgrade elevation as shown on the Contract Drawings.

For Site 3, the total volume of fill was determined to be 29,052 cubic yards (cy) and the total volume to be cut was determined to be 1,156 cy. The volume of cut was subtracted from the volume of fill to

determine the net volume of fill that was required to be brought to the site. The approximate net volume of fill for Site 3 was 27,896 cy. The actual amount of subgrade material transported to the Site 3 landfill cap was 76,636 tons. This subgrade material was provided by the Navy from an on-site borrow source.

4.2.3 Installation of the 3-Foot Soil Cover Cap

Components of the installation of the 3-foot soil cap in ascending order consisted of placement and compaction of 30 inches of cover soil material and the placement of 6 inches of top soil to support final seeding and vegetation. The installation of the cap was performed according to the Contract Drawings and Technical Specifications. The cover soil and the top soil was supplied by Harrod Enterprises, Inc. Approximately 26,407 tons of cover soil and approximately 5,575 cy of top soil was installed at the Site 3 landfill cap. The final top soil layer was graded to promote proper run-off, and to accommodate settling. The state sanitary landfill regulations require that, after allowing for settlement, the top surface of a landfill cap be between 3 percent and 5 percent. To be conservative, a minimum slope of 5 percent slope was used in the design and construction. Side slopes were constructed to a 3 to 1 (3 horizontal to 1 vertical) slope. This design and construction promotes the run-off of precipitation.

4.2.4 Stormwater Management Measures

The stormwater management measures implemented at the Site 3 landfill cap were reinforced concrete pipes, headwalls, drainage swales. Perimeter rip-rap swales and two (2) storm water outlet protections were installed at the locations indicated on the as-built drawings for Site 3 as included in Appendix B. The installation of the stormwater management measures were performed according to the Contract Drawings, Technical Specifications and the Soil Erosion and Sediment Control Plan. The rip-rap stone used for stormwater management was supplied by Harrod Enterprises, Inc. Approximately 1,660 tons of rip-rap stone was installed for stormwater management at both Site 3 and Site 10.

4.2.5 Monitoring Wells

Monitoring well modifications were performed to four (4) existing monitoring wells prior to the cap installation at Site 3. The monitoring well modifications consisted of extending existing wells, MW3-04, MW3-05, MW3-06 and MW3-07 to 3 feet above finished grade. The monitoring well modifications were performed according to the Contract Drawings and Technical Specifications. Monitoring wells outside the cap boundaries remain in their present configuration and were not modified. In addition, four (4) new monitoring wells were installed outside the landfill boundary, MW3-09, MW3-10, MW3-11 and MW3-12. Modifications and installation of the monitoring wells were performed by B&B Drilling, Inc. located in Netcong, New Jersey. The locations of the modified monitoring wells and the installed monitoring wells are shown on the as-built drawings for Site 3 are included in Appendix B. The drillers daily reports (Control Number 26) and catalogue sheets (Control Number 30) for the monitoring well modification are included within Appendix C.

4.2.6 Seeding

As the final component of the landfill cap involved seeding. Seeding was performed by Cedar Hill Landscaping located in Somerset, New Jersey. Seeding on the west side of Site 3 was performed on May 15, 2003 and on the east side of Site 3 on May 20, 2003. The seedbed was initially scarified and then commercial fertilizer, seed, and mulch were furnished and placed. All seeding was in compliance with the Contract Drawings and Technical Specifications.

4.3 FINAL COVER SYSTEM DESIGN – SITE 10

The cap system for the Site 10 landfill as described in the ROD included the following components in ascending order:

- Site preparation including grading of existing material to establish a positive subgrade for drainage.

- Placement of a 12-inch gas management sand layer;
- Installation of a 60-mil HDPE textured geomembrane liner;
- Placement of a 12-inch sand drainage layer;
- Placement of 8-ounce geotextile fabric between the drainage layer and the cover soil material;
- Placement and compaction of 12 inches of cover soil material; and
- Placement of 6 inches of top soil to support final seeding and vegetation.

4.3.1 Landfill Subgrade Preparation/Excavation

The landfill subgrade was prepared prior to the cap installation. Additionally, the placement and compaction of fill subgrade materials within the limits of the existing landfill material was performed to achieve the appropriate subgrade elevation as shown on the Contract Drawings.

For Site 10, the total volume of fill was determined to be 1,121 cubic yards (cy) and the total volume to be cut was determined to be 1,654 cy. The volume of cut was subtracted from the volume of fill to determine the net volume of fill that was required to be brought to the site. The net volume of fill for Site 10 was -533 cy. This negative value indicated that an excess of 533 cy of fill would remain once the capping activities were completed. This remaining soil was left on-site and was incorporated into the final subgrade elevations.

4.3.2 Gas Management Layer

The gas management layer of the landfill cap at Site 10 was installed according to the Contract Drawings and Technical Specifications. This gas management layer consisted of 12-inches of sand. The sand used for the gas management layer was supplied by Harrod Enterprises, Inc. Approximately 5,350.5 tons of sand was installed. The landfill gas management layer will serve to collect gasses which may be generated by the landfill and to direct the landfill gases to four (4) passive gas vents.

4.3.3 Geomembrane

A 60-mil HDPE textured geomembrane liner was provided by IWT/Cargo-Guard located in Waretown, New Jersey for the Site 10 landfill cap. The geomembrane liner was installed by East Coast Liner located in Toms River, New Jersey at the location shown on the Contract Drawings.

4.3.4 Sand Drainage Layer

The sand drainage layer of the landfill cap at Site 10 was installed according to the Contract Drawings and Technical Specifications. This sand drainage layer consisted of 12-inches of sand that achieved a permeability higher than or equal to 1×10^{-3} cm/sec based upon the New Jersey regulations. The sand used for the sand drainage layer was supplied by Harrod Enterprises, Inc. Approximately 5,319.3 tons of sand was installed. The function of the sand drainage layer is to reduce the head, which would develop on the geomembrane due to water infiltrating into the cap system.

4.3.5 Geotextile Fabric

An 8-ounce geotextile fabric was provided by IWT/Cargo-Guard for the Site 10 landfill cap. The geotextile fabric was installed by East Coast Liner over the drainage sand material at the location indicated on the Contract Drawings.

4.3.6 Soil Cover Layer

A 12-inch cover soil was installed over the 8-ounce geotextile fabric at the locations indicated on the Contract Drawings. The cover soil was supplied by Harrod Enterprises, Inc. Approximately 4,834 tons of cover soil was installed at the Site 10 landfill cap.

4.3.7 Top Soil Layer

A 6-inch layer of top soil was placed on top of the cover soil layer to support final seeding and vegetation according to the Contract Drawings and Technical Specifications. The top soil was supplied by Harrod Enterprises, Inc. Approximately 1,306 cy of top soil was installed at the Site 10 landfill cap. The final top soil layer was required to have grading that promotes proper run-off, to prevent run-on, and to accommodate settling. The state sanitary landfill regulations require that, after allowing for settlement, the top surface of a landfill cap be between 3 percent and 5 percent. To be conservative, a minimum slope of 5 percent was used in the design and construction. Side slopes were constructed to a 3 to 1 (3 horizontal to 1 vertical) slope, except on the east side of the landfill because of the close proximity of the railroad tracks to the site. These slopes vary with location as shown on the Contract Drawings. This design and construction promotes the run-off of precipitation.

4.3.8 Gas Management Piping

The gas management piping construction included the placement of gas management vents for the final cover system. Four (4) gas vent pipes were installed at the locations indicated on the as-built drawings for Site 10 as included in Appendix D. The gas vents were installed by B&B Drilling, Inc. The gas management piping was furnished and installed according to the Contract Drawings and Technical Specifications. The drillers daily reports (Control Number 29) and catalogue sheets (Control Number 28) for the gas management piping are included within Appendix C.

4.3.9 Stormwater Management Measures

The stormwater management measure implemented at the Site 10 landfill cap was a drainage swale. Perimeter rip-rap swales were installed at the locations indicated on the as-built drawings for Site 10 is included in Appendix D. The installation of the stormwater management measures were performed according to the Contract Drawings, Technical Specifications and the Soil Erosion and Sediment Control Plan. The rip-rap stone used for stormwater management was supplied by Harrod Enterprises, Inc. Approximately 1,660 tons of rip-rap stone was installed for stormwater management at both Sites 3 and Site 10.

4.3.10 Monitoring Wells

Monitoring well modifications were performed to one (1) existing monitoring wells prior to the cap installation at Site 10. The monitoring well modification consisted of extending the existing well, MW10-02, to 3 feet above finished grade. The monitoring well modification was performed according to the Contract Drawings and Technical Specifications. Monitoring wells outside the cap boundaries remain in their present configuration and were not modified. Modification of the monitoring well was performed by B&B Drilling, Inc. The location of the modified monitoring well is shown on the as-built drawings for Site 10 as included in Appendix D. The drillers daily reports (Control Number 29) and catalogue sheets (Control Number 28) for the monitoring well modification are included within Appendix C.

4.3.11 Seeding

The final component of the landfill cap involved seeding. Seeding was performed by Cedar Hill Landscaping. Seeding on the of Site 10 was performed on May 8, 2003. The seedbed was initially scarified and then commercial fertilizer, seed, and mulch were furnished and placed. All seeding was in compliance with the Contract Drawings and Technical Specifications.

4.4 OTHER DESIGN REQUIREMENTS

4.4.1 Ordnance Materials

During the geophysical investigation at Site 10, ordnance materials were encountered. All ordnance materials appeared to be shell casings, shipping containers, and other components. No unexploded ordnance (UXO) materials were encountered.

FWENC UXO personnel were available during all intrusive activities in the areas where ordnance materials were encountered. When an ordnance-type material was encountered, UXO personnel inspected the materials and found several 40 mm cartridge cases, several 20 mm cartridge cases and one (1) 3-inch cartridge case. All ordnance-type materials found were expended (inert). A copy of the FWENC UXO log book of their daily findings is included as Appendix E.

4.4.2 Dust Control

Dust generated during earth moving activities was controlled using dust suppression techniques. Clean water was used for dust suppression which was applied using a 3000 gallon water truck. Special precautions were taken to monitor dust emissions and implement dust control measures during the initial limited activities involving the disturbance of the existing site soils.

5. QUALITY CONTROL TESTING/INSPECTION

All of the QC testing and inspection for the project was performed and coordinated by the QCE in accordance with the CQC Plan. The QCE was directly responsible for conducting all field inspections of the landfill cover systems construction activities, coordinating the on-site and laboratory testing of the construction materials, coordinating inspections with the QC representative of the geosynthetic crew, and reviewing the manufacturer's certifications of materials delivered to the site. Results of the QC field inspections were submitted in the daily production report for review by the ROICC. Results of the on-site and laboratory QC testing were reviewed by the QCE prior to submittal to the Project Manager for review, and approval by the Construction NTR. These submittals are included in Appendix C. The QC testing and inspection conducted for the borrow materials, geosynthetics and concrete is presented in this section.

5.1 BORROW MATERIALS

The borrow materials used to construct the final landfill cover system underwent three phases of QC testing to ensure conformance with the Technical Specifications and the CQC Plan. The three phases included: Pre-Construction Testing, Construction Phase Testing, and In-Place Field Testing. The borrow materials that went through these testing phases included: Gas Management Material, Granular Drainage Material, Cover Soil and Top Soil. The on-site and laboratory geotechnical testing of the Gas Management, the Granular Drainage Material, Cover Soil and Top Soil was completed by American Geotech, Inc. under subcontract to FWENC.

5.1.1 Pre-Construction Testing

Prior to a borrow source being approved to supply components of the final landfill cover system to Landfill Sites 3 and 10, FWENC was required to perform pre-construction testing of the material to demonstrate conformance with the Technical Specifications. The QCE visited the borrow source to inspect the material, evaluated the quantity of material available, and assessed the manner in which the material was processed or derived. All of the borrow materials were demonstrated to conform with the Technical Specifications prior to their use on the project.

5.1.2 Construction Phase Testing

Once a borrow material was accepted for use on the project, QC testing of the material proceeded to the construction phase to verify that conformance to the Technical Specifications was maintained. This phase of testing was implemented so that variations in the material that affected the placement and compaction efforts could be observed and the construction activities modified accordingly. In addition, visual inspection of the borrow materials was routinely performed by the QCE to check their consistency throughout the project. Results of the construction phase testing were found to be in conformance with the Technical Specifications and are presented in Appendix C, the Quality Control Submittals.

5.1.3 In-Place Field Testing

In-place QC field testing was performed by American Geotech, Inc., to verify that the density and moisture content of the completed subgrade and cover layers was in conformance with the Technical Specifications and the CQC Plan. Tests for pH, permeability and sieve analysis was performed on the Gas Management Material and Granular Drainage Material. Sieve analysis, Atterburg Limits, pH and total organic content (TOC) tests were performed on the Top Soil. Results of the testing were reviewed by the QCE prior to submittal to the Project Manager for review, and approval by the Construction NTR. The results of the in-place field testing for the Gas Management Material (Control Number 12), Granular Drainage Material (Control Number 12A) and Top Soil (Control Number 31) are presented in Appendix C, the Quality Control Submittals.

The depth of the subgrade and cover layers at each test location was measured during the in-place testing as part of the quality control of the layer thickness. The results of the layer thickness verification were recorded by the QCE and appropriate action was taken in deficient locations.

Field testing of the Rip-Rap was also performed throughout the project. Testing of these materials involved determining the gradation by the method outlined in ASTM D5519. A sample of the material was taken from an on-site stockpile and the stones were segregated according to their size. All of the different stone sizes were then weighed to determine the percentage of the total sample that each stone size comprised. QC testing of the riprap demonstrated that the material met or exceeded the requirements of the Technical Specifications. The results were compared by the QCE to the values specified in the NJDOT regulations prior to submittal to the Project Manager for review, and approval by the Construction NTR. Results of the Rip-Rap testing are presented in Appendix C, the Quality Control Submittals.

5.2 GEOSYNTHETIC MATERIALS

QC testing and inspection of the geosynthetic materials involved reviewing the testing certificates provided by the manufacturer, conducting laboratory testing of the materials to demonstrate conformance with the Technical Specifications, and performing field tests on the material to verify that they were properly installed.

5.2.1 Geomembrane/Geotextile Manufacturer's Certifications

The geomembrane/geotextile installed at Landfill Site 10 was Mirafi 180N (8 oz.), Mirafi 1120N (12 oz.) and Solomax 460T (60 mil HDPE textured liner). Mirafi 180N (8 oz.) was installed at Site 10 below the cover soil layer and above the sand drainage layer. Solomax 460T was installed above the gas management layer and below the sand drainage layer. The Mirafi 1120N (12 oz.) is non-woven and was installed at Site 10 below the site access roads and below all drainage swales. Providing the certification involved QC testing of the geotextile at the manufacturing facility prior to its delivery to the landfill. Results of the QC testing were reviewed by the QCE for conformance with the Technical Specifications prior to submittal to the Project Manager for review, and approval by the Construction NTR. All of the geotextile rolls delivered to the landfill were inspected by the QCE upon arrival to verify that the proper rolls were delivered and that no damage occurred during transport. Certifications for Mirafi 180N (8 oz.), Solomax 460T, Mirafi 1120N (12 oz.) geomembrane are included in Appendix C, under Control Number 16 and Control Number 20.

5.2.2 Borrow Material/Geomembrane Interface Testing

The interface friction between the geomembrane and the borrow material or geosynthetic components above and below the geomembrane were tested prior to installation of the materials to verify that the shear resistance between them was acceptable. The test, referred to as a direct shear test, provided the resulting friction angle which was subsequently used to determine the maximum slope angle on which the subject material can be installed while minimizing the potential for slope failure. The three interfaces that were tested for the project include: textured geomembrane to non-woven cushion geotextile, smooth geomembrane to non-woven cushion geotextile, and non-woven cushion geotextile to granular drainage material. The direct shear testing was conducted by an independent laboratory under subcontract to FWENC in accordance with ASTM D5321 as outlined in Section 02771 of the Technical Specifications. The minimum angle required by the Technical Specifications for the textured geomembrane-cushion geotextile and cushion geotextile-granular drainage material interfaces was 25 degrees and the minimum angle for the smooth geomembrane-cushion geotextile interface was 8 degrees. All of the interface testing was performed under the anticipated field conditions. The testing was performed by Geotesting Express. The results of the interface testing were reviewed by the QCE prior to submittal to the Project Manager, and approval by the Construction NTR. All results of interface testing were acceptable.

Results of the testing are included within Control Number 17, Control Number 18 and Control Number 20 within Appendix C.

5.2.3 Field Test Seams

Each day prior to deployment of the geomembrane, a field test seam was prepared by the geosynthetic crew with each machine that would be used that day. Seam testing consisted of welding together two strips of geomembrane, either by fusion or extrusion welding, followed by strength testing of the weld to demonstrate that the test conditions were adequate to meet the requirements of the Technical Specifications. Test seams were also prepared every four (4) hours during seaming operations to verify that the welding machines remained calibrated. All of the test seams were a minimum of 36-inches long and were divided between the geosynthetic QC representative for field and laboratory testing, and the QCE for archiving. The geosynthetic QC representative cut ten (10) samples from each of the test seams and field tested them for shear and peel strength in accordance with ASTM D4437 and Section 02771 of the Technical Specifications. Test seams that did not meet the strength requirements of the Technical Specifications were rejected and a new test seam was welded after adjustments were made by the welder. Results of the testing are included within Control Number 17, Control Number 18 and Control Number 20 within Appendix C.

5.2.4 Non-Destructive Seam Testing

Non-destructive seam testing was performed daily on each of the welded geomembrane seams to verify the continuity of the weld. Both seaming methods, fusion and extrusion welding, required testing of the entire seam prior to approval for the next phase of testing.

Fusion welding involved thermally bonding adjoining sheets of geomembrane with two welds separated by an air channel. The continuity of the weld was tested by inserting a manometer into the air channel and pumping air throughout the channel. The weld was judged to be acceptable if the air pressure in the channel did not drop more than 3 psi over a 5-minute period. Any larger pressure drop was assumed to be indicative of a leak in the channel caused by a break in one of the two welds. Leaks in the geomembrane seams were located by the geosynthetic crew, repaired with an extrusion weld or a cap strip, and vacuum tested prior to approval of the seam.

Extrusion welding of the geomembrane seams were performed when fusion welding was not practical. An extrusion weld involved thermally bonding two overlapped pieces of geomembrane at the surface with a continuous bead of HDPE welding rod. Each extrusion weld was tested using the vacuum box method. This method involved spreading a soapy solution over the weld and applying an external vacuum to each section of the weld. The vacuum pressure of 5 psi was applied to the weld using a 12-inch square box with a clear window at the top. Leaks in the weld were detected by the appearance of bubbles at the edge of the weld during the vacuum application. Any leaks that were detected in the weld were repaired by re-extrusion welding and testing the deficient areas. All of the non-destructive test records are included within Control Number 17, Control Number 18 and Control Number 20 within Appendix C.

5.2.5 Destructive Seam Testing

Destructive seam testing of the geomembrane was performed upon completion of the non-destructive seam testing. This type of testing was performed on the in-place HDPE geomembrane to verify that the continuous geomembrane welds met the strength requirements of the Technical Specifications. The destructive geomembrane samples were 36-inches long and 12-inches wide and were taken at the rate of one every 500-linear feet of completed seam. The holes created in the geomembrane by the destructive sampling were patched by extrusion welding a piece of geomembrane over the hole. The samples were labeled with specified seaming information (e.g., seamer, date, temperature, etc.) and were cut into three 12-inch by 12-inch sections that were used for field testing, laboratory testing, and archiving, respectively.

The first section of the destructive sample was cut into ten 1-inch specimens and field tested by the QC Representative for shear and peel strength using a field tensiometer. Five of the samples were tested for shear strength and five for peel strength. If four of the five samples met or exceeded the specified strength values, the seam was deemed acceptable and the second section of the destructive sample was sent for laboratory testing.

Laboratory testing of the second section of the destructive sample was performed in accordance with ASTM D 4437. The sample was shipped to an independent QC laboratory under subcontract to FWENC upon completion of the field destructive testing. As occurred in the field test, ten specimens were cut from the sample and were tested for shear and peel strength. All of the destructive samples sent to the independent QC laboratory were in conformance with the Technical Specifications. The results of the field and QC laboratory destructive sample testing are included within Control Number 17, Control Number 18 and Control Number 20 within Appendix C.

5.3 REINFORCED CONCRETE

Reinforced concrete was used to construct the head walls and pipe for drainage at Site 3. The pre-cast headwalls and reinforced concrete pipe (RCP) material being supplied conformed to Section 02501 of the Technical Specifications. All of the QC testing conducted on the pre-cast concrete met or exceeded the requirements of the Technical Specifications. The manufacturer's data sheets and installation instructions are included within Control Number 21 within Appendix C.

6. LANDFILL CAP CONSTRUCTION ACTIVITIES

Construction of the final cover systems at Landfill Sites 3 and 10 required extensive survey control to verify that the cover systems were constructed according to the lines and grades indicated on the Construction Drawings. Boucher and James, Inc. located in Doylestown, Pennsylvania was the licensed surveying company subcontracted by FWENC to perform all of the critical surveying activities. In addition to the surveying conducted by the licensed surveyors, a member of FWENC's construction crew performed routine surveys to assist in controlling the lift thickness of the cover layers during installation.

6.1 CONSTRUCTION LAYOUT

The construction layout was established using the project baseline and the survey control points. The coordinates of random survey points were checked at the start of the project to verify the accuracy of the Construction Drawings. The survey crew was responsible for establishing the lines and grades for the subgrade and final grade elevations, and for locating various features throughout the landfill. Some of the features that the survey crew was responsible for locating and establishing grades for included:

- Limit of clearing;
- Final limit of landfill material;
- Limit of the final cover system;
- Cuts and fills for the relocation of landfill material;
- Top and toe of the slope; and
- Centerline of storm water drainage measures, gas vents, and monitoring wells.

The survey crew worked closely with FWENC to ensure that proper grades were maintained throughout the project.

6.2 AS-BUILT DOCUMENTATION

An as-built survey of the subgrade and final grade layers was performed Boucher and James, Inc. in accordance with the CQC Plan. The survey was performed on cross-sections at 50-foot intervals along the baseline and was submitted to the QCE as a set of cross-section drawings. The as-built cross-sections were used to verify that the thickness of the completed landfill cover system conformed to the requirements set forth in the Construction Drawings. In addition to the cross-sections, topographical drawings of the final grade at Landfill Sites 3 and 10 were submitted. The topographical drawings depicted the final grades of the completed landfill surfaces along with the locations of all the features visible on the final landfill surfaces including:

- Gas vents;
- Monitoring wells;
- Settlement Monuments; and
- Storm water drainage measures.

A Copy of the As-Built drawings are included in Appendix B for Site 3 and Appendix D for Site 10.

7. REFERENCES

Final Remedial Action Work Plan for Remedial Action at Operable Unit 6 (Sites 3 and 10); Volume I of III – Final Design Analysis Report, Volume II of III – Final Technical Specifications and Contract Drawings, Volume III of III – Final Soil Erosion and Sediment Control Plan, Naval Weapons Station Earle, Colts Neck, New Jersey, FWENC, August 5, 2002.

"Proposed Plan for Sites 3 and 10 (OU-6)" Prepared by Tetra Tech NUS, Inc. Dated May 2001

"Record of Decision Operable Unit 6 (OU-6)" Prepared by Tetra Tech NUS, Inc. Dated July 2001

"Standards for Soil Erosion and Sediment Control in New Jersey" Promulgated by The NJ State Conservation Committee. Dated July 1999

APPENDIX A

Site 3 – Existing Structure Disposal Documentation

47392.2

MARPAL DISPOSAL
PO BOX 138
LINCROFT, NJ 07738

TICKET: 14211
DATE: 10/30/2002
TIME: 09:21 - 09:31

CUSTOMER: WMI MAT / WASTE MANAGEMENT OF MATAWAN
GENERATOR: NA / Non App
ORIGIN: CN / COLTS NECK
TRUCK: WMR0407392
TRAILER:

PROFILE: NA
LICENSE: RESLF
WO:
HAULCUST: NA

P.O.:
GROSS: 44420 LBS
TARE: 36800 LBS
NET: 7620 LBS

Automatic Gross
Automatic Tare
SCALE OUT: E

COMMENT:

WASTE	QUANTITY	UNIT
13 / BULKY WASTE	3.81	T

Foster Wheeler
w/o 105615

Driver: _____ Weighmaster: _____

47402.4

MARPAL DISPOSAL
PO BOX 138
LINCROFT, NJ 07738

TICKET: 18065
DATE: 12/27/2002
TIME: 12:45 - 12:53

CUSTOMER: WMI MAT / WASTE MANAGEMENT OF MATAWAN
GENERATOR: NA / Non App PROFILE: NA
ORIGIN: CN / COLTS NECK
TRUCK: WMR0408563 LICENSE: AF318U
TRAILER: WO: HAULCUST: NA

P.O.:
GROSS: 50080 LBS
TARE: 37840 LBS
NET: 12240 LBS

Automatic Gross
Automatic Tare
SCALE OUT: 2

COMMENT:

WASTE	QUANTITY	UNIT
13 / BULKY WASTE	6.12	T

Ticket 10836
M.d 59473
Box 0136
RF408563
1

Driver: _____ Weighmaster: _____

473923

MARPAL DISPOSAL
PO BOX 138
LINCROFT, NJ 07738

TICKET: 13418
DATE: 10/21/2002
TIME: 10:20 - 10:31

CUSTOMER: WMI NAT / WASTE MANAGEMENT OF MATAWAN
GENERATOR: NA / Non App
ORIGIN: CN / COLTS NECK
TRUCK: WMR0407392
TRAILER:

LICENSE: AE511F
WO:

PROFILE: NA
HAULCUST: NA

P.O.:
GROSS: 51700 LBS
TARE: 37980 LBS
NET: 13720 LBS

Automatic Gross
Automatic Tare
SCALE OUT: 2

COMMENT:

WASTE	QUANTITY	UNIT
18 / BULKY WASTE	6.86	T

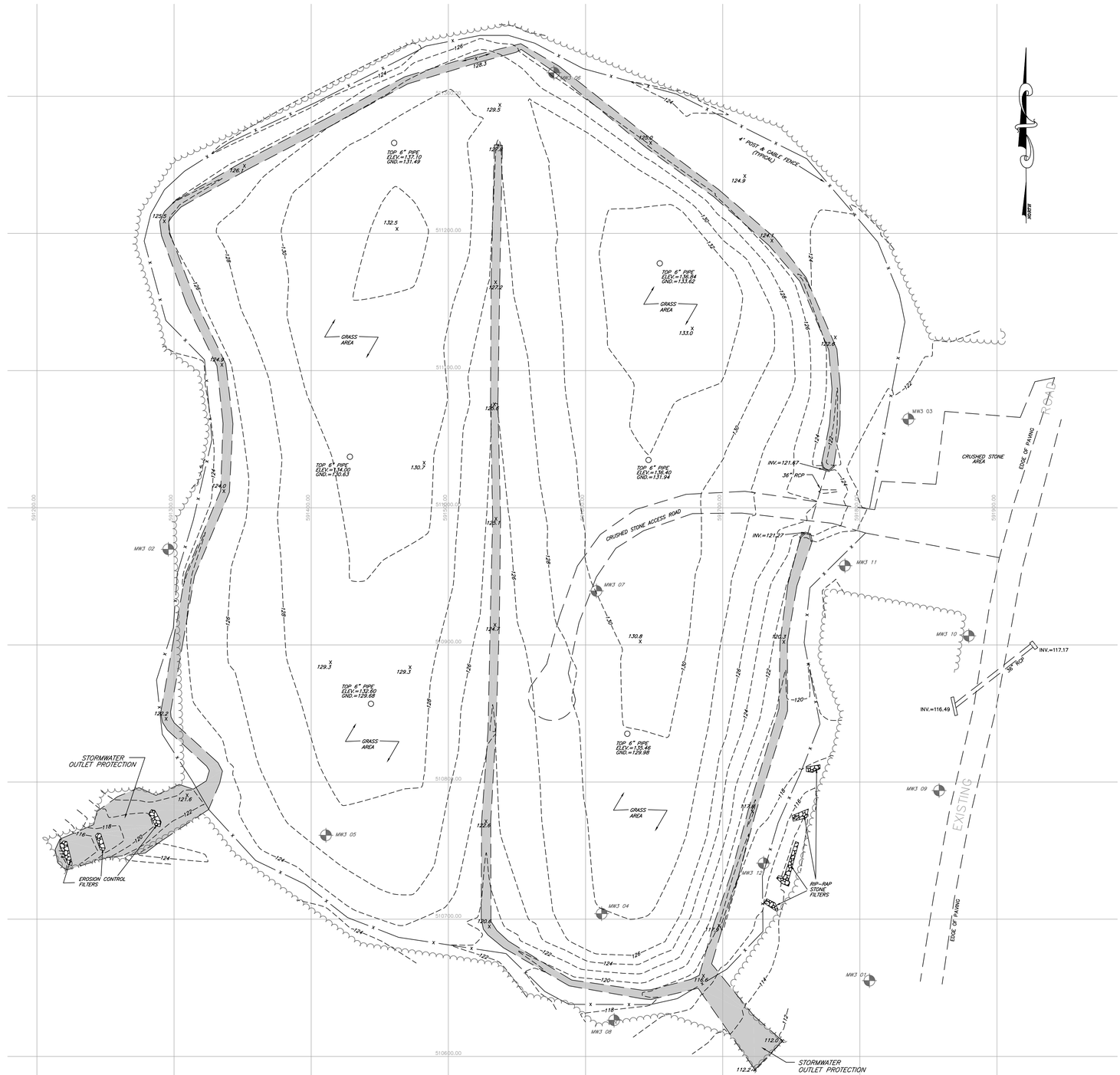
Foster Wheeler
w/o 105088

Driver: [signature]

Weighmaster: [signature]

APPENDIX B

Site 3 – As-Built Drawings



LOCATION MAP
NOT TO SCALE

Legend

- MONITORING WELL
- 6" ROUND CAST IRON SETTLEMENT MONUMENT
- EDGE OF STONE
- TREELINE
- RIP-RAP SWALE
- SPOT ELEVATION (x 130.8)
- ROCK FILTER AREA
- PERIMETER CABLE FENCE

Monitoring Well Locations

Description	Northing	Easting	Top Cap Elev.	Top PVC Elev.
MW3 01	510855.2567	591807.0137	116.61	116.31
MW3 02	510969.6953	591295.7860	125.59	125.03
MW3 03	511064.5850	591835.5470	124.65	124.25
MW3 04	510704.0369	591611.7600	131.10	130.75
MW3 05	510761.9290	591410.7100	129.25	129.06
MW3 06	511117.1870	591576.9590	127.87	127.68
MW3 07	510939.0950	591607.9920	134.19	133.91
MW3 08	510626.1480	591620.8400	118.03	118.30
MW3 09	510793.8190	591857.8000	122.77	122.54
MW3 10	510906.5940	591879.4880	124.13	123.84
MW3 11	510857.7920	591789.1330	124.94	124.68
MW3 12	510740.8340	591729.8530	120.23	119.84

NOTE: MW3 04, MW3 05, MW3 06 & MW3 07 WERE EXTENDED DURING CONSTRUCTION TO MATCH NEW LANDFILL ELEVATIONS.

General Notes

1. TOPOGRAPHIC DATA SHOWN HEREON BASED UPON A FIELD SURVEY CONDUCTED BY BOUCHER & JAMES, INC. ON JUNE 17, 2003.

2. HORIZONTAL DATUM BASED UPON NEW JERSEY STATE PLANE COORDINATES NAD83 AND VERTICAL DATUM BASED UPON NAVD88 AS FURNISHED BY THE ROCC OFFICE AT THE NAVAL WEAPONS STATION – EARLE FOR THE FOLLOWING MONITORING WELLS:

SITE NO. 3

	NORTH	EAST	TOP OUTER CASING
MW03–04	510703.97	591611.40	122.90
MW03–08	510626.47	591620.78	118.84

SITE NO. 10

	NORTH	EAST	TOP OUTER CASING
MW10–06	519268.74	592712.39	106.50
MW10–07	519230.86	592807.94	108.20

3. SITE NO. 3 SHOWN HEREON IS NOT WITHIN THE LIMITS OF THE 100 YEAR FLOOD ZONE AS DEFINED ON THE FLOOD INSURANCE RATE MAP FOR THE TOWNSHIP OF HOWELL, MONMOUTH COUNTY COMMUNITY–PANEL NUMBER 340301 0010B, EFFECTIVE DATE: JANUARY 6, 1983 AS ADOPTED BY FEMA.

4. THE CONTOURS SHOWN HEREON ARE AT 2 FOOT INTERVALS.

5. ANYONE USING THIS DRAWING FOR CONSTRUCTION IS ADVISED TO CALL 1–800–272–1000 FOR UNDERGROUND UTILITY LOCATIONS PRIOR TO EXCAVATION IN ACCORDANCE WITH NEW JERSEY ONE CALL SYSTEM, INC.

CALL BEFORE YOU DIG!
UNDERGROUND UTILITY PROTECTION ACT REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP CALL.
New Jersey One Call System, Inc.
1–800–272–1000

Revisions	
Date	Description

Project : NAVAL WEAPON'S STATION–EARLE
COLT'S NECK TOWNSHIP
MONMOUTH COUNTY, NJ

Owner : TETRA TECH FW, INC.
2300 LINCOLN HIGHWAY EAST
ONE OXFORD VALLEY, SUITE 200
LANGHORNE, PA 19047–1829

Job No.: 010412
Drawn by: DR–BY
Checked by: CH–BY
Scale: SCALE
Plan Status: FINAL PLAN

Title: SITE NO. 3 - AS-BUILT PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
Doylestown, PA Quakertown, PA Stroudsburg, PA

Sheet: 1 of 1

Project Name : NAVAL WEAPON'S STATION–EARLE

Date: DATE

P:\Navy RAC\Earle_2.5\civil\38.10\survey\test.dwg, 08/13/2003 03:58:13 PM

APPENDIX C

Quality Control Submittals

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 10

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	0040	Naval Weapons Station Earle – Colts Neck, NJ

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (E-Copy and Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

SIGNATURE AND DATE DECEMBER 13, 2002

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-13, Certification, Specification Section 02240, Site construction entrance stone sieve analysis	James M. Lisic, CQA			No further action required

Crushed Stone

Stavola Company, Inc.

PO Box 482, Red Bank, NJ 07701 (732)542-2328 Fax(732)389-5372

September 19, 2001

Harrod Enterprise, Inc.

Re: Earle Naval Base Colts Neck, Landfill

Dear Sir or Madam:

This is to certify that the stone materials supplied to you, for your above mentioned project, meets New Jersey Department of Transportation standard specifications and quality requirements. The following gradation is as follows:

¾" CLEAN STONE

SIEVE SIZE	% PASSING	SPECIFICATION
1 ½"	100	100
1"	99.1	95 - 100
½"	57.6	25 - 60
#4	2.3	0 - 10
#8	1.5	0 - 5

Specific Gravity 2.923

Please be advised that the 3-5 inch Rip-Rap Stone material supplied from our Stavola Construction Material Quarry, Lot 15, Block 6401, Bridgewater Township, is free of any hazardous materials or contamination and is considered to be clean virgin material.

If any further information should be required concerning this material, please feel free to contact me at (732) 542-2328, extension 236.

LAB
EO-245

Respectfully submitted,

Stavola Construction Materials, Inc.

Lee Parisi

Lee Parisi

Quality Control Coordinator

LP/cf

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 11

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

M. Lisic DECEMBER 13, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

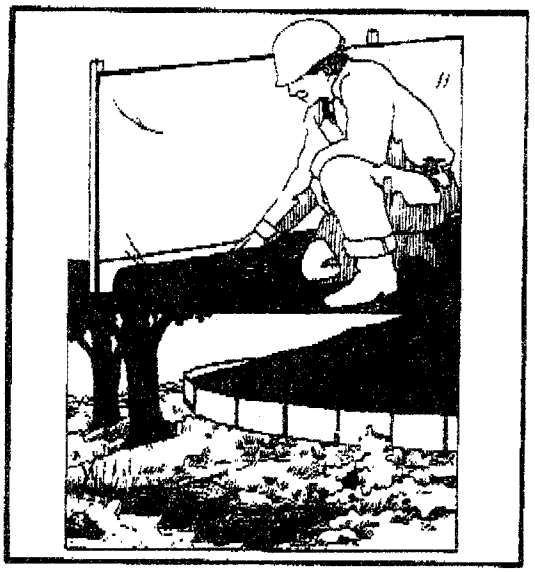
ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Certification, Specification Section 02240, Silt Fence	James M. Lisic, CQA	M. Lisic		No further action required

The Professional ADVANTAGE
AH HARRIS
CONSTRUCTION SPECIALTIES
Since 1916

HARRIS SILT FENCE WITH OAK POST

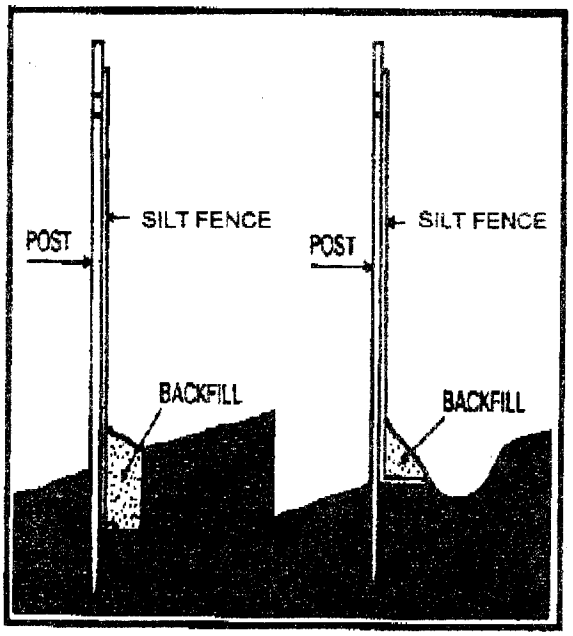
DESCRIPTION

HARRIS SILT FENCE with attached hardwood posts is self supporting, UV stabilized polypropylene silt fence to contain sediment runoff. **Also available with plastic mesh backing.**



SPECIAL FEATURES

- Depth gauge that ensures adequate toe-in of the silt fence.
- Treated to ensure protection against sunlight degradation.
- Very economical.
- Attached 4' oak posts.



INSTALLATION

1. Dig a (4" to 6") trench along the intended fence line.
2. Lay out Silt Fence along the trench line.
3. Stretch Silt Fence tautly.
4. Drive all posts into the ground at back side of fence.
5. Drape bottom 6" of Silt Fence (below red gauge line) in trench, backfill with soil and compact.

HARRIS SILT FENCE W/OAK POSTS

HARRIS SILT FENCE
MINIMUM PHYSICAL PROPERTIES

		2130	
PROPERTY	TEST METHOD	AMERICAN STANDARD	METRIC
Grab Tensile	ASTM D-4632	124 Lbs	550 N
Grab Elongation	ASTM D-4632	15%	15%
Mullen Burst	ASTM 3786	300 psi	2060kPa
Puncture	ASTM 4833	65 Lbs	290 N
Trapezoidal Tear	ASTM D-4533	65 Lbs	290 N
U.V. Resistance (strength retained)	ASTM 4355	80% @ 500 Hrs	80% @ 500 Hrs
Apparent Opening Size	ASTM D-4751	#30 Sieve	0.60 mm
Permittivity	ASTM 4491	0.05 sec	0.05 sec
Flow Rate	ASTM4491	10 GAL/MIN/FT^2	7L/sec/m^2

MESH BACKING SPECIFICATIONS

Material	Polypropylene
Color	Black
Strand Count	2.7 x 2.7
PMSF	7.34
Weight, G/sq. yd.	30.0
FDA Status	Conforms to CFT 117.1520
Tensile Strength	42-12 # Min. per 3"
U.V. Resistant	4% Carbon Black

Roll Width (ft.)	3
Roll Length (ft.)	100

Silt fence fabric is manufactured for A. H. Harris & Sons, Inc. by Amoco Fabrics & Fibers.

LIMITED WARRANTY

A.H. Harris & Sons, Incorporated ("Harris") warrants that, at the time of shipment to its customers, the product it sells or rents conform to its usual standards and are free from defects which would materially affect the products' ability to perform as represented. IF ANY HARRIS PRODUCT IS PROVEN TO BE DEFECTIVE, THE CUSTOMER'S EXCLUSIVE REMEDY IS TO HAVE HARRIS REPLACE THE DEFECTIVE PRODUCT WITH A PRODUCT OF LIKE QUALITY OR AT HARRIS' OPTION, TO REFUND THE PURCHASE PRICE. IN NO EVENT SHALL HARRIS' LIABILITY, IF ANY, WHETHER FOUNDED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE) EXCEED THE PURCHASE PRICE OF THE DEFECTIVE PRODUCTS NOR SHALL HARRIS BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR ANY CLAIM BROUGHT MORE THAN ONE YEAR AFTER THE SALE OF THE PRODUCT BY HARRIS TO ITS CUSTOMER. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND HARRIS MAKES NO OTHER WARRANTIES WITH RESPECT TO ITS PRODUCTS, EXPRESS OR IMPLIED, INCLUDING NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Harris does not intend any of its products to be used in a way that would infringe any patent or copyright.

Rev. 3/97

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 12

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

SIGNATURE AND DATE DECEMBER 13, 2002

FROM:	DATE
TO:	DATE

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FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10, Certification, Specification Section 02320, Geotechnical test reports (gas management layer) • sieve analysis • permeability test • pH • certificate of cleanliness	James M. Lisic, CQA			No further action required

HARROD ENTERPRISES INC.
P.O. BOX 2114. WEST CHESTER, PA 19380
(610) 692-4401

October 2, 2001

Foster-Wheeler Environmental Corp.
2300 Lincoln Highway, East
#1 Oxford Valley, Suite 200
Langhorn, PA 19047-1829

Attn: Mr. Rick Woodworth
Project Manager

Re: US Navy Project, Colt's Neck, NJ

Dear Rick:

I am enclosing for your review job specifications and lab analysis on the materials to be used on the above project. The rip-rap and three-quarter inch stone lab results will be forwarded in the very near future from the quarry supplier.

I hope this report meets with your satisfaction. Please call me to confirm receipt.

Sincerely,

Harry C. Forrest, President

HCF:z
Enc.

ABI LABORATORIES, INC.

Client	***Harry Forest***
Date Received	***9/27/01***
Date Tested	***9/27/01***
Date Submitted	***10/1/01***
Material Type	***Sand***
Sample Origin	***Sand Qeourl #4***
Project Description	***Select***
Lab Number	***HF0932***

Methods:

Standard	*Number*	*Description*
ASTM	*D 1557*	*Modified Proctor*
ASTM	*C136*	*Sieve Analysis*

Notes:

Submitted By:

Date: 10-1-01

ASTM D1557
Moisture Density Relations of Soils

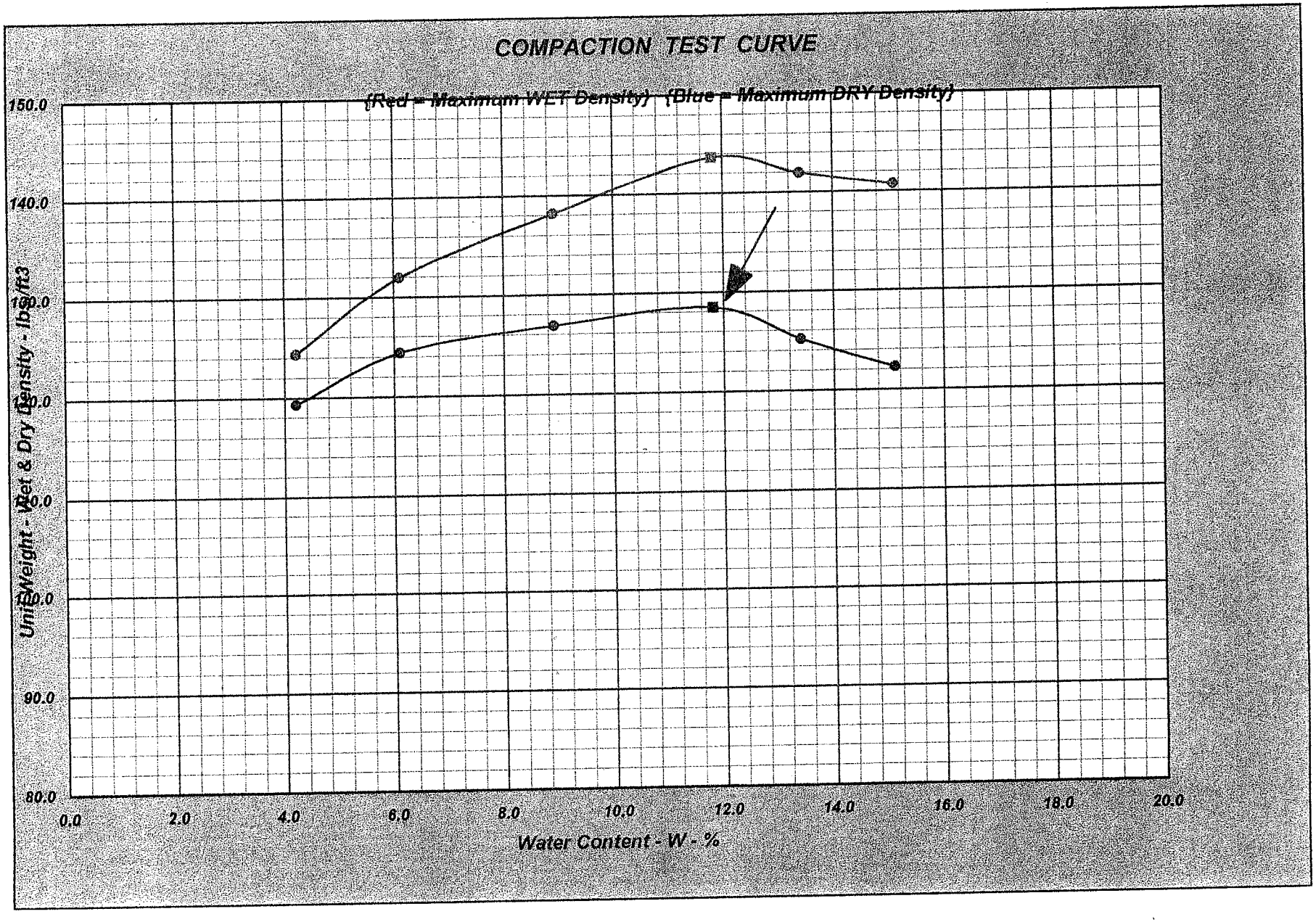
Lab Number	**HF0932**
	Sand
Method	
Prep. Method	**Moist**
Rammer	**10-lbf.**

Spec. No.	Mass of Specimen and Collar [g.]	Mass of Collar [g.]	Net Mass of Specimen [g.]	Wet Density Lbs. / Ft.3	Dry Density Lbs. / Ft.3
1	3897.3	2025.5	1870.8	124.4	119.3
2	4012.1	2025.5	1985.6	132.0	124.4
3	4105.3	2025.5	2078.8	138.2	126.9
4	4187.6	2025.5	2161.1	143.6	128.5
5	4162.1	2025.5	2135.6	142.0	125.2
6	4143.8	2025.5	2117.3	140.7	122.3

Spec. No.	Mass of Cont. & Wet Soil [g.]	Mass of Cont. & Dry Soil [g.]	Mass of Container [g.]	Mass of Soil Loss [g.]	Percent Moisture
1	841.6	814.2	162.4	27.4	4.2
2	877.5	836.4	162.3	41.1	6.1
3	776.5	726.4	163.2	50.1	8.9
4	925.9	845.3	162.5	80.6	11.8
5	783.5	710.2	162.9	73.3	13.4
6	964.2	859.1	163.4	105.1	15.1

Maximum Dry Density =	**128.5 Lbs. / Cu. Ft.**
Optimum Moisture Content =	**11.8 Percent**

ASTM D1557



Compaction Curve

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Sand
Summary Number: HF0932
Date Submitted: 01 Oct 2001

Sample Number	Analysis Required	Sample Type
HF0932	pH	Sand

Brandon Masters

Lab Director

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Sand
Summary Number: HF0932

Date Submitted: 01 Oct 2001

Parameter	Concentration	Units	MDL	Regulatory Limit
% Moisture	13.5	%	0.1	N/A
Corrosivity as pH	7	pH Units	0.5	N/A

ABI LABORATORIES, INC.

Client	Harry Forest
Date Received	10/8/01
Date Tested	10/8/01
Date Submitted	10/9/01
Material Type	Sand / Blend
Sample Origin	Farmingdale
Project Description	Sand
Lab Number	HF1009

Methods:

Standard	Number	Description
ASTM	C136	Sieve Analysis

Notes:

Submitted By:

Date: 10-9-01

ASTM C136 (Sieve Analysis of Fine and Coarse Aggregate)

SIEVE ANALYSIS

HF1009
Blend

9-Oct-01

Sieve	Particle Size, mm	Weigt Passing g.	Percent Passing	Sand Spec.
4 "	100.0	964.2	100.0	
3 1/2 "	90.0	964.2	100.0	
3 "	75.0	964.2	100.0	
2 1/2 "	63.0	964.2	100.0	
2 "	50.0	964.2	100.0	
1 1/2 "	37.5	964.2	100.0	
1 "	25.0	964.2	100.0	
3/4 "	19.0	964.2	100.0	100
1/2 "	12.5	964.2	100.0	
3/8 "	9.5	964.2	100.0	80--100
No. 4	4.75	946.8	98.2	
No. 8	2.36	932.4	96.7	
No. 10	2.00	724.1	75.1	
No.16	1.800	870.7	90.3	
No.30	0.600	765.6	79.4	
No. 40	0.425	602.6	62.5	
No. 50	0.300	410.7	42.6	
No. 80	0.180	168.3	17.5	
No.100	0.150	58.8	6.1	0--8
No. 200 (Washed)	0.075	14.5	1.5	

ABI Laboratories, Inc.

ASTM C136 {Sieve Analysis of Fine and Coarse Aggregate}

SIEVE ANALYSIS

HF1001
Sand

1-Oct-01

Sieve	Particle Size, mm	Weigt Passing g.	Percent Passing	Sand Spec.
4 "	100.0	1000.0	100.0	
3 1/2 "	90.0	1000.0	100.0	
3 "	75.0	1000.0	100.0	
2 1/2 "	63.0	1000.0	100.0	
2 "	50.0	1000.0	100.0	
1 1/2 "	37.5	1000.0	100.0	
1 "	25.0	1000.0	100.0	
3/4 "	19.0	1000.0	100.0	100
1/2 "	12.5	1000.0	100.0	
3/8 "	9.5	1000.0	100.0	80--100
No. 4	4.75	900.0	90.0	
No. 8	2.36	850.0	85.0	
No. 10	2.00	800.0	80.0	
No.16	1.800	750.0	75.0	
No.30	0.600	650.0	65.0	
No. 40	0.425	450.0	45.0	
No. 50	0.300	350.0	35.0	
No. 80	0.180	250.0	25.0	
No.100	0.150	50.0	5.0	0--8
No. 200 {Washed}	0.075	0.0	0.0	

RAM TRUCKING CO.
P.O. BOX 522
FARMINGDALE, NJ 07727
732-938-5093
FAX: 732-938-3632

December 13, 2002

Jim Lisic,

This letter is to certify that the site access road material, gas management material, cover soil, top soil, crushed stone products and drainage layer material delivered and to be delivered to the Foster Wheeler Environmental Corporation project at NWS Earle are clean and free from any contamination.

Rose Ann Muccio

Rose Ann Muccio
President

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 12A

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

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HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

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FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10, Certification, Specification Section 02320, Geotechnical test reports (granular drainage material) • sieve analysis • permeability test • pH • certificate of cleanliness	James M. Lisic, CQA			No further action required

AMERICAN GEOTECH, INC.
Civil/Geotechnical/Environmental/Structural Engineering, Geophysical & Materials Testing
1801 Penn Avenue, Wyomissing Hills, PA 19609/Tel: 610-670-9055/Fax: 610-678-2719
209 Main Street, Woodbridge, NJ 07095 /Tel: 732-750-1668
E-mail: AGImail@americangeotech.com Web Site: WWW.Americangeotech.com

FAX TRANSMITTAL

DATE: 12/10/02
ATTENTION: Jim Leisic / Foster Wheeler
FAX NO.: 22-761-8574
FROM: Kin Chung
NO. OF PAGES (INCLUDING COVER PAGE) 4

REMARK: RE. NAVY - EARLE PLANT NJ
Backfill - Clay in Pile pH, Compaction & Permeability Test Results

See Attached

Kin

AMERICAN GEOTECH, INC.
Engineers, Consultants, and Material Testing Laboratories
Main Office: 1801 Penn Ave., Wyomissing Hills, PA 19609; Tel.: (610) 670-9055 / Fax: (610) 678-2719
Branch Office: 209 Main Street, Woodbridge, NJ 07095; Tel.: (908) 750-1668

Particle Size Analysis of Soils

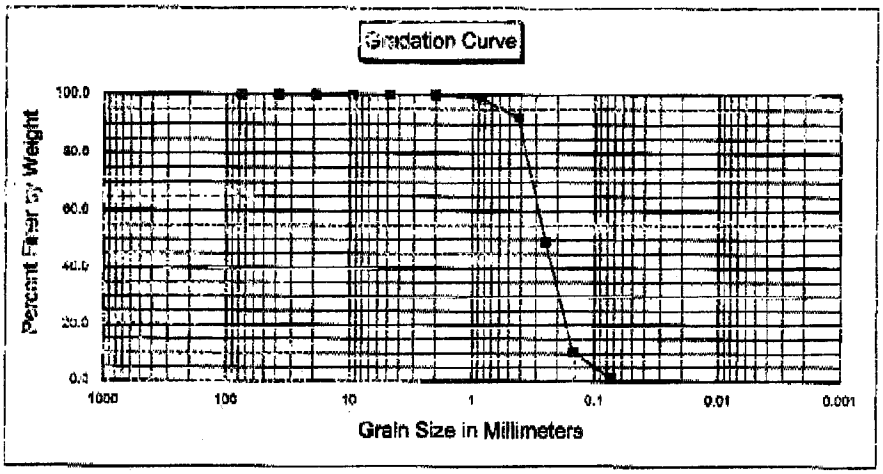
(In accordance with ASTM D 422)

Client:	Foster Wheeler	Boring Number:	
Project:	Navy - NJ	Sample Number:	DW (Dirty Bag) Clayton Pike
Location:		Sample Depth:	
AGI Project No.:		Date(s) Tested:	12/10/02

PH = 7.2

TEST DATA:

Sieve Opening Inches	Sieve Opening Millimeter	U.S. Standard Sieve Size or Number	Weight Retained on Sieve	Cumulative Weight Retained	Cumulative Percent Retained	Percent Finer by Weight	Total Weight of Sieve + Soil	Sieve Weight
3.00	76	3"	0.0	0.0	0.0	100.0		
1.50	38	1 1/2"	0.0	0.0	0.0	100.0		
0.75	19.1	3/4"	0.0	0.0	0.0	100.0		
0.375	9.52	3/8"	0.0	0.0	0.0	100.0		
0.187	4.76	No. 4	0.0	0.0	0.0	100.0	501.8	501.8
0.079	2	No. 10	0.0	0.0	0.0	100.0	445.2	445.2
0.033	0.84	No.20	1.2	1.2	1.4	98.6	430.2	429.0
0.0165	0.42	No.40	5.3	6.5	7.6	92.4	361.1	355.8
0.0098	0.25	No. 60	36.8	43.3	50.7	49.3	406.5	369.7
0.0059	0.149	No. 100	33.2	76.5	89.6	10.4	392.0	358.8
0.0029	0.074	No. 200	7.9	84.4	98.8	1.2	511.5	503.8
		Pan	1.0				347.6	346.6
Total Sample Weight in Grams			85.4					



Sieve
No. 4 100% Passing
No 100 10.4% Passing
No 200 1.2% Passing

Gradation by Descriptive Component: "SP" Poorly Graded Sand

	Boulders	Cobbles	Gravel		Sand			Silt and Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Range	> 12"	12" - 3"	3" - 3/4"	3/4" - #4	#4 - #10	#10 - #40	#40 - #200	< #200
% Retained	0	0	0	0	0	8	91	1

D_{10} = 0.15 D_{30} = 0.2 D_{60} = 0.3

$C_u = \frac{D_{60}}{D_{10}} = \frac{0.3}{0.15} = 2$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = \frac{(0.2)^2}{0.15 \times 0.3} = 0.89$

Technician: Jk Date: 12/10/02
Reviewed By: [illegible] Date: 12/10

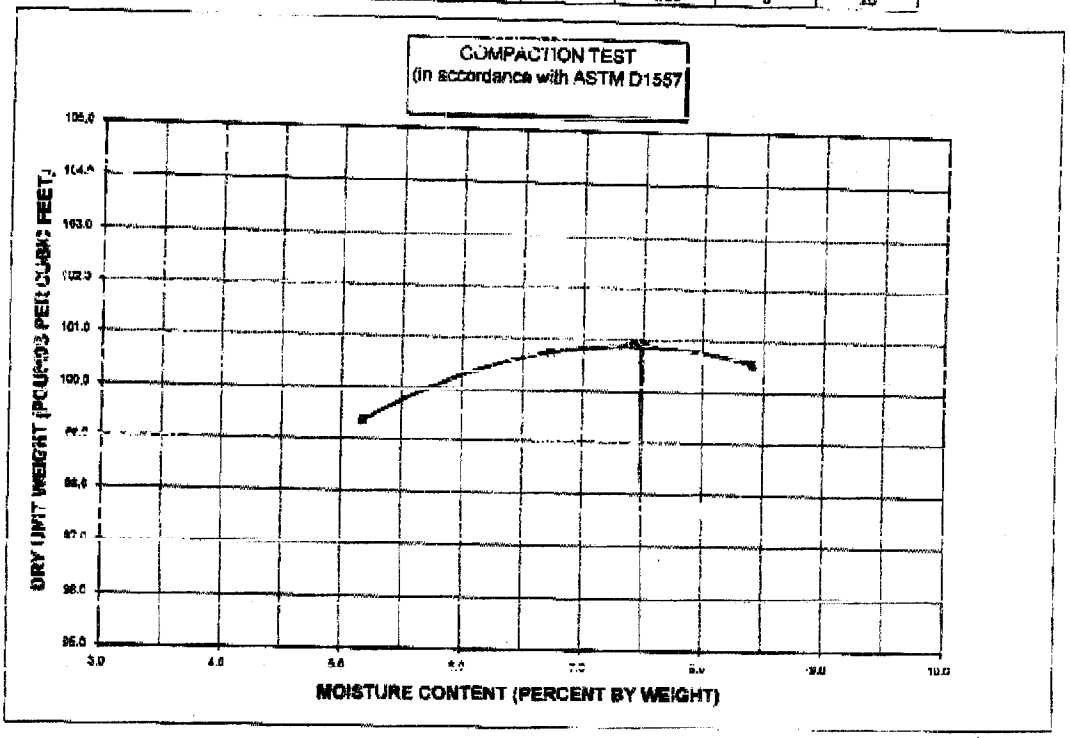
AMERICAN GEOTECH, INC.
Engineers, Consultants, and Material Testing Laboratories
Main Office: 1801 Penn Ave., Wyomissing Hills, PA 19609; Tel.: (610) 670-9055 / Fax: (610) 678-7210
Branch Office: 2nd Main Street, Woodbridge, NJ 07095; Tel.: (908) 750-1568

COMPACTION TEST USING MODIFIED EFFORT
(in accordance with ASTM D 1557)

Client: Foster Wheeler	Boring No.:
Project: Navy - NJ	Sample No.: CLAYTON ALE - D-1
Location:	Sample Depth:

TEST INFO :

Rammer Weight (lbs)	Drop Height (in)	Mold Diameter (in)	Mold Volume (cu ft)	# Layers	# Blows/ Layer
10	18	4	1/30	5	25



TEST RESULTS

	TEST 1	TEST 2	TEST 3	TEST 4	
DISH NUMBER	18	88	66		
WEIGHT OF DISH AND WET SOIL (g)	64.7	65.1	67.6		
WEIGHT OF DISH AND DRY SOIL (g)	63.0	62.9	64.7		
WEIGHT OF MOISTURE LOSS (g)	1.7	2.2	2.9		
WEIGHT OF DISH (g)	30.2	30.2	30.2		
WEIGHT OF DRY SOIL (g)	32.8	32.7	34.5		
MOISTURE CONTENT (%)	5.2	6.7	8.4		
WEIGHT OF SOIL AND MOLD (lbs)	12.84	12.94	12.99		
WEIGHT OF MOLD (lbs)	9.36	9.38	9.36		
NET WEIGHT OF WET SOIL (lbs)	3.48	3.56	3.63		
NET WEIGHT OF DRY SOIL (lbs)	3.31	3.35	3.35		
DRY DENSITY (lbs/cu.ft.)	99.4	100.7	100.6		

= 90.9 pcf

TEST BY: JK DATE: 12/10/02
REVIEWED BY: DATE:

AMERICAN GEOTECH, INC.
Engineers, Consultants, and Material Testing Laboratories
Main Office: 1801 Penn Ave., Wyomissing Hills, PA 19609; Tel.: (610) 670-9055 / Fax: (610) 678-2719
Branch Office: 209 Main Street, Woodbridge, NJ 07095; Tel.: (732) 750-1668

CONSTANT HEAD PERMEABILITY

(In accordance with ASTM D 2434)

Client: **FOSTER WHEELER ENVIRONMENTAL**	Boring Number:
Project: **LAB AND FIELD TESTING**	Sample Number: CLAYTON PILE - D1 (DIRTY BAG)
Location: **NAVY WEAPON PLANT - EARLE PLANT, NJ**	Sample Depth:
AGI Project No.: **G-01-58**	Date(s) Tested: 12/10/2002

SAMPLE DATA:

Specific Gravity (Estimated)	2.65	(assumed)	Diameter	7.30	cm
Weight of Wet Soils	1,085	lbs.		2.874	in.
Wet Density	98.3	pcf	Area (A)	41.85	sq. cm
Dry Density	91.0	pcf		6.49	sq. in.
Maximum Dry Density	101	pcf	Initial Height	7.62	cm
Percent Compaction	90.1	%		3.00	in
Initial Moisture Content	5.90	%	Initial Volume	318.93	c
Final Moisture Content	-	%		0.0113	c . ft.
Distance between manometers (L)	-	cm			

TEST DATA:

Test No.	Manometers H1	Manometers H2	Head, h (cm)	Discharge, Q (cc)	Time, t (sec)	Q/At	Q/At (Avg.)	h/L	h/L (Avg.)	Tem (Deg. C)	Temp. Correction	Permeability, k (cm/sec)	Permeability, k (in/hr)
1			74.1	25	7	0.085331		9.7244094		15	1.061	0.009224[illegible]	13.07
2			74.1	25	6	0.074685		9.7244094		[illegible]	1.051	0.008[illegible]	11.41
3			74.1	25	8	0.074685		9.7244094		[illegible]	1.051	0.008060[illegible]	11.44
4													
5													

K avg = 0.008453903 (cm/sec) 11.98

TECHNICIAN : LR/KC DATE: 12/10/02 CHECKED BY : KC DATE : 12/10 [redacted]

RAM TRUCKING CO.
P.O. BOX 522
FARMINGDALE, NJ 07727
732-938-5093
FAX: 732-938-3632

December 13, 2002

Jim Lisic,

This letter is to certify that the site access road material, gas management material, cover soil, top soil, crushed stone products and drainage layer material delivered and to be delivered to the Foster Wheeler Environmental Corporation project at NWS Earle are clean and free from any contamination.

Rose Ann Muccio

Rose Ann Muccio
President

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 13

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

J. Lisic DECEMBER 13, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

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COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

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TO:	DATE

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COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

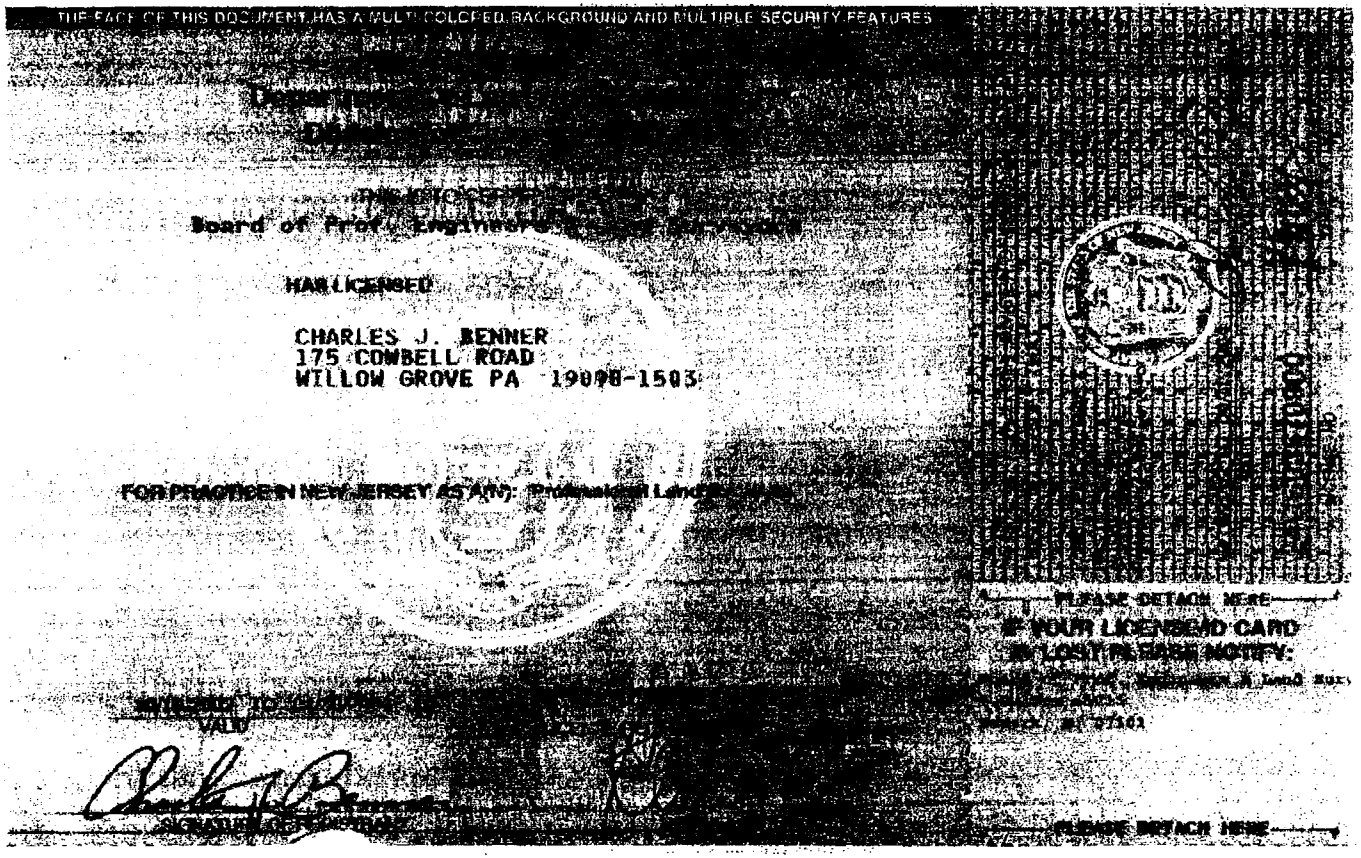
ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-08, Certification, Specification Section 01052, Surveyor's information	James M. Lisic, CQA			No further action required

FAX TRANSMISSION

BOUCHER & JAMES, INC.
P.O. Box 904
Doylestown, Pennsylvania 18901
(215) 345 - 9400
Fax: (215) 794-3987

To:	Jim Lisic - Foster Wheeler	**Date:**	December 13, 2002
Fax #:	732-761-8514	**Pages:**	2 (including cover sheet)
From:	Charles J. Benner, P.L.S.		
Subject:	New Jersy Professional License		

Enclosed is a copy of my New Jersey Surveyor License as requested. Our surveyors are under my direct supervision for the projects at Earle.


THE FACE OF THIS DOCUMENT HAS A MULTI-COLORED BACKGROUND AND MULTIPLE SECURITY FEATURES
Board of Prof. Engineers
HAS LICENSED
CHARLES J. BENNER
175 COWBELL ROAD
WILLOW GROVE PA 19090-1503
FOR PRACTICE IN NEW JERSEY AS A(N):
PLEASE DETACH HERE
IF YOUR LICENSE/ID CARD
IS LOST OR STOLEN NOTIFY:
PLEASE DETACH HERE

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 14

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	**DATE**
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic DECEMBER 13, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10, Certification, Specification Section 02324, Site access road material • gradation • modified Proctor • certificate of cleanliness	James M. Lisic, CQA			No further action required

ABI LABORATORIES, INC.

Client	**Harry Forest**
Date Received	**9/27/01**
Date Tested	**9/27/01**
Date Submitted	**10/1/01**
Material Type	**Crushed Concrete**
Sample Origin	**Site Access Road**
Project Description	**Select**
Lab Number	**HF0931**

Methods:

Standard	Number	Description
ASTM	D 1557	Modified Proctor
ASTM	C136	Sieve Analysis

Notes:

Submitted By: [signature]

Date: 10-1-01

ASTM D1557
Moisture Density Relations of Soils

Lab Number	HF0931
	Crushed Concrete
Method	
Prep. Method	Moist
Rammer	10-lbf.

Spec. No.	Mass of Specimen and Collar [g.]	Mass of Collar [g.]	Net Mass of Specimen [g.]	Wet Density Lbs. / Ft3	Dry Density Lbs. / Ft3
1	3785.6	2025.5	1759.1	118.9	109.9
2	3863.4	2025.5	1836.9	122.1	112.8
3	3933.5	2025.5	1907.0	126.8	114.3
4	3995.2	2025.5	1968.7	130.9	115.7
5	3974.1	2025.5	1947.6	129.5	113.4
6	3961.2	2025.5	1934.7	128.6	111.3

Spec. No.	Mass of Cont. & Wet Soil [g.]	Mass of Cont. & Dry Soil [g.]	Mass of Container [g.]	Mass of Soil Loss [g.]	Percent Moisture
1	726.0	691.2	163.3	33.8	6.4
2	771.2	725.1	162.5	46.1	8.2
3	861.8	793.1	163.2	68.7	10.9
4	720.8	656.1	162.5	64.7	13.1
5	892.8	802.1	163.4	90.7	14.2
6	810.0	723.1	162.4	86.9	15.6

Maximum Dry Density =	115.7 Lbs. / Cu. Ft.
Optimum Moisture Content =	13.1 Percent

ASTM C136 {Sieve Analysis of Fine and Coarse Aggregate}

SIEVE ANALYSIS

HF0931
Crushed Concrete

30-Sep-01

Sieve	Particle Size, mm	Weigt Passing g.	Percent Passing	
4 "	8.1	1252.4	100.0	
3 1/2 "	90.0	1252.4	100.0	
3 "	75.0	1252.4	100.0	
2 1/2 "	63.0	1252.4	100.0	
2 "	50.0	1252.4	100.0	100
1 1/2 "	37.5	1191.0	95.1	70–100
1 "	25.0	940.6	75.1	45–80
3/4 "	19.0	844.1	67.4	
1/2 "	12.5	678.8	54.2	30–60
3/8 "	9.5	627.5	50.1	
No. 4	4.75	594.9	47.5	20–50
No. 8	2.36	527.3	42.1	
No. 10	2.00	440.8	35.2	15–40
No.16	1.800	433.3	34.6	
No.30	0.600	296.8	23.7	
No. 40	0.425	175.3	14.0	5–25
No. 50	0.300	102.7	8.2	
No. 80	0.180	47.6	3.8	
No.100	0.150	36.3	2.9	
No. 200	0.075	23.8	1.9	0–10

RAM TRUCKING CO.
P.O. BOX 522
FARMINGDALE, NJ 07727
732-938-5093
FAX: 732-938-3632

December 13, 2002

Jim Lisic,

This letter is to certify that the site access road material, gas management material, cover soil, top soil, crushed stone products and drainage layer material delivered and to be delivered to the Foster Wheeler Environmental Corporation project at NWS Earle are clean and free from any contamination.

Rose Ann Muccio

Rose Ann Muccio
President

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 15

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	0040	Naval Weapons Station Earle – Colts Neck, NJ

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic DECEMBER 23, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10, Certification, Specification Section 02326, Site access road material • gradation • modified Proctor • Atterberg • pH • certificate of cleanliness	James M. Lisic, CQA			No further action required

ABI LABORATORIES, INC.

Client	**Harry Forest**
Date Received	**9/25/01**
Date Tested	**9/26/01**
Date Submitted	**9/28/01**
Material Type	**Soil**
Sample Origin	**Stock Pile**
Project Description	**Sub Base**
Lab Number	**HF0929**

Methods:

Standard	Number	Description
ASTM	D 1557	Modified Proctor
ASTM	C136	Sieve Analysis

Notes:

Submitted By:

Date: 9-28-01

ASTM D1557
Moisture Density Relations of Soils

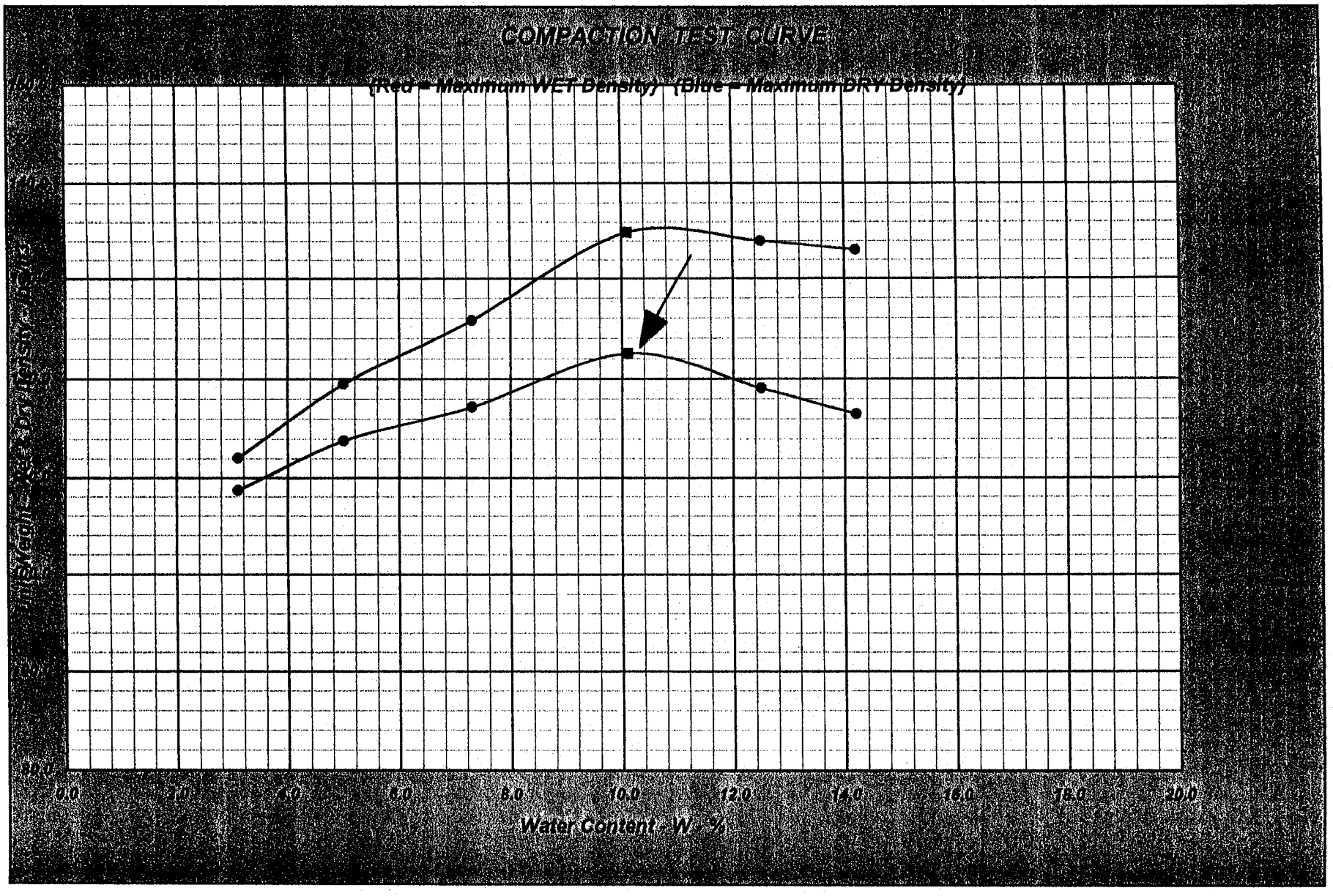
Lab Number HF0929
Stock Pile #3
Method
Prep. Method Moist
Rammer 10-lbf.

Spec. No.	Mass of Specimen and Collar [g.]	Mass of Collar [g.]	Net Mass of Specimen [g.]	Wet Density Lbs. / Ft3	Dry Density Lbs. / Ft3
1	3711.8	2025.5	1685.3	112.0	108.7
2	3824.3	2025.5	1797.8	119.5	113.8
3	3918.7	2025.5	1892.2	125.8	117.2
4	4055.4	2025.5	2028.9	134.9	122.5
5	4042.3	2025.5	2015.8	134.0	119.1
6	4028.4	2025.5	2001.9	133.1	116.5

Spec. No.	Mass of Cont. & Wet Soil [g.]	Mass of Cont. & Dry Soil [g.]	Mass of Container [g.]	Mass of Soil Loss [g.]	Percent Moisture
1	772.4	754.1	162.5	18.3	3.1
2	799.4	769.1	163.3	30.3	5.0
3	637.6	605.4	163.7	32.2	7.3
4	892.1	825.2	162.5	66.9	10.1
5	720.1	658.1	162.4	62.0	12.5
6	817.4	736.1	163.3	81.3	14.2

Maximum Dry Density =	122.5	Lbs. / Cu. Ft.
Optimum Moisture Content =	10.1	Percent

ASTM D1557



Compaction Curve

SIEVE ANALYSIS

HF0929 **27-Sep-01**
Stock Pile #3

Sieve	*Particle Size, mm*	*Weigt Passing g.*	*Percent Passing*	
4 "	*100.0*	*962.5*	*100.0*	
3 1/2 "	*90.0*	*962.5*	*100.0*	
3 "	*75.0*	*962.5*	*100.0*	
2 1/2 "	*63.0*	*962.5*	*100.0*	
2 "	*50.0*	*962.5*	*100.0*	
1 1/2 "	*37.5*	*962.5*	*100.0*	
1 "	*25.0*	*962.5*	*100.0*	
3/4 "	*19.0*	*962.5*	*100.0*	
1/2 "	*12.5*	*962.5*	*100.0*	
3/8 "	*9.5*	*931.2*	*96.7*	
No. 4	*4.75*	*924.7*	*96.1*	
No. 8	*2.36*	*906.4*	*94.2*	
No. 10	*2.00*	*888.5*	*92.3*	
No.16	*1.800*	*865.4*	*89.9*	
No.30	*0.600*	*776.9*	*80.7*	
No. 40	*0.425*	*626.3*	*65.1*	
No. 50	*0.300*	*421.6*	*43.8*	
No. 80	*0.180*	*254.1*	*26.4*	
No.100	*0.150*	*196.3*	*20.4*	
No. 200 {Washed}	*0.075*	*80.5*	*8.4*	

ABI Laboratories, Inc.

Client : **Harry Forrest**
Project / Generator : **Stock Pile #3**
Summary Number: **HF0929**
Date Submitted: **28 Sep 2001**

Sample Number	Analysis Required	Sample Type
HF0929	pH	Sand

Brandon Masters

Lab Director

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Stock Pile #3
Summary Number: HF0929

Date Submitted: 28 Sep 2001

Parameter	Concentration	Units	MDL	Regulatory Limit
% Moisture	11.3	%	0.1	N/A
Corrosivity as pH	7.0	pH Units	0.5	N/A

ABI LABORATORIES, INC.

Client	**Harry Forest**
Date Received	**9/25/01**
Date Tested	**9/26/01**
Date Submitted	**9/28/01**
Material Type	**Soil**
Sample Origin	**Tycom #2**
Project Description	**Sub Base**
Lab Number	**HF0928**

Methods:

Standard	Number	Description
ASTM	D 1557	Modified Proctor
ASTM	C136	Sieve Analysis

Notes:

Submitted By:

Date: 9-28-01

ASTM D1557
Moisture Density Relations of Soils

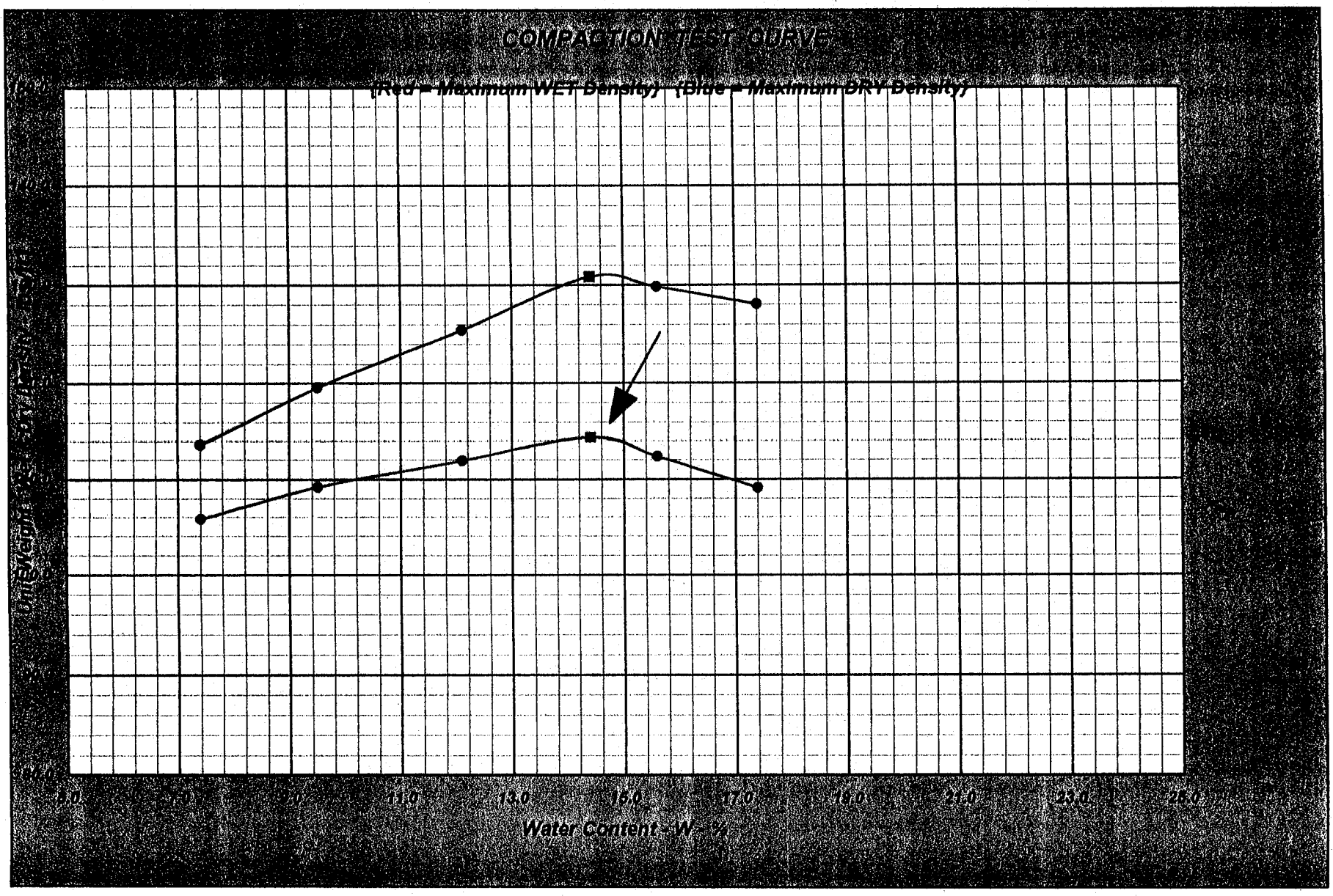
Lab Number	**HF0928**
	Tycom #2
Method	
Prep. Method	**Moist**
Rammer	**10-lbf.**

Spec. No.	Mass of Specimen and Collar [g.]	Mass of Collar [g.]	Net Mass of Specimen [g.]	Wet Density Lbs. / Ft.3	Dry Density Lbs. / Ft.3
1	3734.4	2025.5	1707.9	113.5	105.7
2	3824.2	2025.5	1797.7	119.5	109.1
3	3912.4	2025.5	1885.9	125.4	111.8
4	3994.1	2025.5	1967.6	130.8	114.3
5	3978.6	2025.5	1952.1	129.8	112.2
6	3952.1	2025.5	1925.6	128.0	109.0

Spec. No.	Mass of Cont. & Wet Soil [g.]	Mass of Cont. & Dry Soil [g.]	Mass of Container [g.]	Mass of Soil Loss [g.]	Percent Moisture
1	634.8	602.3	163.5	32.5	7.4
2	778.8	725.3	162.5	53.5	9.5
3	809.2	739.4	162.5	69.8	12.1
4	712.3	643.2	163.4	69.1	14.4
5	794.8	709.5	162.8	85.3	15.6
6	752.7	665.4	163.8	87.3	17.4

Maximum Dry Density =	**114.3 Lbs. / Cu. Ft.**
Optimum Moisture Content =	**14.4 Percent**

ASTM D1557



Compaction Curve

SIEVE ANALYSIS

HF0928 **27-Sep-01**
Tycom #2

Sieve	*Particle Size, mm*	*Weigt Passing g.*	*Percent Passing*	
4 "	*100.0*	*913.7*	*100.0*	
3 1/2 "	*90.0*	*913.7*	*100.0*	
3 "	*75.0*	*913.7*	*100.0*	
2 1/2 "	*63.0*	*913.7*	*100.0*	
2 "	*50.0*	*913.7*	*100.0*	
1 1/2 "	*37.5*	*913.7*	*100.0*	
1 "	*25.0*	*913.7*	*100.0*	
3/4 "	*19.0*	*753.6*	*82.5*	
1/2 "	*12.5*	*704.6*	*77.1*	
3/8 "	*9.5*	*702.1*	*76.8*	
No. 4	*4.75*	*698.7*	*76.5*	
No. 8	*2.36*	*695.7*	*76.1*	
No. 10	*2.00*	*692.4*	*75.8*	
No.16	*1.800*	*667.8*	*73.1*	
No.30	*0.600*	*529.6*	*58.0*	
No. 40	*0.425*	*304.5*	*33.3*	
No. 50	*0.300*	*116.8*	*12.8*	
No. 80	*0.180*	*56.4*	*6.2*	
No.100	*0.150*	*24.1*	*2.6*	
No. 200 {Washed}	*0.075*	*12.6*	*1.4*	

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Tycom #2
Summary Number: HF0928
Date Submitted: 28 Sep 2001

Sample Number	Analysis Required	Sample Type
HF0928	pH	Sand

Brandon Masters

Lab Director

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Tycom #2
Summary Number: HF0928

Date Submitted: 28 Sep 2001

Parameter	Concentration	Units	MDL	Regulatory Limit
% Moisture	9.8	%	0.1	N/A
Corrosivity as pH	6.5	pH Units	0.5	N/A

ABI LABORATORIES, INC.

Client	**Harry Forest**
Date Received	**9/27/01**
Date Tested	**9/27/01**
Date Submitted	**9/30/01**
Material Type	**Soil**
Sample Origin	**Pinnacle #1**
Project Description	**Sub Base**
Lab Number	**HF0930**

Methods:

Standard	Number	Description
ASTM	D 1557	Modified Proctor
ASTM	C136	Sieve Analysis

Notes:

Submitted By:

Date: 9-30-01

ASTM D1557
Moisture Density Relations of Soils

Lab Number	**HF0930**
	Pinnacle #1
Method	
Prep. Method	**Moist**
Rammer	**10-lbf.**

Spec. No.	Mass of Specimen and Collar [g.]	Mass of Collar [g.]	Net Mass of Specimen [g.]	Wet Density Lbs. / Ft.3	Dry Density Lbs. / Ft.3
1	3612.7	2025.5	1586.2	105.4	102.2
2	3729.8	2025.5	1703.3	113.2	107.5
3	3815.3	2025.5	1788.8	118.9	111.0
4	3924.9	2025.5	1898.4	126.2	114.9
5	3907.4	2025.5	1880.9	125.0	111.8
6	3889.4	2025.5	1862.9	123.8	109.5

Spec. No.	Mass of Cont. & Wet Soil [g.]	Mass of Cont. & Dry Soil [g.]	Mass of Container [g.]	Mass of Soil Loss [g.]	Percent Moisture
1	626.7	612.3	163.2	14.4	3.2
2	759.7	729.6	162.5	30.1	5.3
3	817.6	774.2	163.4	43.4	7.1
4	692.9	645.5	162.3	47.4	9.8
5	741.2	680.1	162.5	61.1	11.8
6	769.1	698.9	162.7	70.2	13.1

Maximum Dry Density =	**114.9 Lbs. / Cu. Ft.**
Optimum Moisture Content =	**9.8 Percent**

ASTM C136 (Sieve Analysis of Fine and Coarse Aggregate)

SIEVE ANALYSIS

HF0930
Pinnacle #1

30-Sep-01

Sieve	Particle Size, mm	Weigt Passing g.	Percent Passing	
4 "	8.1	1025.6	100.0	
3 1/2 "	90.0	1025.6	100.0	
3 "	75.0	1025.6	100.0	
2 1/2 "	63.0	1025.6	100.0	
2 "	50.0	1025.6	100.0	
1 1/2 "	37.5	1025.6	100.0	
1 "	25.0	1025.6	100.0	
3/4 "	19.0	1025.6	100.0	
1/2 "	12.5	990.7	96.6	
3/8 "	9.5	964.1	94.0	
No. 4	4.75	952.8	92.9	
No. 8	2.36	944.6	92.1	
No. 10	2.00	925.1	90.2	
No.16	1.800	886.1	86.4	
No.30	0.600	806.1	78.6	
No. 40	0.425	718.9	70.1	
No. 50	0.300	578.4	56.4	
No. 80	0.180	262.6	25.6	
No.100	0.150	134.4	13.1	
No. 200	0.075	43.1	4.2	

ABI Laboratories, Inc.

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Pinnacle
Summary Number: HF1010
Date Submitted: 09 Oct 2001

Sample Number	Analysis Required	Sample Type
HF1010	pH	Sand

Brandon Masters
Lab Director

ABI Laboratories, Inc.

Client : Harry Forrest
Project / Generator : Pinnacle
Summary Number: HF1010

Date Submitted: 09 Oct 2001

Parameter	Concentration	Units	MDL	Regulatory Limit
% Moisture	14.2	%	0.1	N/A
Corrosivity as pH	7.0	pH Units	0.5	N/A

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 16

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

SIGNATURE AND DATE DECEMBER 13, 2002

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10/02 Tests/Catalog Date, Specification Section 02326, Site access road material • Minimum average roll values • Manufacturer's Production QC Certificates • Manufacturer's test results	James M. Lisic, CQA			No further action required

Submittals For Non-Woven Geotextiles for Project:

Earle Naval Weapons Station

Ten Cate Nicolon

Quality Control Plan
Nonwovens

THE QUALITY SYSTEM

The Quality System is for the purpose of continuous improvement of our products and service. The Quality System will be assessed annually through audits and Management Reviews. The Quality Assurance Manager is responsible for establishing, implementing, and maintaining the Quality System.

It is the responsibility of each employee to perform tasks under the quality system assigned to them and to take appropriate actions to ensure that the quality system is followed and that all products of TC Mirafi conform to specification.

PERSONNEL

The Quality Control Lab consists of sufficient staff and testing equipment to properly conduct quality testing on TC Mirafi products. The QA Manager will determine "sufficient staff" based on testing needs. Resource requirements are regularly reviewed during Management Review.

TRAINING

A job description is maintained for each job classification. A training form is maintained for each employee in the QC Lab, detailing training activities. The Quality Assurance Manager and/or Human Resources maintain Job descriptions and training forms.

Individuals are qualified based on their abilities, education, on-the-job training, and other special skills.

OUTSIDE SERVICES AND SUPPLIES

TC Mirafi solicits qualified vendors for products and services in order to maintain Quality Control and to make sure that the inspection practices and techniques assure delivery of only high standard quality materials and services.

Vendors will be verified by the Quality Assurance Manager prior to procurement, for their ability to meet requirements, performance records, and quality history.

MANUFACTURING QUALITY CONTROL

All testing is accomplished in accordance with documented and controlled test methods. Where methods of inspection are not specified, methods shall be selected that have been published in international or national standards by reputable technical organizations or in relevant scientific texts or journals. Use of selected methods shall be verified and approved by the Quality Assurance Manager.

Testing is carried out under controlled conditions including the following:

Overall management of process control is governed by documented procedures.

Documented test methods and work instructions govern the comprehensive inspection and testing of each lot.

Testing equipment is selected based upon needs and the ability to satisfy specified requirements, and the equipment is suitably maintained.

Training of personnel is adequate and documented.

Appropriate Quality Records are maintained.

Each sample to be tested in the lab is accompanied with a label for that particular roll number. Test results are recorded on Quality Control Test Reports by number and then entered into the computer database by roll number.

All samples are delivered to the Quality Control lab and the sample is tested as delivered to meet minimum specification values. The standard operating procedure for each test is documented and a copy of ASTM procedures are kept in the lab.

Preparation for each sample is conducted in accordance with Standard Operating Procedures and ASTM requirements.

TESTING FREQUENCY

Physical Property	Minimum Frequency
ASTM D3786 Mullen Burst Strength	18,000 yd^2 or 1 per lot
ASTM D4491 Flow Rate	36,000 yd^2 or 1 per lot
ASTM D4533 Trapezoidal Tear	18,000 yd^2 or 1 per lot
ASTM D4632 Grab Tensile	18,000 yd^2 or 1 per lot
ASTM D4833 Puncture Resistance	18,000 yd^2 or 1 per lot
ASTM D5199 Thickness	18,000 yd^2 or 1 per lot
ASTM D5261 Mass per Unit Area	18,000 yd^2 or 1 per lot
ASTM D4751 Apparent Opening Size	50,000 yd^2 or 1 per lot

IDENTIFICATION

All material is identified with a style number, which will correspond to a specification. Individual production runs will be assigned a lot number for the purpose of controlling production, recording production and maintaining records for that lot. Individual rolls within a lot are assigned a roll number in sequential order.

HANDLING/STORAGE

Handling methods and practices are intended to prevent damage and deterioration to material during the manufacturing process. All geotextile rolls are furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll is labeled or tagged to provide product identification sufficient for inventory and quality control purposes. Rolls are stored in a manner, which protects them from the elements.

Archived samples are identified by a label and adequately stored to prevent deterioration.

SUPPORTING DOCUMENTATION

ASTM D-4354 Practice for Sampling of Geosynthetics for Testing
ASTM D-4873 Guide for Identification, Storage, and Handling of Geotextiles

CONTROL OF NONCONFORMING PRODUCT

TC Mirafi's procedures require the documentation of all nonconformances. Nonconforming material is tagged and/or segregated. The status of nonconforming product is reviewed to determine whether the material will be scrapped, reworked, downgraded or continued through processing, reworked material is re-inspected and must meet requirements.

CORRECTIVE AND PREVENTATIVE ACTION

TC Mirafi recognizes that the effectiveness of the corrective and preventative action policy is crucial to the success of the Quality System.

Corrective Action procedures include:

Analyzing customer complaints.

Investigation into the root cause of nonconforming products and system nonconformances.

Determination of corrective action to eliminate the cause of the nonconformance.

The quality system provides for preventative action by reviewing data including: customer complaints, audit results, and past nonconformances to detect and eliminate potential causes of nonconformances

STATEMENT OF AUTHORITY

The Quality Assurance Manager has been assigned ultimate responsibility for implementing the Quality System and the authority for assuring its maintenance.

In the absence of the Quality Assurance Manager, the delegation of responsibility will be assigned to persons to act in those instances to ensure continuation of operations.

Responsibility for activities described under each element may be assigned to appropriate supervisors. Delegation of responsibility and authority includes responsibility to ensure all activities described in a procedure are implemented as written.

CERTIFICATIONS

All product certifications originate from the Quality Assurance Manager and are supported by test data.

Each shipment of material is certified to meet product specifications and is supported with actual test results. The results of each test, or series of tests, is

recorded in a test report or test certificate and contains all the necessary information as follows:

Report identifiers
Identification of the test method
Property values
Date of issue

The Quality Assurance Manager is responsible for signing reports or designating personnel to sign reports accepting responsibility that content of the report is accurate.

In the event a report or certification is sent to a customer and is determined to have an erroneous result, the QA Manager will amend the report, and the report will reflect a revision.

Where appropriate statements concerning confidentiality and reproducibility will be included.

Roll Certifications for:
Mirafi 180N
Mirafi 1120N

Mirafi® 180N Certification

Ten Cate Nicolon

International Waste Transport

Fax#: 732-596-0763

Project: Earle Naval Weapons
Contractor: Foster Wheeler
Order#: 106042

This is to certify that Mirafi® 180N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. 180N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D 4632	kN (lbs)	0.9 (205)	0.9 (205)
Grab Tensile Elongation	ASTM D 4632	%	50	50
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.36 (80)	0.36 (80)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	2618 (380)	
Puncture Strength	ASTM D 4833	kN (lbs)	0.58 (130)	
Apparent Opening Size (AOS)	ASTM D 4751	mm (U.S. Sieve)	0.180 (80)	
Permittivity	ASTM D 4491	sec^{-1}	1.2	
Permeability	ASTM D 4491	cm/sec	0.21	
Flow Rate	ASTM D 4491	$l/min/m^2$ ($gal/min/ft^2$)	3866 (95)	
UV Resistance (at 500 hours)*	ASTM D 4355	% strength retained	70	

* Certification based on independent lab testing.

Sworn and subscribed before me this 14th day of November, 2002

Linda Evans

My commission expires December 8, 2005

Melissa Medlin
Quality Manager

Ten Cate Nicolon USA
Bayex® • MiraDRI® • Mirafi® Industrial Fabrics and Construction Products
365 South Holland Drive / Pendergrass, Georgia 30567 / 706 693 2226 / 1 888 795 0808 / Fax 706 693 4400
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Geotextile Properties

Roll#	Style	Weight ASTM D5261	Grab Tensile MD ASTM D4632	Elongation MD ASTM D4632	Grab Tensile XMD ASTM D4632	Elongation XMD ASTM D4632	Trap Tear MD ASTM D4533	Trap Tear XMD ASTM D4533	Puncture ASTM D4833	Burst ASTM D3786	AOS ASTM D4751	Thickness ASTM D5199	Flow Rate ASTM D4491	Permeability ASTM D4491	Permittivity ASTM D4491
		Oz/Sy	lbs	%	lbs	%	lbs	lbs	lbs	psi	US Std Sieve	mils	gal/ min/ sf	cm/sec	sec-1
9110159410	180N	7.8	222	57	227	70	120	126	140	390	80	87	118	0.35	1.60
9110159483	180N	8.7	223	59	252	69	102	139	144	447	80	91	105	0.33	1.42
9110159484	180N	8.7	223	59	252	69	102	139	144	447	80	91	105	0.33	1.42
9110159524	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159525	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159526	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159527	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159528	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159529	180N	8.8	230	52	236	62	90	99	140	475	80	90	105	0.33	1.42
9110159580	180N	7.9	209	55	242	65	86	82	133	436	80	84	128	0.37	1.74
9110159581	180N	7.9	209	55	242	65	86	82	133	436	80	84	128	0.37	1.74
9110159582	180N	7.9	209	55	242	65	86	82	133	436	80	84	128	0.37	1.74
9110161426	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161430	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161432	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161433	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161434	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161435	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161436	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161437	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161438	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161439	180N	10.8	250	58	261	71	118	127	170	543	100	137	112	0.52	1.50
9110161441	180N	8.7	205	57	206	76	88	135	144	441	100	111	112	0.52	1.50
9110161442	180N	8.7	205	57	206	76	88	135	144	441	100	111	112	0.52	1.50

Rolls with roll numbers ending in "A", "B", "C", etc. are final "put-up" rolls taken from a single master roll and having identical properties and test data. Results may only be available for tested rolls.

Order# 106042

Mirafi® 1120N Certification

Ten Cate Nicolon

International Waste Transport

Fax#: 732-596-0763

Project: Earle Naval Weapons
Contractor: Foster Wheeler
Order#: 106042

This is to certify that Mirafi® 1120N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. 1120N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.34 (300)	1.34 (300)
Grab Tensile Elongation	ASTM D 4632	%	50	50
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115)	0.51 (115)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	4030 (585)	
Puncture Strength	ASTM D 4833	kN (lbs)	0.78 (175)	
Apparent Opening Size (AOS)	ASTM D 4751	mm (U.S. Sieve)	0.150 (100)	
Permittivity	ASTM D 4491	sec^{-1}	0.8	
Permeability	ASTM D 4491	cm/sec	0.18	
Flow Rate	ASTM D 4491	$l/min/m^2$ ($gal/min/ft^2$)	2648 (65)	
UV Resistance (at 500 hours)*	ASTM D 4355	% strength retained	70	

* Certification based on independent lab testing.

Sworn and subscribed before me this 14th day of November, 2002

Linda Evans

My commission expires December 8, 2005

Melissa Medlin
Quality Manager

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Baycor® • MiraDRI™ • Mirafi® Industrial Fabrics and Construction Products
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A subsidiary of Royal Ten Cate

Ten Cate Nicolon

NBR

Geotextile Properties

Roll#	Style	Weight ASTM D5261	Grab Tensile MD ASTM D4632	Elongation MD ASTM D4632	Grab Tensile XMD ASTM D4632	Elongation XMD ASTM D4632	Trap Tear MD ASTM D4533	Trap Tear XMD ASTM D4533	Puncture ASTM D4833	Burst ASTM D3786	AOS ASTM D4751	Thickness ASTM D5199	Flow Rate ASTM D4491	Permeability ASTM D4491	Permittivity ASTM D4491
		Oz/Sy	lbs	%	lbs	%	lbs	lbs	lbs	psi	US Std Sieve	mils	gal/ min/ sf	cm/sec	sec-1
9110160525	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160526	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160527	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160528	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160533	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160534	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160535	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42
9110160536	1120N	11.2	316	60	328	74	164	186	189	589	100	129	105	0.51	1.42

Rolls with roll numbers ending in "A", "B", "C", etc. are final "put-up" rolls taken from a single master roll and having identical properties and test data. Results may only be available for tested rolls.

Order# 106042

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 17

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	0040	Naval Weapons Station Earle – Colts Neck, NJ

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 13, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 13, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic DECEMBER 13, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10/02/08/11/13/18 , Specification Section 02771, HDPE Geomembrane Liner • Manufacturer's capabilities • List of completed facilities • Origin and identification off resin • Welding rod resin certification • Resin supplier QC certificate • Manufacturer's QC test on supplied resin • Reclaimed polymer certification • Manufacturer's specifics • QC certificates • Manufacturer's QC tests • Manufacturer's warranty	James M. Lisic, CQA			No further action required

Material Submittal for Geomembrane for Project:

Earle Naval Weapons Station

Proposed Manufacturer: Solmax International, Inc.

Prepared for:

IWT/CARGO-GUARD
P.O. Box 454 11 Cedar Avenue
Waretown, NJ 08758

Prepared by:

2801 Marie-Victorin
Varennes, PQ J3X 1P7

November, 2001

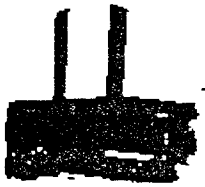
TABLE OF CONTENTS

SECTION 1

Earle Naval Weapons Station

1. Solmax International corporate profile and geomembrane manufacturing experience

   - Solmax International Company Profile
   - Document detailing size of plant, liner producing equipment, and liner producing capacity per shift
   - List of Solmax Manufactured Liner Facilities Totaling over 15,000,000 ft^2.



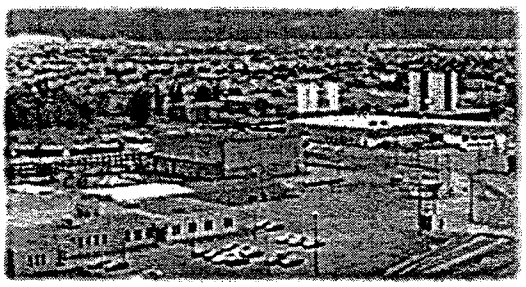
Solmax.

faq quote documents

News
Solmax
.Products
.Technical info
.Equipment
.Contact us

SOLMAX INTERNATIONAL Inc. is a corporation exclusively dedicated to the manufacturing of *polyethylene geomembranes* and the fabrication of *PVC geomembrane panels*.

Through its *network of approved installers*, Solmax also offers field installation of geosynthetic products (geomembranes, geotextiles, geonets and geosynthetic clay liners) for the containment industry. The mission of Solmax International is to provide *quality products* and *unparalleled service* to its clients and to support the application of practical geosynthetic solutions to containment problems faced by the geotechnical, civil and environmental engineering community.



The Solmax International plant is located in Varennes, Province of Quebec, Canada.

The plant houses a state-of-the-art three-layer blown film extruder producing all types of polyethylene geomembrane in 22 feet (6.7 m) wide rolls with thickness ranging from 20 to 100 mil (0.50 to 2.50mm).

Solmax processes various types of resins including *High Density Polyethylene (HDPE)* and other polyethylene configurations such as *Linear Low Density Polyethylene (LLDPE)*. All of these resins can be used to manufacture geomembranes with *smooth surfaces or with texture on one or both sides* in order to improve friction properties.

Solmax International also fabricates *PVC geomembrane panels*. Since 1991, Solmax has assembled millions of square feet of PVC geomembrane panels using a dielectric fabrication process; the industry's most reliable panel assembly technology, in a controlled factory environment.

The quality controls performed by Solmax International at all levels of its involvement are the most stringent found in the industry. Attention to detail and compulsory quality control procedures uniquely differentiate Solmax as one of the leaders in the manufacturing and fabrication of geomembrane materials.

The core of the Solmax International organization is *a dynamic and resourceful group of specialists* at all levels. Solmax engineers and technicians offer the client a full range of services related to geomembrane technologies. *Technical support and expertise, in-house designed tools and specialized equipment are combined to meet the client's needs and expectations.*

Global experience, technical expertise and stringent quality control procedures uniquely define the Solmax organization. Through its approved worldwide installers network Solmax International has the ability to serve clients wherever their project activity is located.

SOLMAX, A HUMAN SIZED COMPANY

SOLMAX
INTERNATIONAL

Earle Naval Weapons Station

Manufacturing Capabilities

The **Solmax International** plant is located in Varennes, Province of Quebec, Canada. The plant houses a state-of-the-art three-layer film blown extruder producing all common types of polyethylene geomembrane in 22 feet (6.7 m) wide rolls with the thickness ranging from 20 to 100 mil (0.50 to 2.50mm). Solmax processes various types of resins including High Density Polyethylene (HDPE) and other polyethylene configurations such as Very Flexible Polyethylene (VFPE). All of these resins can be used to manufacture geomembranes with smooth surfaces or with texture on one or both sides in order to improve friction properties.

The quality controls performed by **Solmax International** at all levels of its involvement are the most stringent found in the industry. Attention to detail and compulsory quality control procedures uniquely differentiate Solmax as one of the leaders in the manufacturing, fabrication and field installation of geomembrane materials.

The core of the **Solmax International** organization is a dynamic and resourceful group of specialists at all levels. Solmax engineers and technicians offer the client a full range of services related to geomembrane technologies.

The manufacturing capabilities of Solmax International

Size of Plant

- The plant has an approximate surface area of 37,000 square feet. The outside storage area is approximately 150,000 square feet. Solmax has one polyethylene production line. The production is continuous. There are also four (4) silos for resin storage.

Equipment

- State-of-the-art Three Layer Blown Film Extrusion Process

Capacity per shift (polyethylene geomembrane only)

- Approximately 30,000 lb. per shift

AT SOLMAX INTERNATIONAL, WE GO FURTHER...

Solmax International, Inc.
List of 32 Solmax Manufactured Liner Facilities Totaling over 15,000,000 SF

Project Name:	Saugus River Improvement Project
Purpose of Facility:	Lined Cell to Treat Dredged Material from River
Location:	Lynn MA
Installation Dates:	December 2000
Facility Owner:	U.S. Army Corps of Engineers
Owner's Representative/Phone:	Design: Scott Michalak (978) 318-8350 Project Engineer: Jim Doucakis (978) 318-8308 Site Inspector: Scott Leonard (781) 941-8200
Design Engineer:	U.S. Army Corps of Engineers
Installer:	F.R. Liners
Material Thickness/Surface Area:	40 mil Smooth and Textured LLDPE 581,000 SF

Project Name:	Loring Air Force Base
Purpose of Facility:	MSW Landfill Closure
Location:	Limestone Maine
Installation Dates:	September 1999
Facility Owner:	Air Force Center for Environmental Excellence
Owner's Representative/Phone:	John Mueller / (207) 328-4530
Design Engineer:	Bechtel
Installer:	Solmax International
Material Thickness/Surface Area:	60 mil Smooth and Textured LLDPE 1,993,000 SF

Project Name:	Essex Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Essex New York
Installation Dates:	September 1999
Facility Owner:	Town of Essex
Owner's Representative/Phone:	Charles E. Teale (603) 668-1654
Design Engineer:	HTE Northeast, Inc.
Installer:	F.R. Liners
Material Thickness/Surface Area:	40 mil Textured HDPE 274,560 SF

Project Name:	Lumberland Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Lumberland, NY
Installation Dates:	July 1999
Facility Owner:	Town of Lumberland
Owner's Representative/Phone:	Joseph Gottlieb / (914) 794-5506
Design Engineer:	Joseph Gottlieb, P.E., P.C.
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Smooth HDPE 151,836 SF

Project Name:	Marshfield Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Town of Marshfield
Installation Dates:	September 1999
Facility Owner:	Town of Marshfield
Owner's Representative/Phone:	Michael Richard / (508) 532-1900
Design Engineer:	Weston & Sampson, Inc
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE 411,750 SF

Project Name:	Brookfield Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Brookfield, MA
Installation Dates:	September 1999
Facility Owner:	Brookfield Board of Health
Owner's Representative/Phone:	Richard Cox / (508) 248-5185
Design Engineer:	Cox Environmental Engineering, Inc.
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE 304,884 SF

Project Name:	New York Air Brake Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Watertown, NY
Installation Dates:	August 1999
Facility Owner:	New York Air Brake
Owner's Representative/Phone:	Lenny Dougher / (609) 588-6366
Design Engineer:	IT Corporation
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE 520,825 SF

Project Name:	Westhampton Sanitary Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Westhampton, MA
Installation Dates:	July 1999
Facility Owner:	Town of Westhampton
Owner's Representative/Phone:	Jim Laurila / (413) 773-3642
Design Engineer:	Dufresne-Henry, Inc.
General Contractor:	E.T.&L. Corp.
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE 240,240 SF

Project Name:	Putnam Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Putnam, CT
Installation Dates:	October 1999
Facility Owner:	Putnam, CT
Owner's Representative/Phone:	Dan Clemmer / (860) 928-9625
Design Engineer:	Griffin Engineering Group, LLC
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	60 mil Textured LLDPE 629,200 SF

Project Name:	Wisdom Way Sanitary Landfill Closure
Purpose of Facility:	MSW Landfill Closure
Location:	Greenfield, MA
Installation Dates:	October 1999
Facility Owner:	Greenfield, MA
Owner's Representative/Phone:	Fran Hoey / (413) 562-1600
Design Engineer:	Griffin Engineering Group, LLC
Installer:	F.R. Liners, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE 450,800 SF

Project Name:	Finch Pruyn Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Queensbury, NY
Installation Dates:	June 1999
Facility Owner:	Finch Pruyn
Owner's Representative/Phone:	Jason Gorman (518) 453-4500
Design Engineer:	Clough Harbour & Associates
Installer:	GeoPacific Lining, Inc.
Material Thickness/Surface Area:	60 mil Textured LLDPE/1,235,520 SF

Project Name:	Town of Granville Landfill Closure
Purpose of Facility:	MSW Landfill Closure
Location:	Granville, NY
Installation Dates:	June-July 1997
Facility Owner:	Town of Granville, NY
Owner's Representative/Phone:	Mike Amodeo (518) 453-4500
Design Engineer:	Clough Harbour & Associates
General Contractor:	Solmax Geosynthetics, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil Smooth HDPE/708,000 SF

Project Name:	Hatfield, MA
Purpose of Facility:	MSW Landfill Closure
Location:	Town of Hatfield, MA
Installation Dates:	September, 1997
Facility Owner:	Town of Hatfield, MA
Project Manager:	Jack Spanbauer
Design Engineer:	Dufresne & Henry
General Contractor:	Mackin Construction
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE/225,000 SF

Project Name:	North Lawrence Oil Dump Site
Purpose of Facility:	Landfill Closure
Location:	North Lawrence, NY
Installation Dates:	July 1997
Facility Owner:	Town of North Lawrence, NY
Project Manager:	Charles White
Design Engineer:	ABB Environmental Services, Inc.
General Contractor:	IEM Sealand
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	60 mil Textured HDPE/70,000 SF

Project Name:	PSC Resources Superfund Site
Purpose of Facility:	Landfill Closure
Location:	Palmer, MA
Installation Dates:	September 1997
Facility Owner:	PSC Resources Site Group
Project Manager:	Jennifer Smith (315)437-6400
Design Engineer:	O'Brien & Gere Engineers
General Contractor:	IT Corporation
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	60 mil Textured HDPE/68,640 SF

Project Name:	West Tisbury , MA
Purpose of Facility:	MSW Landfill Closure
Location:	West Tisbury, MA
Installation Dates:	October 1997
Facility Owner:	Martha's Vineyard Refuse
Project Manager:	Wayne Perry (617) 273-4499
Design Engineer:	Stearns & Wheler
General Contractor:	Lynch Corporation
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil Textured VFPE/75,000 SF

Project Name:	Carrs Mill Landfill
Purpose of Facility:	MSW Landfill Closure
Location:	Lisbon, MD
Installation Dates:	December 1997
Facility Owner:	Howard County, MD
Project Manager:	James Law (410) 995-4040
Design Engineer:	SCS Engineers
General Contractor:	Pavex, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil Textured VFPE/326,000 SF

Project Name:	Woronoco Landfill
Purpose of Facility:	Paper Pulp Landfill Closure
Location:	Woronoco, MA
Installation Date:	October 1997
Facility Owner:	Strathmoore Paper Company
Project Manager:	Kevin Dufek
Design Engineer:	Rust Environmental
General Contractor:	YOLAM Construction, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil VFPE/154,415 SF

Project Name:	Cumberland County Landfill Cap
Purpose of Facility:	Landfill Cap
Location:	Cumberland County Landfill, NC
Installation Date	November, 1998
Facility Owner:	Cumberland County, NC
Project Manager:	Martin D. Sanford (703) 642-5500
Design Engineer:	Camp Dresser & McKee
General Contractor:	Glover Construction
Installer:	Flint Industries
Material Thickness/Surface Area:	40 mil VFPE/1,048,000 SF

Project Name:	Onslow County Landfill Cap
Purpose of Facility:	Landfill Cap
Location:	Onslow County Landfill, NC
Installation Date	November, 1998
Facility Owner:	Onslow County
Project Manager:	Martin D. Sanford (703) 642-5500
Design Engineer:	Camp Dresser & McKee
General Contractor:	Glover Construction
Installer:	Flint Industries
Material Thickness/Surface Area:	40 mil VFPE/89,257SF

Project Name:	Fort Edward Landfill Cap
Purpose of Facility:	Landfill Closure
Location:	Glens Falls, NY
Installation Dates:	May and September 1998
Facility Owner:	NYS Department of Conservation
Project Manager:	Randy West (716) 856-5636
Design Engineer:	URS Consultants
General Contractor:	Kubricky Construction
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil VFPE/1,664,995 SF

Project Name:	Twin Buttes Dam Lining
Purpose of Facility:	Dam Lining
Location:	San Angelo, TX
Installation Dates:	July 1997
Facility Owner:	Twin Buttes
Project Manager:	Alice Comer (281) 578-9305
Design Engineer:	Department of Interior Bureau of Reclamation
Installer:	In-Line Plastics
Material Thickness/Surface Area:	60 mil Textured VFPE/1,300,000 SF

Project Name:	Boscawen Landfill
Purpose of Facility:	Landfill Cap
Location:	Boscawen, NH
Date of Completion:	October, 1998
Facility Owner:	Town of Boscawen
Project Manager:	Brian Vincent (603) 224-4182
Design Engineer:	Nobis Engineering
General Contractor:	R.D. Edmunds
Installer:	Environmental Network LLC
Material Thickness/Surface Area:	40 mil Textured VFPE 360,360 SF

Project Name:	Sunapee
Purpose of Facility:	Landfill Cap
Location:	Sunapee, NH
Date of Completion:	September, 1998
Facility Owner:	Town of Sunapee
Project Manager:	Brian Vincent (603) 224-4182
Design Engineer:	Nobis Engineering
General Contractor:	United Construction
Installer:	Environmental Network LLC
Material Thickness/Surface Area:	40 mil Textured VFPE/137,280 SF

Project Name:	Anheuser Busch Waste Water Plant
Purpose of Facility:	Bio Filter
Location:	Baldwinsville, NY
Date of Completion:	November 1998
Facility Owner:	Anheuser Busch
Project Manager:	Steve Snyder
Design Engineer:	O'Brien & Gere Engineers
General Contractor:	Industrial Contracting, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	80 mil HDPE/13,000 SF

Project Name:	Niagara Mohawk
Purpose of Facility:	Holding Pond
Location:	Hudson, NY
Date of Completion:	October 1998
Facility Owner:	Niagara Mohawk
Project Manager:	Chris Canonica
Design Engineer:	Blasland Bouck & Lee
General Contractor:	AAA Environmental, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil textured HDPE/17,160 SF

Project Name:	Bourne Landfill
Purpose of Facility:	Landfill Closure
Location:	Bourne, MA
Date of Completion:	December 1998
Facility Owner:	Town of Bourne
General Contractor:	Lawrence Lynch Corp.
Installer:	New Lining Solutions
Material Thickness/Surface Area:	60 mil Textured HDPE/300,000

Project Name:	Chicago Pneumatics
Purpose of Facility:	Landfill Cell and Cap
Location:	Utica, NY
Date of Completion:	October 1998
Facility Owner:	Chicago Pneumatics
Project Manager:	Chris Canonica
Design Engineer:	Blasland Bouck & Lee
General Contractor:	AAA Environmental, Inc.
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	Solmax 640/9,750 SF

Project Name:	Village of Roscommon
Purpose of Facility:	Waste Water Treatment plant
Location:	Roscommon, MI
Date of Completion:	December, 1998
Facility Owner:	Village of Roscommon
Project Manager:	C.L. Smith
Design Engineer:	Gove Associates, Inc.
Installer:	Great Lakes Containment, Inc.
Material Thickness/Surface Area:	40 mil Smooth and Textured HDPE/850,000 SF

Project Name:	Town of Moreau, New York
Purpose of Facility:	Landfill Cap
Location:	Moreau, NY
Date of Completion:	December, 1998
Facility Owner:	Town of Moreau
Project Manager:	Bradford L. Smith (315) 655-8161
Design Engineer:	Stearns & Wheler, LLC
Installer:	New Lining Solutions, Inc.
Material Thickness/Surface Area:	40 mil Textured VFPE/1,800,000 SF

Project Name:	Taunton Landfill
Purpose of Facility:	Landfill Cap
Location:	Taunton, MA
Date of Completion:	December, 1998
Facility Owner:	MASS Gravel, Inc.
Installer:	GeoPacific Lining Company
Material Thickness/Surface Area:	60 mil Textured HDPE/354,000 SF

Project Name:	Jersey Garden Mall
Purpose of Facility:	Storm Water Detention Basin
Location:	Elizabeth, NY
Date of Completion:	November, 1998
Facility Owner:	N.J. Metromall Urban Renewal, Inc.
Installer:	The Liner Company
Material Thickness/Surface Area:	40 mil Textured HDPE/70,000 SF

Project Name:	Deer Track Landfill
Purpose of Facility:	Landfill Cap
Location:	Wisconsin
Date of Completion:	1998
Facility Owner:	U.S.A. Waste
Designer:	Foth & Van Dyke
Project Manager:	Marten J. Cieslik, P.E., DEE (608) 238-4761
Installer:	Solmax Geosynthetics, Inc.
Material Thickness/Surface Area:	40 mil Textured HDPE/411,840 SF

SECTION 2

Earle Naval Weapons Station

2. Origin and identification of resin to be used to manufacture the geomembrane

    - Product information sheet for HDPE resin
    - Sample of a Certificate of Analysis of HDPE resin

Please note that the actual Certificate of Analysis for the resin used in the above mentioned project will be made available to the Contractor after the liner is produced and before the release for shipment to the jobsite.

Marlex®

POLYETHYLENE
DATA SHEET

Marlex® K306

Fully Formulated Medium Density Hexene Copolymer

CUSTOMER BENEFITS

This extrusion grade hexene copolymer has the following desirable features...

- Good processability
- Excellent melt strength
- Broad fusion range
- Outstanding stress cracking resistance
- Meets the requirements of GRI-GM13

SUGGESTED APPLICATIONS

Recommended resin for...

- Pond liners
- Gas and chemical tank containment liners
- Landfill liners

PROCESSING RECOMMENDATIONS

Maintain this condition for optimum processing...

- Extrusion Stock Temperature 380-450°F (193-232°C)

SPECIFICATION DATA

- ASTM D1248 - Type II, Class A, Category 5
- ASTM D4976-89 - PE 225

Marlex® POLYETHYLENE

Nominal Physical Properties of Marlex® K306

Property*	Test Method	English Unit	English Value	SI Unit	SI Value
Density	D1505	lbs/ft³	58	g/cc	0.937
Melt Index, Condition 190/21.60	D1238	g/10 min	12.0	g/10 min	12.0
ESCR, Condition C (100% Igepal), F_{50}	D1693	h	>1500	h	>1500
ESCR, Condition B (10% Igepal), F_{50}	D1693	h	>1500	h	>1500
Tensile Yield Strength 2" *(50 mm)* per min.	D638 Type IV	psi	2700	MPa	19
Elongation 2" *(50 mm)* per min.	D638 Type IV	%	>700	%	>700
Flexural Modulus	D790	psi	116,000	MPa	800

*Physical properties reported herein were determined on compression molded specimens prepared in accordance with Procedure C of ASTM D1928.

THE NOMINAL PROPERTIES REPORTED HEREIN ARE TYPICAL OF THE PRODUCT BUT DO NOT REFLECT NORMAL TESTING VARIANCE AND THEREFORE SHOULD NOT BE USED FOR SPECIFICATION PURPOSES.

January, 2001

For more information and technical assistance:

PHILLIPS CHEMICAL COMPANY
A DIVISION OF
PHILLIPS PETROLEUM COMPANY
P.O. BOX 58966
HOUSTON, TX 77258-8966
1-800-231-1212
1-800-392-2078 (in Texas)

PÉTROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10465 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-6400
http://www.petromont.qc.ca

Customer information

SOLMAX INTERNATIONAL INC.
2801, MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Contact
CHANTAL GAGNON 450-929-2548

Your reference

Your material number

Quality certificate

Date
09/11/2001 11:54:40

Delivery item
A-1528 DHDA-1528 NT

Delivery number and item

Order number and item

Vehicule

Material : A-1528 DHDA-1528 NT

Batch MM 181973

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.153		
Flow Index 190C 21.6kg	g/10mi	18.4	14.0	23.0
Melt Flow Ratio 21.6/2.16	---			
Density Annealed 15C/min	g/cc	0.9391	0.9365	0.9410
Oxydative Induction Time	min	179		

*** End ***

RECEIVED

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

Responsible Care:
A Total Commitment®

SOLMAX
INTERNATIONAL

2801 Marie-Victorin Blvd, Varennes, Quebec, Canada J3X 1P7
Phone: (800) 571-3904 Fax (450) 929-1227

November 26, 2002

Peter Daly
International Waste Transport
11 Cedar Avenue
Wareton, NJ 08758

RE: Welding Rod
Project name: Earle Naval Weapons Station

Dear Mr. Daly,

Solmax International hereby certifies that all extrusion rods that are provided for the above mentioned project are from one Manufacturer. The resin that is used in the manufacture of the extrudate will be the same resin type as used in the manufacture of the geomembrane rolls for this project.

Please feel free to call me at (800) 571-3904 if you have any questions or require additional information.

Sincerely,

Solmax International, Inc.

Bob Denis
VP Quality and Product Engineering

Manufacturing Quality Control Test Results - Resin

MF-CQ-11
Rev.: 00 / 10-10-00

2801 Marie-Victorin, Quebec, Canada, J3X 1P7

26-Nov-02

Project Name: Colts Neck, NJ
Project No: 3438
Reference No: 9186

Lot No.	Melt Index	Density	SP-NCTL	Roll Tested
Specification	< 1.0 g/10 minutes	> 0.932 g/cc	> 200 hrs	
Test Method	ASTM D1238	ASTM D1505	ASTM D5397	
MM185298	0.080	0.9395	>200	31818
MM185300	0.083	0.9389	>200	31788

FAX

DATE:

Page 1

11/26/02 TUE 09:53 FAX 450 9292548 Solmax Int'l 001

PÉTROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10455 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-7400
http://www.petromont.qc.ca

Customer information

SOLMAX INTERNATIONAL INC.
2801 MARIE-VICTORIN
VARENNES QC J3X 1P7

Contact
CHANTAL GAGNON 450-929-1234

Your reference
30662

Your material number

Quality certificate

Date
2002/10/25 09:01:53

Delivery item
A-1528 DHDA-1528 NT

Delivery number and item
80035607 000010

Order number and item
10379 000010

Vehicule
UNPX 122526

Material : A-1528 DHDA-1528 NT

Batch MM 185298 / Qty 29,130 KG

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.080		
Flow Index 190C 21.6kg	g/10mi	11.7	10.0	16.0
Melt Flow Ratio	---	146.3		
Density Annealed 15C/min	g/cc	0.9395	0.9365	0.9410
Oxydative Induction Time	min	109		

*** End ***

RECEIVED

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

Responsible Care:
A Total Commitment®

** PAGE TOTALE.01 **

PÉTROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10455 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-7400
http://www.petromont.qc.ca

Customer information

SOLMAX INTERNATIONAL INC.
2801 MARIE-VICTORIN
VARENNES QC J3X 1P7
Contact
CHANTAL GAGNON 450-929-2548
Your reference
30613
Your material number

Quality certificate

Date
2002/10/09 09:06:15
Delivery item
A-1528 DHDA-1528 NT
Delivery number and item
80034712 000010
Order number and item
10063 000010
Vehicule
CGLX 10498

Material : A-1528 DHDA-1528 NT

Batch MM 185300 / Qty 88,430 KG

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.083		
Flow Index 190C 21.6kg	g/10mi	12.2	10.0	16.0
Melt Flow Ratio	---	147.0		
Density Annealed 15C/min	g/cc	0.9389	0.9365	0.9410
Oxydative Induction Time	min	113		

*** End ***

RECEIVED

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

Responsible Care:
A Total Commitment®

** PAGE TOTALE.02 **

List of Geomembrane Rolls

MF-CQ-01
Rev.: 00 / 10-10-00

2801 Marie-Victorin, Quebec, Canada, J3X 1P7

04-Nov-02

Project Name: Colts Neck, NJ
Customer P.O.: 3438
Reference No: 9186

Roll No.	Product Code	Lot Number	Length * ft	Width ft	Date Manufactured
31813	Solmax 460T	MM185300	520	22.2	10/26/02
31814	Solmax 460T	MM185300	520	22.1	10/26/02
31815	Solmax 460T	MM185300	520	22.1	10/26/02
31816	Solmax 460T	MM185300	520	22.1	10/26/02
31817	Solmax 460T	MM185300	520	22.1	10/26/02
31818	Solmax 460T	MM185298	520	22.1	10/26/02
31819	Solmax 460T	MM185298	520	22.1	10/26/02
31820	Solmax 460T	MM185298	520	22.1	10/26/02
31821	Solmax 460T	MM185298	520	22.1	10/26/02

* Roll length may vary ± 1%

SOLMAX INTERNATIONAL

Manufacturing Quality Control Test Results - Rolls

MF-CQ-08
Rev.: 00 / 10-10-00

2801 Marie-Victorin, Varennes, Québec, J3X 1P7

04-Nov-02

Project Name: Colts Neck, NJ
Project No: 3438
Reference No: 9186

Product: Solmax 460T

Property		Thickness ave. / min.	Sheet Density	Car. blk. Content	Car. blk. Dispersion	Yield Strength	Yield Elongation	Break Strength	Break Elongation	Tear Resistance	Puncture Resistance	Dimensional Stability	Asperity Height In / out
Units		mil	g/cc	%		ppi	%	ppi	%	lbs	lbs	%	mil
Test method		D5994	D1505	D4218	D5596	D5538 2.0 in Gage Length, Type IV; 2 ipm				D1004	D4833	D1204	GRI-GM12
Specification		> 57 / > 51	> 0.940	2 to 3	1 or 2	126	12	90	100	42	90	± 2	> 10
Roll No.													
31813	MD	58.3 / 52	0.944	2.36	Cat. 1 10 Views	164	17	199	538	54	141	0.04	19.9 / 17.8
	XD				Cat. 2 0 Views	166	15	159	362	50		0.40	
31814	MD	57.7 / 53	0.944	2.34	Cat. 1 10 Views	166	17	179	342	54	141	0.04	19.9 / 18.4
	XD				Cat. 2 0 Views	166	15	153	369	50		0.40	
31815	MD	57.5 / 55	0.944	2.34	Cat. 1 10 Views	166	17	179	342	54	141	0.04	19.1 / 18.1
	XD				Cat. 2 0 Views	166	15	153	369	50		0.40	
31816	MD	57.7 / 55	0.944	2.39	Cat. 1 10 Views	157	17	191	520	54	141	0.04	18.2 / 18.3
	XD				Cat. 2 0 Views	159	16	170	492	50		0.40	
31817	MD	57.9 / 55	0.944	2.39	Cat. 1 10 Views	157	17	191	520	54	141	0.04	18.1 / 18.6
	XD				Cat. 2 0 Views	159	16	170	492	50		0.40	
31818	MD	57.5 / 55	0.944	2.4	Cat. 1 10 Views	167	17	182	446	54	146	-0.19	18.5 / 18.8
	XD				Cat. 2 0 Views	162	15	170	483	53		0.03	
31819	MD	57.5 / 53	0.944	2.4	Cat. 1 10 Views	167	17	182	446	54	146	-0.19	18.3 / 19.4
	XD				Cat. 2 0 Views	162	15	170	483	53		0.03	
31820	MD	57.4 / 53	0.944	2.47	Cat. 1 10 Views	163	18	191	498	54	146	-0.19	19.6 / 17.9
	XD				Cat. 2 0 Views	164	17	173	498	53		0.03	
31821	MD	57 / 53	0.944	2.47	Cat. 1 10 Views	163	18	191	498	54	146	-0.19	18.5 / 18
	XD				Cat. 2 0 Views	164	17	173	498	53		0.03	

QC
APPROVED/APPROUVÉ

SITE

SOLMAX
INTERNATIONAL

2801 Marie-Victorin Blvd, Varennes, Quebec, Canada J3X 1P7
Phone: (800) 571-3904 Fax (450) 929-1227

November 26, 2002

Peter Daly
International Waste Transport
11 Cedar Avenue
Wareton, NJ 08758

RE: Reclaimed Polymer
Project name: Earle Naval Weapons Station

Dear Mr. Daly,

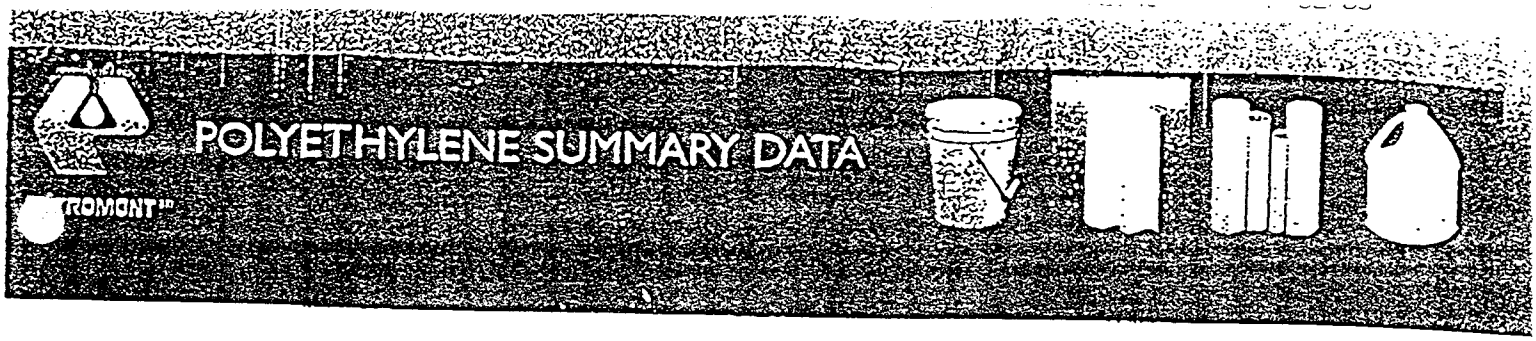
Solmax International hereby certifies that as per Paragraph 1.3.B.3. of Section 02771, the Solmax 460T manufactured for the above-mentioned projet was from virgin raw materials including not more than 2% by weight of clean in-house regrind.

Please feel free to call me at (800) 571-3904 if you have any questions or require additional information.

Sincerely,

Solmax International, Inc.

Bob Denis
VP Quality and Product Engineering



DHDA-1528 NATURAL

MEDIUM DENSITY POLYETHYLENE RESIN

MELT INDEX 0.19 dg/min.
DENSITY 0.939 g/cm³

GEOMEMBRANE MATERIAL
COPOLYMER

DESCRIPTION

DHDA-1528 Natural is a medium-density polyethylene hexene modified resin with an excellent balance of chemical resistance and durability. It is readily processed by blown sheet or flat die extrusion equipment.

DHDA-1528 Natural is an unpigmented polyethylene compound which, after proper incorporation of carbon black, may be used for geomembrane applications, such as liners for landfills and surface impoundments, where polyethylene is the material of choice. Comprehensive information on such facilities is available in documents issued by the U.S.A EPA.

When **DHDA-1528 Natural**, containing sufficient stabilizers, is properly processed into sheet, installed and seamed, the resulting liner is expected to provide excellent resistance to aqueous chemicals and solvents as well as to stress cracking. Sheet made in this way from DHDA-1528 Natural can be expected to pass the physical property requirements of the GRI (*Geosynthetic Research Institute*) for Flexible Membrane Liners.

The manufactured sheet should be tested to determine suitability for use in applications where unique conditions may apply, as is the case with leachate from each specific waste site.

PHYSICAL PROPERTIES

PROPERTIES	UNITS		TEST METHOD	TYPICAL VALUES	
	S.I.	ENG.		S.I.	ENG.
Melt Index, I_2	dg/min	dg/min	ASTM D 1238/E	0.19	0.9
Flow Index, I_{21}	dg/min	dg/min	ASTM D 1238/F	20	20
Density	g/cm³	g/cm³	ASTM D 1505	0.9395	0.9395
Test results on moulded plaque					
Tensile Strength at yield	MPa	psi	ASTM D 638	20	2,850
Tensile Strength at break	MPa	psi	ASTM D 638	31	4,000
Elongation at Break	%	%	ASTM D 638	>850	>850
Flexural Modulus	MPa	psi	ASTM D 790	650	95,000
ESCR, (F_0)	hours	hours	ASTM D 1693/B	>2,000	>2,000
Oxygen Induction Time (1)	min	min	ASTM D 3895	>100	>100

(1) At 200°C with oxygen in aluminium pan

STORAGE AND HANDLING

Pétromont DHDA-1528 Natural is supplied in pellet form. The product may readily be conveyed and bulk-fed through equipment designed for conventional pelleted polyethylene resin provided the equipment is designed to prevent accumulation of the fines and dust particles that are contained in all polyethylene resins. These fines and dust particles can, under certain conditions, pose an explosion hazard. We recommend that the conveying system used be: (1) equipped with filters of adequate size, (2) operated and maintained in such a manner to insure no leaks develop and (3) grounded adequately at all times. We further recommend good housekeeping be practised throughout your facility.

The fines and dust particles contained in all polyethylene resins are defined as Class I Dust (lowest explosive level) under National Fire Protection Association (NFPA)-68. Your facilities and procedures must conform to NFPA-654. These fines and dust particles are considered a nuisance dust under OSHA-1910.1000 and personnel exposure must be controlled accordingly. Before using this product, read and understand the current Pétromont Material Safety Data Sheet for this product.

AVAILABILITY

Pétromont DHDA-1528 Natural is available in both bulk hopper cars and bulk hopper trucks. Contact the Pétromont sales office nearest you for availability in your area.

EMERGENCY SERVICE

Pétromont maintains an around-the-clock emergency service for its polyethylene products. In the event of spills, leaks, fires or other emergencies involving Pétromont products, call collect day or night:

1-514-640-6400 (Montreal)

Please specify that it is an emergency and your call will be directed to the Emergency Coordinator on duty.

DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.

BUREAUX DES VENTES / SATISFACTION CLIENTS

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SECTION 3

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3. Solmax International polyethylene geomembrane manufacturing and installation quality control procedures

    - Solmax International Polyethylene geomembrane manufacturing and quality control procedures
    - International Association of Geosynthetic Installers HDPE Geomembrane Installation Specification

SOLMAX
INTERNATIONAL

Manufacturing and QC Procedures - PE

Technical Info

TABLE OF CONTENTS

This document was updated in October, 2000

1. INTRODUCTION

Solmax International Inc. has developed this manual to outline the Quality Control Program implemented at the manufacturing facility which ensures the integrity and the quality of all products supplied to its customers. This manual describes the general guidelines of all quality control procedures from resin selection (including reception and storage) to the manufacture of roll goods (including roll identification, handling and storage, material defects and statistical control).

Solmax International Inc. uses the highest level of quality control procedures designed for geomembranes. Its Quality Control Program is qualified as one of the most stringent in the industry. This comprehensive and detailed MQC Program ensures rapid and accurate detection of any material or workmanship non-conformance. It also allows Solmax personnel to identify the cause and extent of non-conformance and to take measures to prevent future occurrences. In addition to ensuring complete specification conformance, these well-defined quality control procedures provide extensive documentation required for liability limitations and enable material and workmanship warranties to be issued.

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2. QUALITY CONTROL ON RAW MATERIALS

2.1 General

Solmax uses resin from internationally recognized resin manufacturers. The resin is shipped to the Solmax facility by railcar - each railcar has a capacity of

approximately 180,000 lbs. of resin pellets. Each railcar is then given a batch number to ease identification and traceability of raw materials.

Each resin manufacturer submits quality control data to Solmax showing test results for the following properties (see Technical Data Sheets) :

- Density,
- Melt index,
- Oxidative Induction Time (O.I.T.), and
- Carbon Black Content (when applicable).

The carbon black content is applicable if the resin is preblended. When the resin is not preblended, the carbon black is added by Solmax during the manufacture of roll goods.

2.2 Resin Testing
Upon arrival at our facility, the railcars are sampled and tested for the following properties:

- Density, according to ASTM D1505;
- Melt Index, according to ASTM D1238;
- Carbon Black Content (if applicable), according to ASTM D4218;

Raw materials are not used until all testing is conducted and satisfactory test results are obtained.

2.3 Storage
Upon approval of test results, the resin is stored in four storage silos. Each silo contains up to one full railcar. The resin is used on a "first-in, first-out" basis.

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3. QUALITY CONTROL ON ROLL GOODS

3.1 Manufacturing Process
The Solmax International plant is located in Varennes, Province of Quebec, Canada - on the south shore of Montreal. The plant houses an industry-standard, state-of-the-art three-layer film blown extruder with a production capacity, for standard geomembranes, of 180,000 square feet (16,750 square meters) daily and approximately 66 million square feet (6.1 million square meters) annually.

This equipment produces all common types of polyethylene geomembrane in 22 feet (6.7 m) wide rolls with thicknesses ranging from 20 to 100 mil (0.50 to 2.50mm). Solmax International Inc. is capable of processing various types of resins including high density polyethylene (HDPE) and other polyethylene configurations such as Linear Low Density Polyethylene (LLDPE). All of these resins can be used to manufacture geomembranes with smooth surfaces or with texture on one or both sides in order to improve friction properties.

3.2 Manufacturing Quality Control
Quality control is critical during manufacturing. The production of roll goods is monitored continuously and rolls are visually inspected by Solmax QC

Inspectors as well as Operators. Any roll identified as defective is set aside and stored separately. The roll is then evaluated according to section 4 of this document, "Non-Complying Materials".

The production line is equipped with a hole detector into which all materials go through before being wound into rolls. If there is a hole in the geomembrane sheet, the detector will spark through it and burn the geomembrane at the location of the hole. Whenever the hole detector sparks, an alarm goes on at the same time so that the operators can locate and cut off the defect.

3.2.1 Testing Frequency
Solmax uses the same testing frequency for all of its materials. Thickness, roll dimensions and weight are measured for every roll produced. Tensile, sheet density and carbon black content are tested every other roll. Carbon Black Dispersion, Tear Resistance and Puncture Resistance are tested every sixth roll. For every textured roll produced, the asperity height is measured according to the GRI-GM12 Standard. In addition to this, every roll of a new resin batch is tested as well as the first roll after any product change (i.e. change in thickness or surface finish). For all other properties, rolls that are not tested are certified according to the results obtained for the rolls tested before and after.

3.2.2 Test Data and Archives
For each roll produced, a sample is cut, identified and archived for a minimum period of 10 years.

All test results are incorporated into a database from which the quality control certificates are issued. The database can generate reports for specific projects, types of material, dates of manufacture, thicknesses, resin batch numbers, etc. Test results and statistical control reports are made available to clients upon request.

3.2.3 Test Methods
Solmax uses only well-recognized test methods published by either ASTM or GRI (Geosynthetics Reasearch Institute, Drexel University). The properties are tested according to the test methods listed on the Solmax geomembrane technical data sheets. The technical data sheets show all routine testing, frequencies and internal specifications. The specifications listed are minimum roll values.

Any property not included in the Standard Manufacturing Quality Control Program is certified by Solmax according to independent laboratory test results.

3.3 Roll Identification
Each roll manufactured is given a unique roll number, regardless of the type of material. The roll number is attributed chronologically to each roll manufactured. All manufacturing and quality control data relative to each roll is stored in a database under the roll number. This information allows Solmax to keep track of all rolls produced, QC results, roll dimensions and weight, date shipped, Client, etc.

Each roll is identified with at least two labels: one inside the core and the other directly on the geomembrane sheet. These labels show the roll number, resin blend, product code, dimensions, weight and date of manufacture.

3.4 Roll Handling and Storage

Geomembrane rolls shall be handled and stored according to the US-EPA guidelines. The equipment used must be able to handle a 5,000 lbs. (2 270 kg) roll with ease and in such a manner as not to damage it. Each roll has two nylon slings for proper handling using a forklift. Rolls can also be handled by inserting a " metal carpet pin" into the cardboard core of the roll.

Polyethylene geomembrane rolls do not require a protective wrapping for outside storage. They need only be covered by a tarp or other protective cover if stored outside for a period exceeding six months. Geomembrane rolls can be stacked up to four or five rolls high without any crushing of the core. The rolls should not be stored in the mud nor in an area where there is an excess of water or any other material that could damage the geomembrane.

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4. NON-COMPLYING MATERIALS

Any material showing damages, such as holes, undispersed raw materials, scratches or other defects, shall be identified as non-complying and stored apart from other rolls. All materials identified as defective must be evaluated in order to determine the extent of the damaged area. Following the evaluation of each roll, they are then classified as:

- Reject: The roll is then ground into chips and incorporated into the production line at a maximum rate of 2 % by weight;
- Localized damage: The damaged area is cut out and the roll can be used like all others;
- Downgraded: The roll is used at a lower grade than it was originally produced for. No apparent damage on the roll except that it does not meet the specifications for the given thickness;
- Used by derogation: The roll could be used on a non-environmental project if approved by the client - golf pond, fire pond, etc.

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5. WARRANTY

Solmax International's polyethylene geomembranes are warrantied against any manufacturing defect. See the specimen warranty and the warranty requisition form.

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INTERNATIONAL ASSOCIATION OF GEOSYNTHETIC INSTALLERS

HDPE GEOMEMBRANE INSTALLATION SPECIFICATION

Revision, February 2000

PART 1 - GENERAL

1.01 Summary

A. This specification includes furnishing and installing HDPE geomembranes with a formulated sheet density of 0.940 g/cm or greater. Geomembranes with both smooth and textured surfaces are included.

1.02 References

A. American Society for Testing and Materials (ASTM):

1. D 638, Standard Test Method for Tensile Properties of Plastics.
2. D 751, Standard Test Methods for Coated Fabrics.
3. D 792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
4. D 1004, Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
5. D 1204, Standard Test Method for Linear Dimensional Changes of Non Rigid Thermoplastic Sheeting or Film at Elevated Temperature.
6. D 1238, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
7. D 1505, Standard Test Method for Density of Plastics by Density-Gradient Technique.
8. D 1603, Standard Test Method for Carbon Black in Olefin Plastics.
9. D 3895, Test Method for Oxidative Induction Time of Polyolefins by Thermal Analysis.
10. D 4218, Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.
11. D 4437, Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes.
12. D 4833, Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.

13. D 5199, Standard Test Method for Measuring Nominal Thickness of Smooth Geomembranes.

14. D 5397, Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefins using Notched Constant Tensile Load Test.

15. D 5596, Standard Practice for Microscopical Examination of Pigment Dispersion in Plastic Compounds.

16. D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.

17. D 5721, Practice for Air-Oven Aging of Polyolefin Geomembranes.

18. D 5820, Test Method for Air Testing.

19. D 5885, Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High Pressure Differential Scanning Calorimetry.

20. D 5994, Standard Test Method for Measuring Nominal Thickness of Textured Geomembranes

21. D 6365, Standard Practice for the Nondestructive Testing of Geomembrane Seams using The Spark Test

B. Geosynthetic Research Institute (GRI):

1. GRI GM 6, Pressurized Air Channel Test for Dual Seamed Geomembranes

2. GRI GM 9, Cold Weather Seaming of Geomembranes

3. GRI GM 10, Specification for Stress Crack Resistance of HDPE Geomembrane Sheet

4. GRI GM 13, Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes

5. GRI GM 14, Test Frequencies for Destructive SeamTesting

1.03 Submittals

A. Submit under provisions of Section 01300, Submittals.

B. Submit the following to the Engineer or Owner, for review and approval, within a reasonable time so as to expedite shipment or installation of the Geomembrane:

1. Documentation of manufacturer's qualifications as specified in subsection 1.04A of this Section.

2. Manufacturer's Quality Control program manual or descriptive documentation.

3. A material properties sheet, including at a minimum all properties specified in GRI GM 13, including test methods used.

4. Sample of the material.

5. Documentation of Installer's qualifications, as specified below and in subsection 1.04B of this Section.

a. Submit a list of at least ten completed facilities. For each installation, provide: name and type of facility; its location; the date of installation; name and telephone number of contact at the facility; type and thickness of geomembrane and; surface area of the installed geomembrane.

b. Submit resumes or qualifications of the Installation Supervisor, Master Seamer and Technicians to be assigned to this project.

c. Quality Control Program.

6. Example Material Warranty and Liner Installation Warranty complying with subsections 1.07 and 1.08 of this Section.

7. Resin Supplier's name, resin production plant identification, resin brand name and number, production date of the resin, resin Manufacturer's quality control certificates, and certification that the properties of the resin meet the requirements for the project.

C. Shop Drawings

1. Submit copies of shop drawings for engineer's approval within a reasonable time so as not to delay the start of geomembrane installation. Shop drawings shall show the proposed panel layout identifying seams and details. Seams should generally follow the direction of the slope. Butt seams or roll-end seams should not occur on a slope unless approved by the Owner's Representative. Butt seams on a slope, if allowed, should be staggered.

2. Placement of geomembrane will not be allowed to proceed until Owner's Representative has received and approved the shop drawings.

D. Additional Submittals (In-Progress and at Completion)

1. Manufacturer's warranty (refer to subsection 1.07).
2. Geomembrane installation warranty (refer to subsection 1.08).
3. Daily written acceptance of subgrade surface (refer to subsection 3.01.C).
4. Low temperature seaming procedures, if applicable (refer to subsection 3.03.A).
5. Prequalification test seam samples (refer to subsection 3.05.A.6).
6. Field seam non-destructive test results (refer to subsection 3.05.B.1).
7. Field seam destructive test results (refer to subsection 3.05.C.6).
8. Daily field installation reports (refer to subsection 3.05.G).
9. Installation record drawing, as discussed in subsection 3.05.

1.04 Quality Control

A. Manufacturer's Qualifications: The manufacturer of geomembrane of the type specified or similar product shall have at least five years experience in the manufacture of such

geomembrane. In addition, the geomembrane manufacturer shall have manufactured at least 1,000,000 M2 (10,000,000 FT2) of the specified type of geomembrane or similar product during the last five years.

B. Installer's Qualifications

1. The Geomembrane Installer shall be the Manufacturer, approved Manufacturer's Installer or a contractor approved by the Owner's Representative to install the geomembrane.

2. The Geomembrane Installer shall have at least three years experience in the installation of the specified geomembrane or similar. The Geomembrane Installer shall have installed at least 10 projects involving a total of 500,000 M2 (5,000,000FT2) of the specified type of geomembrane or similar during the last three years.

3. Installation shall be performed under the direction of a field Installation Supervisor who shall be responsible throughout the geomembrane installation, for geomembrane panel layout, seaming, patching, testing, repairs, and all other activities of the Geomembrane Installer. The Field Installation Supervisor shall have installed or supervised the installation and seaming of a minimum of 10 projects involving a total of 500,000 M2 (5,000,000 FT2) of geomembrane of the type specified or similar product.

4. Seaming shall be performed under the direction of a Master Seamer (who may also be the Field Installation Supervisor or Crew Foreman) who has seamed a minimum of 300,000M2 (3,000,000FT2) of geomembrane of the type specified or similar product, using the same type of seaming apparatus to be used in the current project. The Field Installation Supervisor and/or Master Seamer shall be present whenever seaming is performed.

5. All seaming, patching, other welding operations, and testing shall be performed by qualified technicians employed by the Geomembrane Installer.

1.05 Delivery, Storage and Handling

A. Each roll of geomembrane delivered to the site shall be labeled by the manufacturer. The label shall be firmly affixed and shall clearly state the manufacturer's name, product identification, material thickness, roll number, roll dimensions and roll weight.

B. Geomembrane shall be protected from mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.

C. Rolls shall be stored away from high traffic areas. Continuously and uniformly support rolls on a smooth, level prepared surface.

D. Rolls shall not be stacked more than three high.

1.06 Project Conditions

A. Geomembrane should not be installed in the presence of standing water, while precipitation is occurring, during excessive winds, or when material temperatures are outside the limits specified in Section 3.03.

1.07 Material Warranty

As required by specification, or as required in GRI GM 13 (attachment A)

1.08 Geomembrane Installation Warranty

A. The Geomembrane Installer shall guarantee the geomembrane installation against defects in the installation and workmanship for 1 year commencing with the date of final acceptance.

1.09 Geomembrane Pre-Construction Meeting

A. A Geomembrane Pre-Construction Meeting shall be held at the site prior to installation of the geomembrane. At a minimum, the meeting shall be attended by the Geomembrane Installer, Owner, Owner's representative (Engineer and/or CQA Firm), and the Earthwork Contractor.

B. Topics for this meeting shall include:

1. Responsibilities of each party.
2. Lines of authority and communication. Resolution of any project document ambiguity.
3. Methods for documenting, reporting and distributing documents and reports.
4. Procedures for packaging and storing archive samples.
5. Review of time schedule for all installation and testing.
6. Review of panel layout and numbering systems for panels and seams including details for marking on geomembrane.
7. Procedures and responsibilities for preparation and submission of as-built panel and seam drawings.
8. Temperature and weather limitations. Installation procedures for adverse weather conditions. Defining acceptable subgrade, geomembrane, or ambient moisture and temperature conditions for working during liner installation.
9. Subgrade conditions, dewatering responsibilities and subgrade maintenance plan.
10. Deployment techniques including allowable subgrade for the geomembrane.
11. Plan for controlling expansion/contraction and wrinkling of the geomembrane.
12. Covering of the geomembrane and cover soil placement.
13. Measurement and payment schedules.
14. Health and safety.

C. The meeting shall be documented by a person designated at the beginning of the meeting and minutes shall be transmitted to all parties.

PART 2 - PRODUCTS

2.01 Source Quality Control

A. Manufacturing Quality Control

1. The test methods and frequencies used by the manufacturer for quality control/quality assurance of the above geomembrane prior to delivery, shall be in accordance with GRI GM 13, or modified as required for project specific conditions.

2. The manufacturer's geomembrane quality control certifications, including results of quality control testing of the products, as specified in subsection 2.01.A.3 of this Section, must be supplied to the Owner's Representative to verify that the materials supplied for the project are in compliance with all product and or project specifications in this Section. The certification shall be signed by a responsible party employed by the manufacturer, such as the QA/QC Manager, Production Manager, or Technical Services Manager. Certifications shall include lot and roll numbers and corresponding shipping information.

3. The Manufacturer will provide Certification that the geomembrane and welding rod supplied for the project have the same base resin and material properties.

2.02 Geomembrane

A. The geomembrane shall consist of new, first quality products designed and manufactured specifically for the purpose of this work which shall have been satisfactorily demonstrated by prior testing to be suitable and durable for such purposes. The geomembrane rolls shall be seamless, high density polyethylene (HDPE- Density >0.94g/cm) containing no plasticizers, fillers or extenders and shall be free of holes, blisters or contaminants, and leak free verified by 100% in line spark or equivalent testing. The geomembrane shall be supplied as a continuous sheet with no factory seams in rolls. The geomembrane will meet the property requirements as shown in Table A. (GRI GM 13)

B. Material conformance testing by the Owner's Representative, if required, will be conducted in accordance with the project specifications.

C. The geomembrane seams shall meet the property requirements as shown in Table 2, (Attachment B) or as required by project specifications

PART 3 - EXECUTION

3.01 Subgrade Preparation

A. The subgrade shall be prepared in accordance with the project specifications. The geomembrane subgrade shall be uniform and free of all sharp or angular objects that may damage the geomembrane prior to installation of the geomembrane.

B. The Geomembrane Installer and Owner's Representative shall inspect the surface to be covered with the geomembrane on each day's operations prior to placement of geomembrane to verify suitability.

C. The Geomembrane Installer and Owner's Representative shall provide daily written acceptance for the surface to be covered by the geomembrane in that day's operations. The surface shall be maintained in a manner, during geomembrane installation, to ensure subgrade suitability.

D. All subgrade damaged by construction equipment and deemed unsuitable for geomembrane deployment shall be repaired prior to placement of the geomembrane. All repairs shall be approved by the Owner's Representative and the Geomembrane Installer. This damage, repair, and the responsibilities of the contractor and Geomembrane Installer shall be defined in the preconstruction meeting.

3.02 Geomembrane Placement

A. No geomembrane shall be deployed until the applicable certifications and quality control certificates listed in subsection 1.03 of this Section are submitted to and approved by the Owner's Representative. Should geomembrane material be deployed prior to approval by the Owner's Representative it will be at the sole risk of the Geomembrane Installer and/or Contractor. If the material does not meet project specifications it shall be removed from the work area at no cost to the owner.

B. The geomembrane shall be installed to the limits shown on the project drawings and essentially as shown on approved panel layout drawings.

C. No geomembrane material shall be unrolled and deployed if the material temperatures are lower than 0 degrees C (32 degrees F) unless otherwise approved by the Owner's Representative. The specified minimum temperature for material deployment may be adjusted by the Owner's Representative based on recommendations by the manufacturer. Temperature limitations should be defined in the preconstruction meeting. Typically, only the quantity of geomembrane that will be anchored and seamed together in one day should be deployed.

D. No vehicular traffic shall travel on the geomembrane other than an approved low ground pressure All Terrain Vehicle or equivalent.

E. Sand bags or equivalent ballast shall be used as necessary to temporarily hold the geomembrane material in position under the foreseeable and reasonably - expected wind conditions. Sand bag material shall be sufficiently close- knit to prevent soil fines from working through the bags and discharging on the geomembrane.

F. Geomembrane placement shall not be done if moisture prevents proper subgrade preparation, panel placement, or panel seaming. Moisture limitations should be defined in the preconstruction meeting.

G. Damaged panels or portions of the damaged panels which have been rejected shall be marked and their removal from the work area recorded.

H. The geomembrane shall not be allowed to "bridge over" voids or low areas in the subgrade. In these areas, the geomembrane shall be to allow the geomembrane to rest in intimate contact with the subgrade.

I. Wrinkles caused by panel placement or thermal expansion should be minimized in accordance with section 1.09 B11.

J. Considerations on Site Geometry: In general, seams shall be oriented parallel to the line of the maximum slope. In corners and odd shaped geometric locations, the total length of field seams shall be minimized. Seams shall not be located at low points in the subgrade unless geometry requires seaming at such locations and if approved by the Owner's Representative.

K. Overlapping: The panels shall be overlapped prior to seaming to whatever extent is necessary to effect a good weld and allow for proper testing. In no case shall this overlap be less than 75mm (3 in.).

3.03 Seaming Procedures

A. Cold weather installations should follow guidelines as outlined in GRI GM9.

B. No geomembrane material shall be seamed when liner temperatures are less than 0 degrees C (32 degrees F) unless the following conditions are complied with:

1. Seaming of the geomembrane at material temperatures below 0 degrees C (32 degrees F) is allowed if the Geomembrane Installer can demonstrate to the Owner's Representative, using pre-qualification test seams, that field seams comply with the project specifications, the safety of the crew is ensured, and geomembrane material can be fabricated (i.e. pipeboots, penetrations, repairs. etc.) at sub-freezing temperatures.
2. The Geomembrane Installer shall submit to the Owner's Representative for approval, detailed procedures for seaming at low temperatures, possibly including the following:

1. Preheating of the geomembrane

2. The provision of a tent or other device if necessary to prevent heat losses during seaming and rapid heat losses subsequent to seaming.

3. Number of test welds to determine appropriate seaming parameters

C. No geomembrane material shall be seamed when the sheet temperature is above 75 degrees C (170 degrees F) as measured by an infrared thermometer or surface thermocouple unless otherwise approved by the Owner's Representative. This approval will be based on recommendations by the manufacturer and on a field demonstration by the Geomembrane Installer using prequalification test seams to demonstrate that seams comply with the specification.

D. Seaming shall primarily be performed using automatic fusion welding equipment and techniques. Extrusion welding shall be used where fusion welding is not possible such as at pipe penetrations, patches, repairs and short (less than a roll width) runs of seams.

E. Fishmouths or excessive wrinkles at the seam overlaps, shall be minimized and when necessary cut along the ridge of the wrinkles back into the panel so as to effect a flat overlap. The cut shall be terminated with a key hole cut (nominal 10 mm (1/2 in) diameter hole) so as to minimize crack/tear propagation. The overlay shall subsequently be seamed. The key hole cut shall be patched with an oval or round patch of the same base geomembrane material extending a minimum of 150 mm (6 in.) beyond the cut in all directions.

3.04 Pipe and Structure Penetration Sealing System

A. Provide penetration sealing system as shown in the Project Drawings.

B. Penetrations shall be constructed from the base geomembrane material, flat stock, prefabricated boots and accessories as shown on the Project Drawings. The pre-fabricated or field fabricated assembly shall be field welded to the geomembrane as shown on the Project Drawings so as to prevent leakage. This assembly shall be tested as outlined in section 3.05.B. Alternatively, where field non destructive testing can not be performed, attachments will be field spark tested by standard holiday leak detectors in accordance with ASTM 6365 Spark testing should be done in areas where both air pressure testing and vacuum testing are not possible.

a. Equipment for Spark testing shall be comprised of but not limited to: A hand held holiday spark tester and conductive wand that generates a high voltage.

b. The testing activities shall be performed by the Geomembrane Installer by placing an electrically conductive tape or wire beneath the seam prior to welding. A trial seam containing a non welded segment shall be subject to a calibration test to ensure that such

a defect (non welded segment) will be identified under the planned machine settings and procedures. Upon completion of the weld, enable the spark tester and hold approximately 25mm (1 in) above the weld moving slowly over the entire length of the weld in accordance with ASTM 6365. If there is no spark the weld is considered to be leak free.

c. A spark indicates a hole in the seam. The faulty area shall be located, repaired and retested by the Geomembrane Installer.

d. Care should be taken if flammable gases are present in the area to be tested.

3.05 Field Quality Control

The Owner's Representative shall be notified prior to all pre qualification and production welding and testing, or as agreed upon in the pre construction meeting.

A. Prequalification Test Seams

1. Test seams shall prepared and tested by the Geomembrane Installer to verify that seaming parameters (speed, temperature and pressure of welding equipment) are adequate.

2. Test seams shall be made by each welding technician and tested in accordance with ASTM D 4437 at the beginning of each seaming period. Test seaming shall be performed under the same conditions and with the same equipment and operator combination as production seaming. The test seam shall be approximately 3.3 meters (10 feet) long for fusion welding and 1 meter (3 feet) long for extrusion welding with the seam centered lengthwise. At a minimum, tests seams should be made by each technician 1 time every 4–6 hours; additional tests may be required with changes in environmental conditions.

3. Two 25 mm (1 in) wide specimens shall be die-cut by the Geomembrane Installer from each end of the test seam. These specimens shall be tested by the Geomembrane Installer using a field tensiometer testing both tracks for peel strength and also for shear strength. Each specimen shall fail in the parent material and not in the weld, "Film Tear Bond"(F.T.D. failure). Seam separation equal to or greater than 10% of the track width shall be considered a failing test.

4. The minimum acceptable seam strength values to be obtained for all specimens tested are listed in Subsection 3.05.C.4 of this Section. All four specimens shall pass for the test seam to be a passing seam.

5. If a test seam fails, an additional test seam shall be immediately conducted. If the additional test seam fails, the seaming apparatus shall be rejected and not used for

production seaming until the deficiencies are corrected and a successful test seam can be produced.

6. A sample from each test seam shall be labeled. The label shall indicate the date, geomembrane temperature, number of the seaming unit, technician performing the test seam and pass or fail description. The sample shall then be given to the Owner's Representative for archiving.

B. Field Seam Non-destructive Testing

1. All field seams shall be non-destructively tested by the Geomembrane Installer over the full seam length before the seams are covered. Each seam shall be numbered or otherwise designated. The location, date, test unit, name of tester and outcome of all non-destructive testing shall be recorded and submitted to the Owner's Representative.

2. Testing should be done as the seaming work progresses, not at the completion of all field seaming, unless agreed to in advance by the Owner's Representative. All defects found during testing shall be numbered and marked immediately after detection. All defects found should be repaired, retested and remarked to indicate acceptable completion of the repair.

3. Non-destructive testing shall be performed using vacuum box, air pressure or spark testing equipment.

4. Non-destructive tests shall be performed by experienced technicians familiar with the specified test methods. The Geomembrane Installer shall demonstrate to the Owner's Representative all test methods to verify the test procedures are valid.

5. Extrusion seams shall be vacuum box tested by the Geomembrane Installer in accordance with ASTM D 4437 and ASTM D 5641 with the following equipment and procedures:

a. Equipment for testing extrusion seams shall be comprised of but not limited to: a vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft rubber gasket attached to the base, port hole or valve assembly and a vacuum gauge; a vacuum pump assembly equipped with a pressure controller and pipe connections; a rubber pressure/vacuum hose with fittings and connections; a plastic bucket; wide paint brush or mop; and a soapy solution.

b. The vacuum pump shall be charged and the tank pressure adjusted to approximately 35 kPa (5 psig).

c. The Geomembrane Installer shall create a leak tight seal between the gasket and geomembrane interface by wetting a strip of geomembrane approximately 0.3m (12

in) by 1.2m (48 in) (length and width of box) with a soapy solution, placing the box over the wetted area, and then compressing the box against the geomembrane. The Geomembrane Installer shall then close the bleed valve, open the vacuum valve, maintain initial pressure of approximately 35 kPa (5 psig) for approximately 5 seconds. The geomembrane should be continuously examined through the viewing window for the presence of soap bubbles, indicating a leak. If no bubbles appear after 5 seconds, the area shall be considered leak free. The box shall be depressurized and moved over the next adjoining area with an appropriate overlap and the process repeated.

d. All areas where soap bubbles appear shall be marked, repaired and then retested.

e. At locations where seams cannot be non destructively tested, such as pipe penetrations, alternate nondestructive spark testing (as outlined in section 3.04.B) or equivalent should be substituted.

f. All seams that are vacuum tested shall be marked with the date tested, the name of the technician performing the test and the results of the test.

6. Double Fusion seams with an enclosed channel shall be air pressure tested by the Geomembrane Installer in accordance with ASTM D 5820 and ASTM D 4437 and the following equipment and procedures:

a. Equipment for testing double fusion seams shall be comprised of but not limited to: an air pump equipped with a pressure gauge capable of generating and sustaining a pressure of 210 kPa (30 psig), mounted on a cushion to protect the geomembrane; and a manometer equipped with a sharp hollow needle or other approved pressure feed device.

b. The Testing activities shall be performed by the Geomembrane Installer. Both ends of the seam to be tested shall be sealed and a needle or other approved pressure feed device inserted into the tunnel created by the double wedge fusion weld. The air pump shall be adjusted to a pressure of 210 kPa (30 psig), and the valve closed,. Allow 2 minutes for the injected air to come to equilibrium in the channel, and sustain pressure for 5 minutes. If pressure loss does not exceed 28 kPa (4 psig) after this five minute period the seam shall be considered leak tight. Release pressure from the opposite end verifying pressure drop on needle to ensure testing of the entire seam. The needle or other approved pressure feed device shall be removed and the feed hole sealed.

c. If loss of pressure exceeds 28 kPa (4 psig) during the testing period or pressure does not stabilize, the faulty area shall be located, repaired and retested by the Geomembrane Installer.

d. Results of the pressure testing shall be recorded on the liner at the seam tested and on a pressure testing record.

C. Destructive Field Seam Testing

1. One destructive test sample per 150 linear m (500 linear ft) seam length or another predetermined length in accordance with GRI GM 14 shall be taken by the Geomembrane Installer from a location specified by the Owner's Representative. The Geomembrane Installer shall not be informed in advance of the sample location. In order to obtain test results prior to completion of geomembrane installation, samples shall be cut by the Geomembrane Installer as directed by the Owner's Representative as seaming progresses.

2. All field samples shall be marked with their sample number and seam number. The sample number, date, time, location, and seam number shall be recorded. The Geomembrane Installer shall repair all holes in the geomembrane resulting from obtaining the seam samples. All patches shall be vacuum box tested or spark tested. If a patch cannot be permanently installed over the test location the same day of sample collection, a temporary patch shall be tack welded or hot air welded over the opening until a permanent patch can be affixed.

3. The destructive sample size shall be 300 mm (12 in) wide by 1 m (36 in) long with the seam centered lengthwis. The sample shall be cut into three equal sections and distributed as follows: one section given to the Owner's Representative as an archive sample; one section given to the Owner's Representative for laboratory testing as specified in paragraph 5 below; and one section retained by the Geomembrane Installer for field testing as specified in paragraph 4 below.

4. For field testing, the Geomembrane Installer shall cut 10 identical 25 mm (1 in) wide replicate specimens from his sample. The Geomembrane Installer shall test five specimens for seam shear strength and five for peel strength. Peel tests will be performed on both inside and outside weld tracks. To be acceptable, 4 of 5 test specimens must pass the stated criteria in section 2.02 with less than 10% separation. If 4 of 5 specimens pass, the sample qualifies for testing by the testing laboratory if required.

5. If independent seam testing is required by the specifications it shall be conducted in accordance with ASTM 5820 or ASTM D4437 or GRI GM 6.

6. Reports of the results of examinations and testing shall be prepared and submitted to the Owner's Representative.

7. For field seams, if a laboratory test fails, that shall be considered as an indicator of the possible inadequacy of the entire seamed length corresponding to the test sample. Additional destructive test portions shall then be taken by the Geomembrane Installer at locations indicated by the Engineer, typically 3 m (10 ft) on either side of the failed sample and laboratory seem tests shall be performed. Passing tests shall be an indicator of adequate seams. Failing tests shall be an indicator of non-adequate seams and all seams represented by the destructive test location shall be repaired with a cap-strip extrusion welded to all sides of the capped area. All cap-strip seams shall be non-destructively vacuum box tested until adequacy of the seams is achieved. Cap strip seams exceeding 50 M in length (150 FT) shall be destructively tested.

D. Identification of Defects

1. Panels and seams shall be inspected by the Installer and Owner's Representative during and after panel deployment to identify all defects, including holes, blisters, undispersed raw materials and signs of contamination by foreign matter.

E. Evaluation of Defects: Each suspect location on the liner (both in geomembrane seam and non-seam areas) shall be non-destructively tested using one of the methods described in Section 3.05.B. Each location which fails non-destructive testing shall be marked, numbered, measured and posted on the daily "installation" drawings and subsequently repaired.

1. If a destructive sample fails the field or laboratory test, the Geomembrane Installer shall repair the seam between the two nearest passed locations on both sides of the failed destructive sample location.

2. Defective seams, tears or holes shall be repaired by reseaming or applying a extrusion welded cap strip.

3. Reseaming may consist of either:

a. Removing the defective weld area and rewelding the parent material using the original welding equipment; or

b. Reseaming by extrusion welding along the overlap at the outside seam edge left by the fusion welding process.

4. Blisters, larger holes, and contamination by foreign matter shall be repaired by patches and/or extrusion weld beads as required. Each patch shall extend a minimum of 150 mm (6 in) beyond all edges of the defects.

5. All repairs shall be measured, located and recorded.

F. Verification of Repairs on Seams: Each repair shall be non-destructively tested using either vacuum box or spark testing methods. Test which pass the non-destructive test shall be taken as an indication of a successful repair. Failed tests shall be reseamed and retested until a passing test results. The number, date, location, technician and test outcome of each patch shall be recorded.

G. Daily Field Installation Reports: At the beginning of each day's work, the Installer shall provide the Engineer with daily reports for all work accomplished on the previous work day. Reports shall include the following:

1. Total amount and location of geomembrane placed;
2. Total length and location of seams completed, name of technicians doing seaming and welding unit numbers;
3. Drawings of the previous day's installed geomembrane showing panel numbers, seam numbers and locations of non-destructive and destructive testing;
4. Results of pre-qualification test seams;
5. Results of non-destructive testing; and
6. Results of vacuum testing of repairs.

H. Destructive test results shall be reported prior to covering of liner or within 48 hours.

3.06 Liner Acceptance

A. Geomembrane liner will be accepted by the Owner's Representative when:

1. The entire installation is finished or an agreed upon subsection of the installation is finished;
2. All Installer's QC documentation is completed and submitted to the owner
3. Verification of the adequacy of all field seams and repairs and associated geomembrane testing is complete.

3.07 Anchor Trench

A. Construct as specified on the project drawings.

3.08 Disposal of Scrap Materials

A. On completion of installation, the Geomembrane Installer shall dispose of all trash and scrap material in a location approved by the Owner, remove equipment used in connection with the work herein, and shall leave the premises in a neat acceptable manner. No scrap material shall be allowed to remain on the geomembrane surface.

SECTION 4

Earle Naval Weapons Station

4. Solmax 460T, 60 mil textured HDPE technical data sheet

   - Technical Data Sheet: Solmax 460T
   - Copy of Solmax's proposed warranty for the above mentioned project

SOLMAX INTERNATIONAL	Technical Data Sheet Textured HDPE Geomembrane	MFT-CQ-10 Revision : 02 Oct. 2001

Resin Properties	Test Method	Frequency [2]	Resin HD
Resin Density	ASTM D1505	Once per batch	> 0.932 g/cc
Melt Index	ASTM D1238 Condition E	Once per batch	< 1.0 g / 10 minutes
Oxidative Induction Time	ASTM D3895	Once per batch	> 100 minutes
Stress Crack Resistance (SP-NCTL) [3]	ASTM D5397 Appendix	Once per batch	> 200 hours

Sheet Properties	Test Method	Frequency [2]	Solmax 460T	
			SI (metric) Units	English Units
Thickness (min ave) Lowest individual for 8 out of 10 values Lowest individual for any of the 10 values	ASTM D5994	Every Roll	1.43 mm 1.35 mm 1.28 mm	57 mil 54 mil 51 mil
Standard Roll Dimensions (Roll length may vary ± 1%)	N/A	N/A	6.7 m x 158 m	22' x 520'
Asperity Height (min ave) Lowest individual 8 out of 10 values Lowest individual for any of the 10 values	GM 12	Every Roll	> 0.25 mm > 0.18 mm > 0.13 mm	> 10 mil > 7 mil > 5 mil.
Sheet Density	ASTM D1505	Every Other Roll	> 0.940 g / cm^3	> 0.940 g / cm^3
Carbon Black Content	ASTM D4218	Every Other Roll	2.0 to 3.0 %	2.0 to 3.0 %
Carbon Black Dispersion	ASTM D5596	Every sixth Roll	Category 1 or 2	Category 1 or 2
Tensile [1] - Yield strength - Yield elongation (1.3 in gage length) - Break strength - Break Elongation (2 in. gage length.)	ASTM D638 Type IV	Every Other Roll	 22 kN/m 12 % 16 kN/m 100 %	 126 ppi 12 % 90 ppi 100 %
Tear Resistance [1]	ASTM D1004	Every sixth Roll	187 N	42 lbs
Puncture Resistance	ASTM D4833	Every sixth Roll	400 N	90 lbs
Oven Aging (at 85 °C, Standard OIT, % retained after 90 days)	ASTM D5721	Per Formulation	55%	55%
UV Resistance (High pressure OIT, % Retained after 1600hrs)	GRI-GM11	Per Formulation	50%	50%

1. Machine direction (MD) and Cross machine Direction (XMD) average values should be on the basis of 5 test specimens each direction.
2. Testing frequency based on standard roll dimensions and one resin batch is approximately 180,000 lbs (or one railcar)
3. The SP-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials. The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MCQ testing.

SOLMAX
INTERNATIONAL

SOLMAX INTERNATIONAL INC. – SPECIMEN STANDARD LIMITED WARRANTY

PROJECT: GEOMEMBRANE TYPE:
ADDRESS: EFFECTIVE DATE:

SOLMAX hereby warrants to **BENEFICIARY** that the geomembrane sold for the above mentioned **PROJECT** (**"SOLMAX geomembrane"**) conforms at the time of sale to the specifications of **SOLMAX**, and to be free from manufacturing defects, and to be able to withstands normal weathering for a period of 20 years from the above **EFFECTIVE DATE** for normal use in approved applications.

This Warranty does not include damages or defects in the **SOLMAX geomembrane** resulting from acts of God, casualty or catastrophe including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" as used herein does not include, among other things, the exposure of **SOLMAX geomembrane** to harmful chemicals; abuse of **SOLMAX geomembrane** by machinery, equipment, people, animals; improper site preparation or covering materials; existing conditions, including, but not limited to, subsurface conditions beneath the geomembrane such as a settlement of the ground, cave-in, etc...; excessive pressures or stresses from any source or improper application or installation; improper operation and maintenance by the Owner. **SOLMAX geomembrane** Warranty is intended for commercial use only and is not in effect for the consumer. The parties expressly agree that the sale hereunder is for commercial or industrial use only.

Should defects or premature loss of use within the scope of the above Warranty occur, **SOLMAX** will, at its option, repair or replace **SOLMAX geomembrane** on a pro-rata basis at the then current price in such a manner as to charge **BENEFICIARY** only for that portion of the warranted life which has elapsed since the **EFFECTIVE DATE**. **SOLMAX** will have the right to inspect and determine the cause of any alleged defect in **SOLMAX geomembrane** and to take the appropriate steps to repair or replace **SOLMAX geomembrane** if a defect exist which is covered under this Warranty. Any determination as to what constitutes the appropriate steps of remedying a defect will be made by **SOLMAX**. This Warranty extends only to **SOLMAX's geomembrane**, and does not extend to the installation service of **SOLMAX** or third parties.

Any claim for any alleged defect under this Warranty must be made in writing, by certified mail, to the President of **SOLMAX** within ten (10) days of becoming aware of the alleged defect. Should the require notice not be given within that timeframe, the defect and all warranties are waived by **BENEFICIARY**, and **BENEFICIARY** shall not have any rights of recovery against **SOLMAX**. **SOLMAX** shall not be obligated to perform repairs or replacements under this Warranty unless and until the area to be repaired or replaced is clean, dry and unencumbered. This includes, but is not limited to, the area made available for repair and/or replacement of **SOLMAX geomembrane** to be free from all water, dirt, sludge, residuals and liquids of any kind. If after inspection it is determined that there is no claim under this Warranty, **BENEFICIARY** shall reimburse **SOLMAX** for its costs associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, **BENEFICIARY** shall be entitled to a return of the purchase price for so much of the material as **SOLMAX** determines to have violated the Warranty provided herein. **SOLMAX** shall not be liable for any direct, indirect, incidental, specific or consequential damages of any kind or any loss of profits resulting from failure of **SOLMAX geomembrane** or the breach of this Warranty, whether such damage are for breach of warranty, negligence or otherwise. **SOLMAX** shall not be obligated to reimburse **BENEFICIARY** for any repairs, replacement, modifications or alterations made by **BENEFICIARY** unless **SOLMAX** specifically authorized, in writing, said repairs, replacements, modifications or alterations in advance of them having been made. **SOLMAX's liability under this Warranty shall in no event exceed the replacement cost of the SOLMAX geomembrane sold for the above mentioned PROJECT which has violated the Warranty provided herein.**

SOLMAX neither assumes nor authorizes any person other than the undersigned of **SOLMAX** to assume for it any other or additional liability in connection with **SOLMAX geomembrane** made on the basis of the Warranty. The Warranty on **SOLMAX geomembrane** herein is given in lieu of all other possible material warranties, either expressed or implied, and by accepting delivery of the material, **BENEFICIARY** waives all other possible warranties, except those specifically given. This Warranty is for the sole benefit of **BENEFICIARY** and is non-transferable and non-assignable; i.e., there are no third-party beneficiaries to this Warranty.

BENEFICIARY acknowledges by acceptance that the Warranty herein given is accepted in preference to any and other possible materials warranties.

SOLMAX MAKES NO WARRANTY OF ANY OTHER KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESSED OR IMPLIED, OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS SI THE ONLY WARRANTY THAT APPLIES TO THE MATERIALS REFERRED TO HEREIN AND SOLMAX DISCLAIMS ANY LIABILITY FOR ANY WARRANTIES GIVEN BY ANY OTHER PERSON OR ENTITY, EITHER WRITTEN OR ORAL.

In the event any term or provision of this Warranty is inconsistent with or in conflict with any writing, purchase order, or contract executed by **"SOLMAX"**, then, to the extent such inconsistency or conflict exists, the terms and conditions of this Warranty shall control in all respects.

The legal relations of **"SOLMAX"** and **BENEFICIARY** shall be determined and governed exclusively by the laws of the province of Quebec, Canada. **BENEFICIARY** consents to the exclusive jurisdiction of the courts sitting in Montreal, Quebec, Canada.

SOLMAX'S WARRANTY BECOMES AN OBLIGATION OF SOLMAX TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT. SAID WARRANTY SHALL NOT BE HONORED UNTIL AN ORIGINAL DATED AND SIGNED COPY BY AN AUTHORIZED OFFICER OF **BENEFICIARY** HAS BEEN DULY RETURNED TO **SOLMAX** AND IF NOT SIGNED AND RETURNED TO **SOLMAX** BEFORE 90 DAYS OF ITS ISSUANCE, THIS WARRANTY WILL NOT TAKE EFFECT AND IN SUCH EVENT, **SOLMAX'S** GEOMEMBRANE IS SOLD "AS IS" AND **SOLMAX** DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF THE PRODUCT IN ADDITION TO ITS DISCLAIMERS SET FORTH IN THIS LIMITED WARRANTY.

SOLMAX INTERNATIONAL INC.

_____

BY- Contract Administrator

I hereby state that I have read and understand the above and foregoing Warranty and agree to such by signing hereunder.

BENEFICIARY

BY:_____

TITLE:_____

DATE:_____

Roll Certifications for:
Solmax 460T

SOLMAX INTERNATIONAL

List of Geomembrane Rolls

MF-CQ-01
Rev.: 00 / 10-10-00

2801 Marie-Victorin, Quebec, Canada, J3X 1P7

04-Nov-02

Project Name: Colts Neck, NJ
Customer P.O.: 3438
Reference No: 9186

Roll No.	Product Code	Lot Number	Length * ft	Width ft	Date Manufactured
31813	Solmax 460T	MM185300	520	22.2	10/26/02
31814	Solmax 460T	MM185300	520	22.1	10/26/02
31815	Solmax 460T	MM185300	520	22.1	10/26/02
31816	Solmax 460T	MM185300	520	22.1	10/26/02
31817	Solmax 460T	MM185300	520	22.1	10/26/02
31818	Solmax 460T	MM185298	520	22.1	10/26/02
31819	Solmax 460T	MM185298	520	22.1	10/26/02
31820	Solmax 460T	MM185298	520	22.1	10/26/02
31821	Solmax 460T	MM185298	520	22.1	10/26/02

* Roll length may vary ± 1%

Manufacturing Quality Control Test Results - Resin

MF-CQ-11
Rev.: 00 / 10-10-00

2801 Marie-Victorin, Quebec, Canada, J3X 1P7

04-Nov-02

Project Name: Colts Neck, NJ
Project No: 3438
Reference No: 9186

Lot No.	Melt Index	Density	SP-NCTL	Roll Tested
Specification	< 1.0 g/10 minutes	> 0.932 g/cc	> 200 hrs	
Test Method	ASTM D1238	ASTM D1505	ASTM D5397	
MM185298	0.080	0.9395	Started on 27-10-2002	31818
MM185300	0.083	0.9389	Started on 25-10-02	31788

SOLMAX INTERNATIONAL

Manufacturing Quality Control Test Results - Rolls

2801 Marie-Victorin, Varennes, Québec, J3X 1P7

04-Nov-02

Project Name: Colts Neck, NJ
Project No: 3438
Reference No: 9186

Product: Solmax 460T

Property		Thickness ave. / min.	Sheet Density	Car. blk. Content	Car. blk. Dispersion	Yield Strength	Yield Elongation	Break Strength	Break Elongation	Tear Resistance	Puncture Resistance	Dimensional Stability	Asperity Height in / out
Units		mil	g/cc	%		ppi	%	ppi	%	lbs	lbs	%	mil
Test method		D5994	D1505	D4218	D5596	D638 2.0 in Gage Length, Type IV; 2 ipm				D1004	D4833	D1204	GRI-GM12
Specification		> 57 / > 51	> 0.940	2 to 3	1 or 2	126	12	90	100	42	90	± 2	> 10
Roll No.													
31813	MD	58.3 / 52	0.944	2.36	Cat. 1 10 Views	164	17	199	538	54	141	0.04	19.9 / 17.8
	XD				Cat. 2 0 Views	166	15	159	362	50		0.40	
31814	MD	57.7 / 53	0.944	2.34	Cat. 1 10 Views	166	17	179	342	54	141	0.04	19.9 / 18.4
	XD				Cat. 2 0 Views	166	15	153	369	50		0.40	
31815	MD	57.5 / 55	0.944	2.34	Cat. 1 10 Views	166	17	179	342	54	141	0.04	19.1 / 18.1
	XD				Cat. 2 0 Views	166	15	153	369	50		0.40	
31816	MD	57.7 / 55	0.944	2.39	Cat. 1 10 Views	157	17	191	520	54	141	0.04	18.2 / 18.3
	XD				Cat. 2 0 Views	159	16	170	492	50		0.40	
31817	MD	57.9 / 55	0.944	2.39	Cat. 1 10 Views	157	17	191	520	54	141	0.04	16.1 / 18.6
	XD				Cat. 2 0 Views	159	16	170	492	50		0.40	
31818	MD	57.5 / 55	0.944	2.4	Cat. 1 10 Views	167	17	182	446	54	146	-0.19	18.5 / 18.8
	XD				Cat. 2 0 Views	162	15	170	483	53		0.03	
31819	MD	57.5 / 53	0.944	2.4	Cat. 1 10 Views	167	17	182	446	54	146	-0.19	18.3 / 19.4
	XD				Cat. 2 0 Views	162	15	170	483	53		0.03	
31820	MD	57.4 / 53	0.944	2.47	Cat. 1 10 Views	163	18	191	498	54	146	-0.19	19.6 / 17.9
	XD				Cat. 2 0 Views	164	17	173	498	53		0.03	
31821	MD	57.1 / 55	0.944	2.47	Cat. 1 10 Views	163	18	191	498	54	146	-0.19	18.5 / 18
	XD				Cat. 2 0 Views	164	17	173	498	53		0.03	

QC
APPROVED/APPROUVÉ

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 18

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 16, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 16, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

SIGNATURE AND DATE DECEMBER 16, 2002

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:
☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

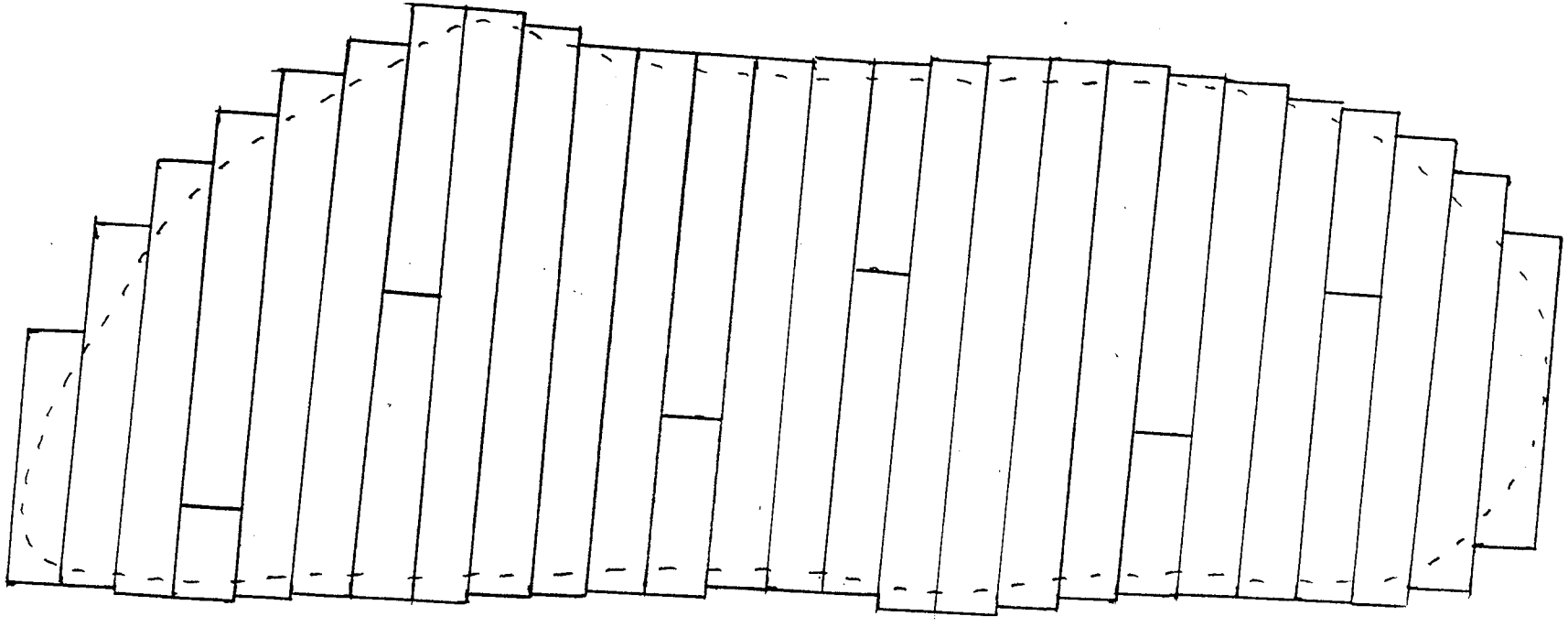
FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-04/08/09/10/12 , Specification Section 02771, HDPE Geomembrane Liner (Installation) • Installation layout • Letter of approval • Installation capabilities • List of completed facilities • Resume of installation superintendent • Subcontractor installation QC documentation	James M. Lisic, CQA			No further action required



NAVAL WEAPONS STATION EARLE
LANDFILL CAP SITE 10
EAST COAST LINER CO., INC.
PROPOSED PANEL LAYOUT
PANEL LAYOUT MAY CHANGE
DUE TO FIELD CONDITIONS

SOLMAX
INTERNATIONAL

2801 Marie-Victorin Blvd.
Varennes (Quebec) Canada
J3X 1P7
Tel.: (450) 929-1234
Fax: (450) 929-1227

July 31, 2001

East Coast Liner Company Inc.
1565 Route 37 West Unit 12
Toms River, NJ 08755

To Whom it may concerns,

This correspondence serves to recognize East Coast Liner Company, Inc. as a certified installer of Solmax International flexible geomembrane products (HDPE & PVC).

As a certified installer, East Coast Liner Company, Inc. has to follow Solmax International field installation quality assurance manual. They have been provided with a copy of Solmax International's proprietary product manual containing the data sheets and all Solmax International's products. East Coast Liner Company, Inc. also has access to Solmax International's technical department's representatives who can respond to questions on specifications and installation techniques.

Solmax International Inc. does not warrant nor guarantee the work of a certified installer. Hence, East Coast Liner Company, Inc. and/or its employees are acting as independent contractors and/or employees of Solmax International Inc. and they may not grant any right or authority or assume or create any obligation or liability express or implied, for or on behalf of Solmax International Inc. without the written consent of an authorized representative of Solmax International Inc.

On the assumption that you will find the foregoing to your satisfaction.

Truly yours,

Paul Payeur
Vice President
Network Development
Solmax International Inc.

SUBGRADE ACCEPTANCE

When signed below, by the Field Superintendent of East Coast Liner Company, Inc., this document certifies the acceptance of the surface conditions of the subgrade to be covered by liner panel _____ of the _____ liner system as numbered in the panel layout.

East Coast Liner Company, Inc. in accepting the surface conditions, makes no statement, warranty or certification as to the acceptability of the compaction, density, elevations or materials used to construct the subgrade.

_____

SIGNATURE OF FIELD SUPERINTENDENT,
EAST COAST LINER COMPANY, INC.

_____

PRINTED NAME

_____

DATE

:ECL SUBGRADE ACCEPTANCE FORM

EAST COAST LINER CO. INC
DAILY JOB REPORT

DATE: _____

PROJECT: _____

GENERAL CONTRACTOR: _____

MEN ON JOB: _____ HOURS WORKED: _____

MORNING WEATHER: _____ TEMPERATURE: _____
P.M. WEATHER: _____ TEMPERATURE: _____

WIND: CALM: AM [ ] PM [ ] LIGHT: AM [ ] PM [ ] HEAVY: AM [ ] PM [ ]

ACTIVITIES:

_____
_____
_____
_____
_____
_____
_____

MATERIAL TYPE: _____ _____ _____

AMOUNT DEPLOYED: _____ _____ _____

AMOUNT COMPLETED: _____ _____ _____

PROBLEMS ENCOUNTERED:

_____
_____
_____
_____
_____
_____
_____

DELAYS IN PRODUCTION CAUSED BY:

_____
_____
_____
_____
_____
_____
_____

HOURS DELAYED: _____

FORM COMPLETED BY: _____

ECL DAILY JOB REPORT

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

TRIAL WELD INFORMATION

page ________ of ________

PROJECT NAME: ______________________
PROJECT NUMBER: ______________________

MATERIAL DESCRIPTION: ______________________

DATE / TIME	AMBIENT TEMP	SEAMER INITIALS	MACHINE NUMBER	EXTRUSION WELDS			FUSION WELDS			PEEL VALUES			SHEAR VALUES			PASS FAIL	COMMENTS
				BARREL TEMP	PREHEAT TEMP	WELD THICKNESS	WEDGE TEMP	SPEED FT / MIN	WHEEL SETTING	LBS / INCH			LBS / INCH				

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL PLACEMENT FORM

PAGE_____ OF_____

PROJECT NAME:_____
PROJECT NUMBER:_____

MATERIAL DESCRIPTION: _____

DATE/ TIME	PANEL NUMBER	ROLL NUMBER	PANEL LENGHT	PANEL WIDTH	COMMENTS / PANEL LOCATION

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL SEAMING FORM

PAGE_____ OF_____

PROJECT NAME:_____
PROJECT NUMBER:_____

MATERIAL DESCRIPTION:_____
_____

DATE / TIME	SEAM NO.	PANEL NUMBERS	SEAM LENGTH	SEAMER INITIALS	MACHINE NUMBER	TEMP SETTING	WEATHER	WINDS	AMBIENT TEMP	DEST TEST P / F	COMMENTS

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

NON-DESTRUCTIVE TESTING FORM

PAGE________ OF________

PROJECT NAME:____________________________________

PROJECT NUMBER:____________________________________

MATERIAL DESCRIPTION:______________________________

DATE/ TIME	SEAM NO.	TESTER INITIAL	AIR TESTING						VBOX P/F	LOCATION/COMMENTS
			PRESSURE			TIME		P/F		
			START	END	+ / -	START	END			

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

DESTRUCTIVE TEST LOG

PAGE_____ OF_____

PROJECT NAME:_____
PROJECT NUMBER:_____

MATERIAL DESCRIPTION:_____

DATE/ TIME	SAMPLE I.D.	SEAM NUMBER	MACHINE NUMBER	OPER. INITIALS	PEEL VALUES LBS. / INCH	SHEAR VALUES LBS. / INCH	P/F	DATE TO LAB SLIP NO.	P/F	LOCATION / COMMENTS

FCL DESTRUCTIVE TEST LOG

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

REPAIR REPORT

PAGE_____ OF_____

PROJECT NAME:_____
PROJECT NUMBER:_____

MATERIAL DESCRIPTION_____

FIELD SEAM	PANEL NUMBER	REPAIR DATE	VBOX CREW	VBOX P/F	LOCATION OF REPAIR

ECL
EAST COAST LINER CO.,Inc

1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
Phone: 732-341-4000
Fax: 732-341-5412

Employees Project Listings

EMPLOYEES NAME	DATE STARTED WITH COMPANY	JOB TITLE
John Knoeringer	January 5, 2000	President Supervisor Field Crew Foreman Seaming Foreman QC Manager
Joseph Guerriero	January 5, 2000	Vice President Supervisor Field Crew Foreman Seaming Foreman QC Manager
James Knoeringer	April 15, 2000	Supervisor Field Crew Foreman Seaming Foreman QC Manager
Paul Kunyz	April 15, 2000	Supervisor Field Crew Foreman Seaming Foreman QC Manager

ECL
EAST COAST LINER CO.,Inc

1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
Phone: 732-341-4000
Fax: 732-341-5412

Project Listings

John knoeringer, President

PROJECTS — 2002	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Liberty National Development Project Tank Port Property Area 1 Jersey City, NJ.	Containment Barrier	180,000 sf 360,000 sf	60 mil HDPE 12 oz Geotextile	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
Brea Boulevard Substation Park Ridge, NJ.	Spill Containment System	1,800 sf 1,800 sf	40 mil XR5 8 oz Geotextile	Castlton Environmental Contractors Jeffrey P. Hunt 973-772-9030
GATX Staten Island, NY	Containment Basin	239,000 sf	20 mil LLDPE	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
NRC Vehicle Storage Bldg. Lakewood, NJ	Methane Barrier	720 sf	30 mil PVC	Beachwood Builders Inc. Ray Diaz 732-269-5400
Motiva Enterprises Tank # 11 Newark NJ.	Secondary Containment Restoration of existing Liner		40 mil Petroguard	Simpson & Brown Edward M. Lee 908-276-2776
Win Logistics Denville, NJ.	Rail Car Bed Liner	400 sf	120 mil HDPE	Win Logistics Thomas Winant 908-879-9465
Clinton Cartage Site 48 Kearny, NJ	Soil Separator	1,000 sf	Tendrain 7100-2 Geonet	Handex Environmental, Inc. Edward J. Huss, Jr. 732-536-8667

PROJECTS — 2002 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Lipari Landfill Mullica Hill, NJ.	Landfill Cap	2,000 sf	40 mil HDPE	URS Corporation Everett Hayward 856-582-6000
River Park Business Center Whippany, NJ.	Methane Barrier	1,000 sf	40 mil PVC	Parsons Infrastructure & Technology Group Inc. Richard Lorfing 732-560-9300
Cabot Performance Materials Boyertown, PA.	Holding Bin	11,600 sf 19,000 sf	45 mil PPE 16 oz Geotextile	Cabot Performance Materials Bob Stancavage 601-369-8527
FUSRAP Maywood, NJ.	Decon Pad	7,740 sf	40 mil HDPE Textured	Stone & Webster Michael L. Farrell 201-226-6634
Motiva Enterprises Tank # 1 Newark NJ.	Secondary Containment	45,000 sf	80 mil HDPE	Jersey Tank Fabricators Allen 908-561-2865
Liberty National Development Project Shore Line Area Jersey City, NJ.	Containment Barrier	63,000 sf 171,000 sf	60 mil HDPE T 12 oz Geotextile	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
River Park Business Center Whippany, NJ.	Methane Venting Barrier	50,000 sf	Geocomposite Net	Parsons Infrastructure & Technology Group Inc. Richard Lorfing 732-560-9300
Nacote Creek Project Port Republic, NJ	Retention Basin	108,000 sf	30 mil HDPE	Aqua Dredge Inc. Charles Pound 914-273-3179
Provincetown WTP Cape Cod, Ma.	Secondary Containment	14,220 sf 90 lf	40 mil HDPE Polylock	Robert B. Our Co. Ken Joudrey 508-438-0530 Subcontracted from Atlantic Lining

PROJECTS — 2002 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Liberty National Development Project Tank Port Property Area 80 / 90 Jersey City, NJ.	Containment Barrier	450,000 sf 900,000 sf	60 mil HDPE 12 oz Geotextile	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
FAA - William J. Hughes Technical Center. Area B&41 Atlantic City Airport Atlantic City, NJ.	Soil Stockpile and Decon Pad	64,000 sf	40 mil HDPE	URS Corporation Mac Walling 973-812-6811
Allentown Business School Center Valley, PA.	Detention Basin	70,000 sf	30 mil PVC	Semmel Excavating Inc. Mike Heffelinger 610-481-9300
Centralized Tactical Vehicle Wash Facility. Fort Dix NJ.	Water Supply Basin	117,000 sf	60 mil HDPE	Eagle Construction Services, Inc. Michael Davison 609-239-8000 Subcontracted from The Liner Co.
River Park Business Center Whippany, NJ.	Methane Venting Barrier	133,000 sf	Geocomposite Net	Parsons Infrastructure & Technology Group Inc. Richard Lorfing 732-560-9300
Rehabilitation of South Main Street Bridge. Manchester, NH.	Roadway Membrane	10,000 sf	60 mil HDPE	Venture Construction Robert Hollinger 603-224-6340
Liberty National Development Project Tank Port Property Area 2 and 2A Jersey City, NJ.	Containment Barrier	120,000 sf 240,000 sf	60 mil HDPE 12 oz Geotextile	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
Centralized Tactical Vehicle Wash Facility. Fort Dix NJ.	Equalization Basin	120,000 sf	60 mil HDPE	Eagle Construction Services, Inc. Michael Davison 609-239-8000 Subcontracted from The Liner Co.
AFFF Pond Liner 33-15 McGuire Air Force Base, NJ	Detention Basin	21,000 sf	60 mil HDPE	Beachwood Builders Inc. Ray Diaz 732-269-5400

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Project Listings

John knoeringer, President

PROJECTS — 2001	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
PSEG Power Burlington Generating Station Burlington, NJ	Secondary Containment	110,000 sf	12 oz. Fabric 80 mil HDPE liner	Mark Schwartzkopf Senior Environmental Engineer 609-835-2135 Subcontracted from The Liner Co.
Great Adventure Jackson, NJ	Holding Pond	10,000 sf	36 mil Hypalon	Al Rabano 732-928-2000 Subcontracted from The Liner Co.
Factory Lane Envirocon	Drainage Swale	25,000 sf 37,000 sf 9,000 sf	60 mil VFPE 16 oz. Geotextile Drainage composite	URS Engineer: Glenn R. Bowen 215-542-3800
Saint George Ball Park Staten Island, NY	Runoff Pond	13,500 sf	Bentofix GCL	Sal D. Gangi Contracting 718-332-3436 Subcontracted from Samleen, LLC
NY D.O.T. US Route 202 Reconstruction	Runoff Pond	15,000 sf	45 mil Reinforced Polypropylene	Parsippany Construction Jim Dalton 610-837-8851 Subcontracted from Liner System/ Cover Systems
GPU Whiting Substation Manchester, NJ	Secondary Containment	1,200 sf	40 mil Petroguard	Henkels & McCoy Ed McDonald 215-283-7634 Subcontracted from The Liner Co., Inc.
Town Hall Shoppes Bricktown, NJ	Methane Barrier	22,000 sf	40 mil HDPE	R. Stone and Company Blaze Ionno 732-244-6771 Subcontracted from The Liner Co., Inc.

PROJECTS — 2001 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Hudson County Chromium Sites- Site 115 Jersey City, NJ	Containment Barrier	72,000 sf	30 mil OR-PVC	The Haseley Company Wesley (Sonny) Rohring 716-297-1550 Subcontracted from Samleen, LLC
Homestead Waste Water Lagoons Mansfield, NJ	New Anchor Trench System	34,000 sf	40 mil HDPE	Applied Water Management, Inc Dave Wiman 610-998-1400
Green Briar / Oceanaire Golf Course Waretown, NJ	Decorative Ponds	454,000 sf	30 mil PVC	Wadsworth Golf Construction Company Brian Cunfer 610-998-1400
Marine Park Golf Course Brooklyn, NY	Decorative, Irrigation Pond	80,000 sf	60 mil HDPE	Aqua Turf Ken Rago 914-347-5151 Subcontracted from The Liner Co.
Upper Macungie Twp-Memorial Park Breinigsville, PA	Detention Basin	32,000 sf	30 mil PVC	Semmel Excavating, Inc. Dave Reitz 610-481-9300
Bethlehem Medical Arts Center Bethlehem, PA	Detention Basin	36,000 sf	30 mil PVC	Semmel Excavating, Inc. Mike Heffelinger 610-481-9300
Pelham Bay Golf Course Bronx, NYC	Decorative, Irrigation Pond	37,000 sf	60 mil HDPE 10 oz Geotextile	Aqua Turf Ken Rago 914-347-5151 Subcontracted from The Liner Co.
Bel-Ray Company, Inc. Wall Township, NJ	Detention Basin	34,000 sf	60 mil HDPE	Roy F. Weston 610-701-3000 Subcontracted from The Liner Co.
Mc Enroe Organic Farm Associates Millerton, NY	Compost Bed Liner	126,000 sf	40 mil HDPE Textured	Liberta Bros., Inc Steve Liberta 518-396-7024 Subcontracted from The Liner Co.

PROJECTS — 2001 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
PPG Site 147 Weehawken, NJ	Containment Barrier	141,000 sf 326,000 sf	40 mil HDPE Tex. 14 oz Geotextile	Conti Environmental Bob Scerbo 908-561-8005 ext. 809
Seski Residents Murryville, PA	Decorative Pond	35,000 sf 70,000 sf	45 mil PPE 10 oz Geotextile	John P. Graham, Jr 724-238-4819
Commons at Great Valley Charlestown Twp. Chester County, PA.	Detention Basin	10,600 sf 21,200 sf	40 mil PVC 8 oz Geotextile	S.C. & E.K. Fisher 610-327-1600
Port Imperial South L.L.C. Weehawken NJ.	Containment Barrier	7,200 sf 3,600 sf	40 mil HDPE 8 oz Geotextile	Creamer Environmental, Inc. Tom Cawley 201-968-3300
Green Briar / Oceanaire Golf Course Waretown , NJ	Waterfall Feature	6,000 sf	40 mil PVC	Wadsworth Golf Construction Company Brian Cunfer 610-998-1400
Clinton Cartage Site 48 Kearny, NJ.	Soil Separator	57,600 sf	Tendrain 7100-2 Geonet	Integrated Technical Services, Inc. Brent Peckis 609-567-8140
Reliant Energy, Inc. Gilbert Station Milford, NJ	Two Retention Ponds	24,500 sf 10,000 sf	32 Mil XR5 12 oz Geotextile	East Coast Liner Co., Inc. Reliant Energy, Inc. Mr. David Griffith 908-995-6946
Split Rock Golf Course Hole # 8 Bronx NY.	Decorative, Irrigation Pond	48,000 sf	60 mil HDPE	Aqua Turf Ken Rago 914-347-5151 Subcontractor: The Liner Co.
Town Hall Shoppes Brick Town NJ.	Two Retention Ponds	45,000 sf	20 mil PVC	R. Stone & Company Blaze Ionno 732-244-6771

PROJECTS — 2001 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Pfohl Brothers Landfill Cheektowaga, NY.	Landfill Cap Drainage Swale Tie in	350,000 sf 800 lf	40 mil LLDPE 40 mil LLDPE	Sevenson Environmental Services, Inc. Mike Mahar 716-284-0431 Subcontracted from Atlantic Lining
Duck Island Trenton, NJ.	Decon Pad	84,000 sf	60 mil LLDPE Textured	Parsippany Construction Co. Vince 973-334-8757 Subcontracted from The Liner Co.
Church & Dwight Co., Inc. North Brunswick, NJ.	Railcar Spill Containment	11,000 sf	60 mil LLDPE	HMC Associates Kurt Forte 732-673-2702 Subcontracted from Atlantic Lining
Cytec Industries Woodbridge, NJ.	Soil Separator	19,000 sf	40 mil HDPE	BBL Environmental Services, Inc. David Montinary 412-231-6624 ext. 565
Philadelphia Suburban Water Co. Clearwell, Berwick, PA	Holding Tank	1,240 sf	36 mil PPE Potable Grade	Dave Quinn 570-443-7099
Parklands Landfill Bordentown, NJ	Landfill Cap Reconstruction	35,000 sf	40 mil HDPE	Maverick Construction Management Tim M. Joness 610-783-6202 Subcontracted from The Liner Co.

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Fax: 732-341-5412

Project Listings

John knoeringer, President

PROJECTS — 2000	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Borough of Kutztown - Oil Spill Containment pit Kutztown, PA	Secondary Containment	3,600 sf	XR40-8158 (XR5)	S&M Managment, Inc. Sal Sciascia 570-296-5395
ECC Repair Wayne, NJ	Secondary Containment	10,000 sf	40 mil HDPE	Environment Chemical Corp. Skip Milton 973-835-1666
Burlington County Landfill Burlington, NJ	Gas Vent Boots	2 boots	40 mil LLDPE	James W. Robertson, Inc. Joe Domas 973-263-1901
Sprout Brook Ash Disposal Landfill Closure	Landfill Cap	684,000 sf 684,000 sf	40 mil textured VFPE Drainage Composite	Westway Industries, Inc., The IT Group Keith Burnelt 201-512-5755 Subcontracted from Samleen, LLC.
Cumberland County Landfill Cumberland County, NJ	Repairs to Hypalon Cell Tie-in		36 mil Hyplon	Barbella Env. Technology, Inc. Brian Barbella 908-534-1664
Hunterstown Road Site Hunterstown, PA	Soil Separator	229,500 sf	8 oz. Geotextile	WRS Infrastructure & Environment, Inc. Kenneth F. Shultz 315-432-8370 Subcontracted from Picone Contracting
JIS Landfill Superfund Site South Brunswick, NJ	Landfill Cap	350,000 sf 350,000 sf	40 mil LLDPE Tex. Drainage Composite	Conti Environmental, Inc. Bob Weeks 908-361-9025 Engineer: Blasland, Bouck & Lee, Inc. Subcontracted from Atlantic Lining

PROJECTS — 2000 (cont.)	INSTALLATION TYPE	SIZE	MATERIAL	GENERAL CONTRACTOR
Johnson Controls Middletown, DE	Decorative Sediment Pond	20,000 sf	8 oz. Geotextile 40 mil HDPE	Integrated Technical Services, Inc. Brent Peckis 609-567-8140 Subcontracted from The Liner Co., Inc.
Koppers Wood Treating Site Salisbury, MD	Retention Pond	31,000 sf	40 mil HDPE	Sevenson Bob Braden 410-334-6718 Subcontracted from Atlantic Lining
Smithtown Landfill Smithtown, NY	Landfill Cap	860,000 sf	40 mil LLDPE	Brecco Subcontracted from Atlantic Lining
Perth Amboy Dry Dock Perth Amboy, NJ	Containment Barrier	30,000 sf	Rufco 2101B	Integrated Technical Services, Inc. John Akkerman 609-567-8140
Egg Harbor WWTP Egg Harbor, NJ	Secondary Containment	5,900 sf	45 mil Hypalon	Roy F. Weston, Inc. Scott Sickles 610-701-3000
Scituate WWTP Scituate, MA	Retention Lagoon	110,000 sf	40 mil HDPE Textured	C.H. Nickerson & Co., Inc. Chris K. Arpaia 781-545-5729 Subcontracted from Atlantic Lining

EAST COAST LINER CO.

Resume

John Knoeringer

1565 Route 37 West – Unit 12
Toms River, NJ 08755

Tel 732-341-4000
Cell 732-300-7674
Fax 732-341-5412

Employment History

2000 – Present	Partner in East Coast Liner Co. Sales, service, installation and repairs of all types of lining systems.
1999 – 1983	Field Superintendent. The Liner Co. Supervising all aspects of liner installation including layout, seaming, quality control, personnel manager, planning and scheduling.
1983 – 1980	Master Seamer. The Liner Co. Completed installation training provided by Staff Industries (PVC & Hypalon), National Seal Company (HDPE), and Gundle Lining Systems (HDPE).
1979 – 1978	Layout and Seaming Technician. The Liner Co. Complete on site field training in panel layout and various types of seaming methods.

Installation History – Partial listing of major projects

2001

PSEG Power
Burlington Generating Station
Burlington, NJ
G.C.: Mark Schwartzkopf
Senior Environmental Engineer
609-835-2135
Subcontracted from: The Liner Co.

Secondary Containment
12 oz. Fabric: 110,000 sf
80 mil HDPE liner

Great Adventure
Jackson, NJ
G.C.: Al Rabano
732-928-2000
Subcontracted from: The Liner Co.

Holding Pond
36 mil Hypalon: 10,000 sf

Factory Lane
Envirocon
G.C.: URS
Engineer: Glenn R. Bowen
215-542-3800

60 mil Hypalon: 25,000 sf
16 oz. Geotextile: 37,000 sf
Drainage composite: 9,000 sf

Saint George Ball Park
Staten Island, NY
G.C.: Sal
D. Gangi Contracting
718-332-3436
Subcontracted from: Samleen, LLC

Runoff Pond
Bentofix GCL: 13,500 sf

2000

Borough of Kutztown – Oil Spill
Containment pit
Kutztown, PA
G.C.: S&M Management, Inc.
Sal Sciascia
570-296-5395

Secondary Containment
XR40-8158 (XR5): 3,600 sf

EAST COAST LINER CO.

Resume

Joseph Guerriero

1565 Route 37 West – Unit 12
Toms River, NJ 08755

Tel 732-341-4000
Cell 732-300-7916
Fax 732-341-5412

Employment History

2000 – Present Partner in East Coast Liner Co. Sales, service, installation and repairs of all types of lining systems.

1996 – 1983 Quality Control Manager and Assistant Field Superintendent – The Liner Co. Implimented Quality Control procedures and maintained quality control records. Personally involved and assisted in the installation of over 41,000,000 square feet of various lining systems.

1983 – 1980 Master Seamer – The Liner Co. Completed installation training provided by Staff Industries (PVC & Hypalon), National Seal Company (HDPE), and Gundle Lining Systems (HDPE).

1979 – 1975 Layout and Seaming Technician – The Liner Co. Complete on site field training in panel layout and various types of seaming methods.

Installation History – Partial listing of major projects

2001

PSEG Power
Burlington Generating Station
Burlington, NJ
G.C.: Mark Schwartzkopf
Senior Environmental Engineer
609-835-2135
Subcontracted from: The Liner Co.

Secondary Containment
12 oz. Fabric: 110,000 sf
80 mil HDPE liner

Great Adventure
Jackson, NJ
G.C.: Al Rabano
732-928-2000
Subcontracted from: The Liner Co.

Holding Pond
36 mil Hypalon: 10,000 sf

Factory Lane
Envirocon
G.C.: URS
Engineer: Glenn R. Bowen
215-542-3800

60 mil Hypalon: 25,000 sf
16 oz. Geotextile: 37,000 sf
Drainage composite: 9,000 sf

Saint George Ball Park
Staten Island, NY
G.C.: Sal
D. Gangi Contracting
718-332-3436
Subcontracted from: Samleen, LLC

Runoff Pond
Bentofix GCL: 13,500 sf

2000

Borough of Kutztown – Oil Spill
Containment pit
Kutztown, PA
G.C.: S&M Management, Inc.
Sal Sciascia
570-296-5395

Secondary Containment
XR40-8158 (XR5): 3,600 sf

ECL EAST COAST LINER CO. INC.

Resume

Paul Kunyz

1565 Route 37 West – Unit 12
Toms River, NJ 08755

Tel 732-341-4000
Fax 732-341-5412

Employment History

2000 – Present Supervisor – East Coast Liner Co. Sales, service, installation and repairs of all types of lining systems.

1999 – 1986 Seaming Foreman – The Liner Co. Oversaw all seaming operations and conducted training for new employees. During his employment, Mr. Kunyz was hands-on and personally involved in the installation of over 41,000,000 square feet of various lining systems.

1990 Completed Safety Training Program OSHA 29 CFR, 1910.120 conducted by Waste Management, Inc.

1985 – 1983 Master Seamer – The Liner Co. Completed installation training provided by Staff Industries (PVC & Hypalon), National Seal Company (HDPE) and Gundle Lining Systems (HDPE).

1982-1979 Started with The Liner Co. as a layout and seaming technician, successfully completing his field training in panel layout and various types of seaming methods.

Installation History – Partial listing of major projects

2001

PSEG Power
Burlington Generating Station
Burlington, NJ
G.C.: Mark Schwartzkopf
Senior Environmental Engineer
609-835-2135
Subcontracted from: The Liner Co.

Secondary Containment
12 oz. Fabric: 110,000 sf
80 mil HDPE liner

Great Adventure
Jackson, NJ
G.C.: Al Rabano
732-928-2000
Subcontracted from: The Liner Co.

Holding Pond
36 mil Hypalon: 10,000 sf

Factory Lane
Envirocon
G.C.: URS
Engineer: Glenn R. Bowen
215-542-3800

60 mil Hypalon: 25,000 sf
16 oz. Geotextile: 37,000 sf
Drainage composite: 9,000 sf

Saint George Ball Park
Staten Island, NY
G.C.: Sal
D. Gangi Contracting
718-332-3436
Subcontracted from: Samleen, LLC

Runoff Pond
Bentofix GCL: 13,500 sf

EAST COAST LINER CO. INC.

Resume

Thomas Knoeringer

1585 Route 37 West – Unit 12
Toms River, NJ 08755

Tel 732-341-4000
Fax 732-341-5412

Employment History

2000 – Present Supervisor – East Coast Liner Co. Sales, service, installation and repairs of all types of lining systems.

1999 – 1986 Seaming Foreman – The Liner Co. Oversaw all seaming operations and conducted training for new employees. During his employment, Thomas was hands-on and personally involved in the installation of over 41,000,000 square feet of various lining systems.

1990 Completed Safety Training Program OSHA 29 CFR, 1910.120 conducted by Waste Management, Inc.

1985 – 1983 Master Seamer – The Liner Co. Completed installation training provided by Staff Industries (PVC & Hypalon), National Seal Company (HDPE) and Gundle Lining Systems (HDPE).

1982-1979 Started with The Liner Co. as a layout and seaming technician, successfully completing his field training in panel layout and various types of seaming methods.

Installation History – Partial listing of major projects

2001

NJ DOT - US Route 202
Reconstruction
G.C.: Parsippany Construction
Jim Dalton
610-837-8861
Subcontracted from: Liner System/Cover System

Runoff Pond
45 mil Reinforced Polyporpylene: 15,000 sf

GPU Whiting Substation
Manchester, NJ
G.C.: Henkels & McCoy
Ed McDonald
215-283-7634
Subcontracted from: The Liner Co., Inc.

Secondary Containment
40 mil PMC Petrogard: 1,200 sf

Town Hall Shopppes
Bricktown, NJ
G.C.: R. Stone and Company
Blaze Ionno
732-244-6771
Subcontracted from: The Liner Co., Inc.

Methane Barrier
40 mil HDPE: 22,000 sf

Hudson County Chromium Sites
Site 115
Jersey City, NJ
G.C.: The Haseley Company
Wesley (Sonny) Rohring
716-297-1550
Subcontracted from: Samleen, LLC

Containment Barrier
30 mil ORPVC: 72,000 sf

EAST COAST LINER CO. INC.

1565 Route 37 West – Unit 12
Toms River, NJ 08755

Tel 732-341-4000
Fax 732-341-5412

Resume

James Knoeringer

Employment History

2000 – Present Supervisor – East Coast Liner Co. Sales, service, installation and repairs of all types of lining systems.

1999 – 1986 Seaming Foreman – The Liner Co. Oversaw all seaming operations and conducted training for new employees. During his employment, Mr. Kunyz was hands-on and personally involved in the installation of over 41,000,000 square feet of various lining systems.

1990 Completed Safety Training Program OSHA 29 CFR, 1910.120 conducted by Waste Management, Inc.

1985 – 1983 Master Seamer – The Liner Co. Completed installation training provided by Staff Industries (PVC & Hypalon), National Seal Company (HDPE) and Gundle Lining Systems (HDPE).

1982-1979 Started with The Liner Co. as a layout and seaming technician, successfully completing his field training in panel layout and various types of seaming methods.

Installation History – Partial listing of major projects

2001

NJ DOT - US Route 202
Reconstruction
G.C.: Parsippany Construction
Jim Dalton
610-837-6861
Subcontracted from: Liner System/Cover System

Runoff Pond
45 mil Reinforced Polyporpylene: 15,000 sf

GPU Whiting Substation
Manchester, NJ
G.C.: Henkels & McCoy
Ed McDonald
215-283-7634
Subcontracted from: The Liner Co., Inc.

Secondary Containment
40 mil PMC Petrogard: 1,200 sf

Town Hall Shopppes
Bricktown, NJ
G.C.: R. Stone and Company
Blaze Ionno
732-244-6771
Subcontracted from: The Liner Co., Inc.

Methane Barrier
40 mil HDPE: 22,000 sf

Hudson County Chromium Sites
Site 115
Jersey City, NJ
G.C.: The Haseley Company
Wesley (Sonny) Rohring
716-297-1550
Subcontracted from: Samleen, LLC

Containment Barrier
30 mil ORPVC: 72,000 sf

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

TRIAL WELD INFORMATION

PROJECT NAME: Earle Landfill cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE / TIME	AMBIENT TEMP	SEAMER INITIALS	MACHINE NUMBER	EXTRUSION WELDS			FUSION WELDS			PEEL VALUES LBS / INCH			SHEAR VALUES LBS / INCH			PASS FAIL	COMMENTS
				BARREL TEMP	PREHEAT TEMP	WELD THICKNESS	WEDGE TEMP	SPEED FT / MIN	WHEEL SETTING								
1:30 12.2.02	40°	PK	137	X	X	X	750	5.5	300	134	141	137	192	178	187	P	
										126	123	119					
1:30 12.2.02	40°	JK	190	X	X	X	750	5.5	300	136	142	136	197	189	185	P	
										114	125	117					
820 12.3.02	20°	PK	137	X	X	X	750	5.5	300	127	148	140	229	219	217	P	
										137	138	129					
9:00 12.3.02	20°	JK	190	X	X	X	750	5.5	300	136	128	132	210	211	209	P	
										145	121	130					
2:00 12.3.02	20°	PK	137	X	X	X	750	5.5	300	132	127	129	205	199	207	P	
										129	131	123					
2:00 12.3.02	20°	JK	196	X	X	X	750	5.5	300	132	139	138	211	214	208	P	
										125	141	139					
8:30 12.4.02	20°	PK	137	X	X	X	750	5.5	300	121	129	123	201	199	197	P	
										125	132	131					
8:30 12.4.02	20°	JK	190	X	X	X	750	5.5	300	137	139	128	208	217	205	P	
										140	134	132					
1:15 12.4.02	20°	PK	190	X	X	X	750	5.5	300	137	141	131	201	200	215	P	
										139	135	132					
1:15 12.4.02	20°	JK	137	X	X	X	750	5.5	300	129	137	128	211	216	209	P	
										132	131	134					
AM 12.13.02	30°	JK	EXT 77 5	520	450	180mil	X	X	X	110	108	115	201	214	212	P	

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL PLACEMENT FORM

PROJECT NAME: Earle LandFill cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE/ TIME	PANEL NUMBER	ROLL NUMBER	PANEL LENGHT	PANEL WIDTH	COMMENTS / PANEL LOCATION
12.2.02	1	31813	98'	22.1	
12.2.02	2	31813	133'	22.1	
12.2.02	3	31813	153'	22.1	
12.2.02	4	31813	131'	22.1	
12.2.02	5	31817	35'	22.1	
12.2.02	6	31817	178'	22.1	
12.2.02	7	31817	183'	22.1	20,133.1 SF
12.3.02	8	31817	97'	22.1	
12.3.02	9	31815	92'	22.1	
12.3.02	10	31815	192'	22.1	
12.3.02	11	31815	192'	22.1	
12.3.02	12	31814	190'	22.1	
12.3.02	13	31814	190'	22.1	
12.3.02	14	31814	133	22.1	
12.3.02	15	31821	56	22.1	

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PANEL PLACEMENT FORM

PROJECT NAME: Earle Land Fill cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE/ TIME	PANEL NUMBER	ROLL NUMBER	PANEL LENGHT	PANEL WIDTH	COMMENTS / PANEL LOCATION
12.3.02	16	31821	189'	22.1	
12.3.02	17	31821	190'	22.1	
12.3.02	18	31821	64'	22.1	
12.3.02	19	31819	126'	22.1	
12.3.02	20	31819	190'	22.1	42,012.1 SF
12.4.02	21	31819	193'	22.1	
12.4.02	22	31816	196'	22.1	
12.4.02	23	31816	198'	22.1	
12.4.02	24	31816	106'	22.1	
12.4.02	25	31818	96'	22.1	
12.4.02	26	31818	186'	22.1	
12.4.02	27	31818	169'	22.1	
12.4.02	28	31818	63'	22.1	
12.4.02	29	31820	85'	22.1	
12.4.02	30	31820	115'	22.1	31,094.7

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL SEAMING FORM

PROJECT NAME: Earle Land Fill Cape
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE / TIME	SEAM NO.	PANEL NUMBERS	SEAM LENGTH	SEAMER INITIALS	MACHINE NUMBER	TEMP SETTING	WEATHER	WINDS	AMBIENT TEMP	DEST TEST P/F	COMMENTS
1:40 12·2·02	1/2	X	97'	PK	137	750	cloudy	0-5	40°		
1:45 12·2·02	2/3	X	133'	JK	190	750	cloudy	0-5	40°		
2:30 12·2·02	4/5	X	22.5	JK	190	750	cloudy	0-5	40°		
2:35 12·2·02	3/4+5	X	153'	PK	137	750	cloudy	0-5	40°		
3:30 12·2·02	4+5/6	X	166'	PK	137	750	cloudy	0-5	40°	P	DS #1 114' From East End of Seam
3:45 12·2·02	6/7	X	178'	JK	190	750	cloudy	0-5	40°		
8:20 12·3·02	8/9	X	22.1'	PK	137	750	Sunny	10-15	20°		
9:50 12·3·02	7/8+9	X	183'	JK	190	750	Sunny	10-15	20	P	DS #2 51' From East End of Seam
10:15 12·3·02	8+9/10	X	188'	PK	137	750	Sunny	10-15	20		
9:00 12·3·02	10/11	X	192'	PK	137	750	Sunny	10-15	20		
11:30 12·3·02	11/12	X	190'	JK	190	750	Sunny	10-15	20	P	DS #3 75' From East End of Seam
11:20 12·3·02	12/13	X	190'	PK	137	750	Sunny	10-15	20		
2:45 12·3·02	14/15	X	22.1	JK	190	750	Sunny	10-15	20		
2:58 12·3·02	13/14+15	X	199'	JK	190	750	Sunny	10-15	20		
2:45 12·3·02	14+15/16	X	189	PK	137	750	Sunny	10-15	20	P	DS #4 75' From East End of Seam

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL SEAMING FORM

PROJECT NAME: Earle LandFill Cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE / TIME	SEAM NO.	PANEL NUMBERS	SEAM LENGTH	SEAMER INITIALS	MACHINE NUMBER	TEMP SETTING	WEATHER	WINDS	AMBIENT TEMP	DEST TEST P/F	COMMENTS
3:30 12-3-02	16/17	X	199'	PK	137	750	Sunny	10-15	20°		
3:45 12-3-02	18/19	X	22.1'	JK	190	750	Sunny	10-15	20°		
4:00 12-3-02	17/18+19	X	189'	JK	190	750	Sunny	10-15	20°	P	DS #5 51' From East End of Seam
4:00 12-3-02	18+19/20	X	189'	PK	137	750	Sunny	10-15	20		
10:00 12-4-02	20/21	X	190'	PK	137	750	Sunny	0-5	20°		
9:45 12-4-02	21/22	X	193'	JK	190	750	Sunny	0-5	20°	P	DS #6 123' From East End of Seam
8:45 12-4-02	22/23	X	196'	PK	137	750	Sunny	0-5	20°		
10:00 12-4-02	24/35	X	22.1'	JK	190	750	Sunny	0-5	20°		
10:30 12-4-02	33/24+25	X	198'	JK	190	750	Sunny	0-5	20°	P	DS #7 92' From East End of Seam
11:00 12-4-02	24+25/26	X	186'	PK	137	750	Sunny	0-5	20°		
1:35 12-4-02	26/27	X	169'	PK	137	750	cloudy	0-5	20°	P	DS #8 40' From East End of Seam
1:35 12-4-02	28/29	X	22.1'	JK	190	750	cloudy	0-5	20°		
1:50 12-4-02	27/28+29	X	148'	JK	190	750	cloudy	0-5	20°		
2:50 12-4-02	28+29/30	X	115	PK	137	750	cloudy	0-5	20°	P	DS #9 78' From East End of Seam
											4142LP

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL SEAMING FORM

PROJECT NAME: Earle Land Fill Cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60mil Textured HDPE

DATE / TIME	SEAM NO.	PANEL NUMBERS	SEAM LENGTH	SEAMER INITIALS	MACHINE NUMBER	TEMP SETTING	WEATHER	WINDS	AMBIENT TEMP	DEST TEST P/F	COMMENTS
12.13.02	Patch 1	2/3	6'	JK	EXT #5	520	cloudy	0-5	30°		94' From East End of Seam
12.13.02	P2	3/4	6'	JK	EXT #5	520	cloudy	0-5	30°		87' From East End of Seam
12.13.02	P3	4/5	6'	JK	EXT #5	520	cloudy	0-5	30°		5' From North End of Seam
12.13.02	P4	4/6	12'	JK	EXT #5	520	cloudy	0-5	30°		114' From East End of Seam
12.13.02	Boot 1	5	15'	JK	EXT #5	520	cloudy	0-5	30°		10' From East End of Panel
12.13.02	P5	6/7	6'	JK	EXT #5	520	cloudy	0-5	30°		68' From East End of Seam
12.13.02	C2	7	15'	JK	EXT #5	520	cloudy	0-5	30°		51' From East End of Panel
12.13.02	C3	7	15'	JK	EXT #5	520	cloudy	0-5	30°		126' From East End of Panel
12.13.02	P6	7/9	12'	JK	EXT #5	520	cloudy	0-5	30°		51' From East End of Seam
12.13.02	P7	7/8	6'	JK	EXT #5	520	cloudy	0-5	30°		92' From East End of Seam
12.13.02	P8	10/11	6'	JK	EXT #5	520	cloudy	0-5	30°		68' From East End of Seam
12.13.02	P9	11/12	12'	JK	EXT #5	520	cloudy	0-5	30°		75' From East End of Seam
12.13.02	P10	11/12	6'	JK	EXT #5	520	cloudy	0-5	30°		10' From East End of Seam
12.13.02	P11	13/14	6'	JK	EXT #5	520	cloudy	0-5	30°		75' From East End of Seam
12.13.02	P12	14/16	12'	JK	EXT #5	520	cloudy	0-5	30°		75' From East End of Seam
12.13.02	P13	17/19	12'	JK	EXT #5	520	cloudy	0-5	30°		51' From East End of Seam

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

PANEL SEAMING FORM

PROJECT NAME: Earle Land Fill
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE / TIME	SEAM NO.	PANEL NUMBERS	SEAM LENGTH	SEAMER INITIALS	MACHINE NUMBER	TEMP SETTING	WEATHER	WINDS	AMBIENT TEMP	DEST TEST P/F	COMMENTS
12.13.02	P14	18/19	6'	JK	EXT #5	520	cloudy	0-5	30°		5' From North End of Seam
12.13.02	B5	19	15'	JK	EXT #5	520	cloudy	0-5	30°		51' From East End of Panel
12.13.02	B6	18	15'	JK	EXT #5	520	cloudy	0-5	30°		151' From East End of Panel
12.13.02	P15	21/22	6'	JK	EXT #5	520	cloudy	0-5	30°		126' From East End of Seam
12.13.02	P16	21/22	12'	JK	EXT #5	520	cloudy	0-5	30°		123' From East End of Seam
12.13.02	P17	21/22	6'	JK	EXT #5	520	cloudy	0-5	30°		70' From East End of Seam
12.13.02	B7	22	20'	JK	EXT #5	520	cloudy	0-5	30°		129' From East End of Panel
12.13.02	P18	23/24	12'	JK	EXT #5	520	cloudy	0-5	30°		93' From East End of Seam
12.13.02	P19	26/27	12'	JK	EXT #5	520	cloudy	0-5	30°		40' From East End of Seam
12.13.02	P20	29/30	12'	JK	EXT #5	520	cloudy	0-5	30°		75' From East End of Seam

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: Earle Land Fill Cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE/ TIME	SEAM NO.	TESTER INITIAL	AIR TESTING						VBOX P/F	LOCATION/COMMENTS
			PRESSURE			TIME		P/F		
			START	END	+/-	START	END			
12.2.02	1/2	JG	30	29	-1	2:12	2:17	P		
12.2.02	2/3	JG	30	30	0	2:35	2:40	P		0-94' From East end of Seam
12.2.02	2/3	JG	30	29	-1	2:35	2:40	P		94'-End of Seam
12.13.02	4/5	JK							P	V Box seam
12.2.02	3/4+5	JG	29	29	0	3:49	3:54	P		0-87' From East End of Seam
12.2.02	3/4+5	JG	30	30	0	3:49	3:54	P		87' To End of Seam
12.2.02	4+5/6	JG	30	29	-1	4:14	4:19	P		
12.2.02	5/6	JG	29	28	-1	4:30	4:35	P		East End of Seam
12.2.02	6/7	JG	29	29	0	4:30	4:35	P		68' End of Seam
12.3.02	8/9	JG	30	29	-1	9:05	9:10	P		
12.3.02	7/8+9	JG	30	30	0	11:42	11:47	P		0-92' From East End of Seam
12.3.02	7/8+9	JG	30	29	-1	11:42	11:47	P		92' To End of Seam
12.3.02	8+9/10	JG	30	30	0	11:52	11:57	P		
12.3.02	10/11	JG	30	29	-1	10:06	10:11	P		0-68' From East End of Seam
12.3.02	10/11	JG	30	30	0	10:06	10:11	P		68' to End of Seam
12.3.02	11/12	JG	29	28	-1	1:15	1:20	P		0'-10' From East End of Seam
12.3.02	11/12	JG	29	28	-1	1:15	1:20	P		10' to End of Seam
12.3.02	13/13	JG	30	30	0	1:31	1:36	P		
12.3.02	14/15	JG	30	29	-1	3:30	3:35	P		
12.3.02	13/14+15	JG	29	28	-1	3:47	3:52	P		0-75' From East End of Seam
12.3.02	13/14+15	JG	30	29	-1	3:47	3:52	P		75' to End of Seam
12.3.02	14+15/16	JG	30	30	0	4:01	4:06	P		
12.3.02	16/17	JG	29	28	-1	4:18	4:23	P		
12.13.02	18/19	JK							P	V Box
12.3.02	12/18+19	JG	29	29	0	4:41	4:46	P		
12.3.02	18+19/20	JG	30	29	-1	4:49	4:54	P		
12.4.02	20/21	JG	30	30	0	10:45	10:50	P		
12.4.02	21/22	JG	30	30	0	11:01	11:06	P		0-70' From East End of Seam
	21/22	JG	30	29	-1	11:01	11:06	P		70'-126'

EAST COAST LINER CO. INC.
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TOMS RIVER NJ. 08755
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NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: Earle Land Fill Cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE/ TIME	SEAM NO.	TESTER INITIAL	AIR TESTING						VBOX P/F	LOCATION/COMMENTS
			PRESSURE			TIME		P/F		
			START	END	+/-	START	END			
12.4.02	22/23	JG	30	30	0	11:25	11:30	P		
12.4.02	24/25	JG	30	30	0	11:37	11:42	P		
12.4.02	23/24+25	JG	29	28	-1	11:50	11:55	P		
12.4.02	24+25/26	JG	29	29	0	11:55	12:00	P		
12.4.02	26/27	JG	30	29	-1	2:05	2:10	P		
12.4.02	28/29	JG	29	29	0	2:17	2:22	P		
12.4.02	27/28+29	JG	29	28	-1	2:25	2:40	P		
12.4.02	28+29/30	JG	30	29	-1	2:12	2:17	P		
									P	V Box all Patches
12.13.02	P1-20	JK							P	V Box all Boots
12.13.02	B1-7	JK								

EAST COAST LINER CO. INC.
1565 ROUTE 37 WEST UNIT 12
TOMS RIVER NJ. 08755
PHONE [732] 341-4000 FAX [732] 341-5412

DESTRUCTIVE TEST LOG

PROJECT NAME: Earle Land Fill Cap
PROJECT NUMBER: Site 10

MATERIAL DESCRIPTION: 60 mil Textured HDPE

DATE/ TIME	SAMPLE I.D.	SEAM NUMBER	MACHINE NUMBER	OPER. INITIALS	PEEL VALUES LBS. / INCH					SHEAR VALUES LBS. / INCH					P/F	DATE TO LAB SLIP NO.	P/F	LOCATION / COMMENTS
12.3.02	DS #1	4/6	137	PK	136	142				219	201				P	12.4.02	P	114' From East End of Seam
					132	124												
12.4.02	DS #2	7/9	190	JK	129	139				212	214				P	12.4.02	P	51' From East End of Seam
					131	135												
12.4.02	DS #3	11/12	190	JK	127	130				207	215				P	12.4.02	P	75' From East End of Seam
					121	128												
12.4.02	DS #4	14/16	137	PK	135	139				210	211				P	12.4.02	P	75' From East End of Seam
					131	140												
12.4.02	DS #5	17/19	190	JK	129	127				214	218				P	12.4.02	P	51' From East End of Seam
					128	124												
12.4.02	DS #6	21/22	190	JK	131	129				211	210				P	12.4.02	P	123' From East End of Seam
					134	127												
12.4.02	DS #7	23/25	190	JK	129	127				205	207				P	12.4.02	P	93' From East End of Seam
					124	131												
12.4.02	DS #8	26/27	137	PK	131	134				211	215				P	12.4.02	P	40' From East End of seam
					127	129												
12.4.02	DS #9	29/30	137	PK	135	122				205	211				P	12.4.02	P	75' From East End of Seam
					131	129												

EAST COAST LINER CO. INC
DAILY JOB REPORT

DATE: 12-2-02

PROJECT: Earle Land fill cap site 10

GENERAL CONTRACTOR: Foster Wheeler Environmental

MEN ON JOB: 6 HOURS WORKED: 9

MORNING WEATHER: Cloudy TEMPERATURE: 30°
P.M. WEATHER: Cloudy TEMPERATURE: 40°

WIND: CALM: AM [ ] PM [ ] LIGHT: AM [X] PM [X] HEAVY: AM [ ] PM [ ]

ACTIVITIES:
Mob on site, Safety meeting, Set up equipment
Fill Sand bags Install 60 mil Tex HDPE

MATERIAL TYPE: 60mil HDPE

AMOUNT DEPLOYED:

AMOUNT COMPLETED: 20,133.1 SF

PROBLEMS ENCOUNTERED:

DELAYS IN PRODUCTION CAUSED BY:

HOURS DELAYED:

FORM COMPLETED BY: JL

ECL DAILY JOB REPORT

EAST COAST LINER CO. INC
DAILY JOB REPORT

DATE: 12-3-02

PROJECT: Earle Land Fill Cap Site 10

GENERAL CONTRACTOR: Foster Wheeler Environmental

MEN ON JOB: 6 HOURS WORKED: AC

MORNING WEATHER: Sunny TEMPERATURE: 20°
P.M. WEATHER: Sunny TEMPERATURE: 30°

WIND: CALM: AM [ ] PM [ ] LIGHT: AM [ ] PM [ ] HEAVY: AM [ ] PM [ ]

ACTIVITIES: Install 60 mil Textured HDPE Liner

MATERIAL TYPE: 60mil HDPE

AMOUNT DEPLOYED:

AMOUNT COMPLETED: 42,012.1 SF

PROBLEMS ENCOUNTERED:

DELAYS IN PRODUCTION CAUSED BY:

HOURS DELAYED:

FORM COMPLETED BY: CA

EAST COAST LINER CO. INC
DAILY JOB REPORT

DATE: 12-4-02

PROJECT: Earle Land Fill Cap site 10

GENERAL CONTRACTOR: Foster Wheeler Environmental

MEN ON JOB: 6 HOURS WORKED: 9-

MORNING WEATHER: Sunny TEMPERATURE: 20°
P.M. WEATHER: Cloudy TEMPERATURE: 20°

WIND: CALM: AM [ ] PM [ ] LIGHT: AM [X] PM [X] HEAVY: AM [ ] PM [ ]

ACTIVITIES: Install 60 mil Textured HDPE Liner

MATERIAL TYPE: 60 mil HDPE

AMOUNT DEPLOYED:

AMOUNT COMPLETED: 31,094.75 SF

PROBLEMS ENCOUNTERED:

DELAYS IN PRODUCTION CAUSED BY:

HOURS DELAYED:

FORM COMPLETED BY: JM

ECL DAILY JOB REPORT

EAST COAST LINER CO. INC
DAILY JOB REPORT

DATE: 12·13·02

PROJECT: Earle Land Fill Cap site 10

GENERAL CONTRACTOR: Foster Wheeler Environmental

MEN ON JOB: 6 HOURS WORKED: 8

MORNING WEATHER: Cloudy TEMPERATURE: 30°
P.M. WEATHER: Cloudy TEMPERATURE: 30°

WIND: CALM: AM [ ] PM [ ] LIGHT: AM [X] PM [X] HEAVY: AM [ ] PM [ ]

ACTIVITIES:
Detail work on Patches and Boots

MATERIAL TYPE:

AMOUNT DEPLOYED:

AMOUNT COMPLETED:

PROBLEMS ENCOUNTERED:

DELAYS IN PRODUCTION CAUSED BY:

HOURS DELAYED:

FORM COMPLETED BY: JG

When signed below, by the Field Superintendent of East Coast Liner Company, Inc., this document certifies the acceptance of the surface conditions of the subgrade to be covered by liner panel 1 through 30 of the Earle Landfill cap Site 10 liner system as numbered in the panel layout.

East Coast Liner Company, Inc. in accepting the surface conditions, makes no statement, warranty or certification as to the acceptability of the compaction, density, elevations or materials used to construct the subgrade.

Joseph Guerriero

SIGNATURE OF FIELD SUPERINTENDENT,
EAST COAST LINER COMPANY, INC.

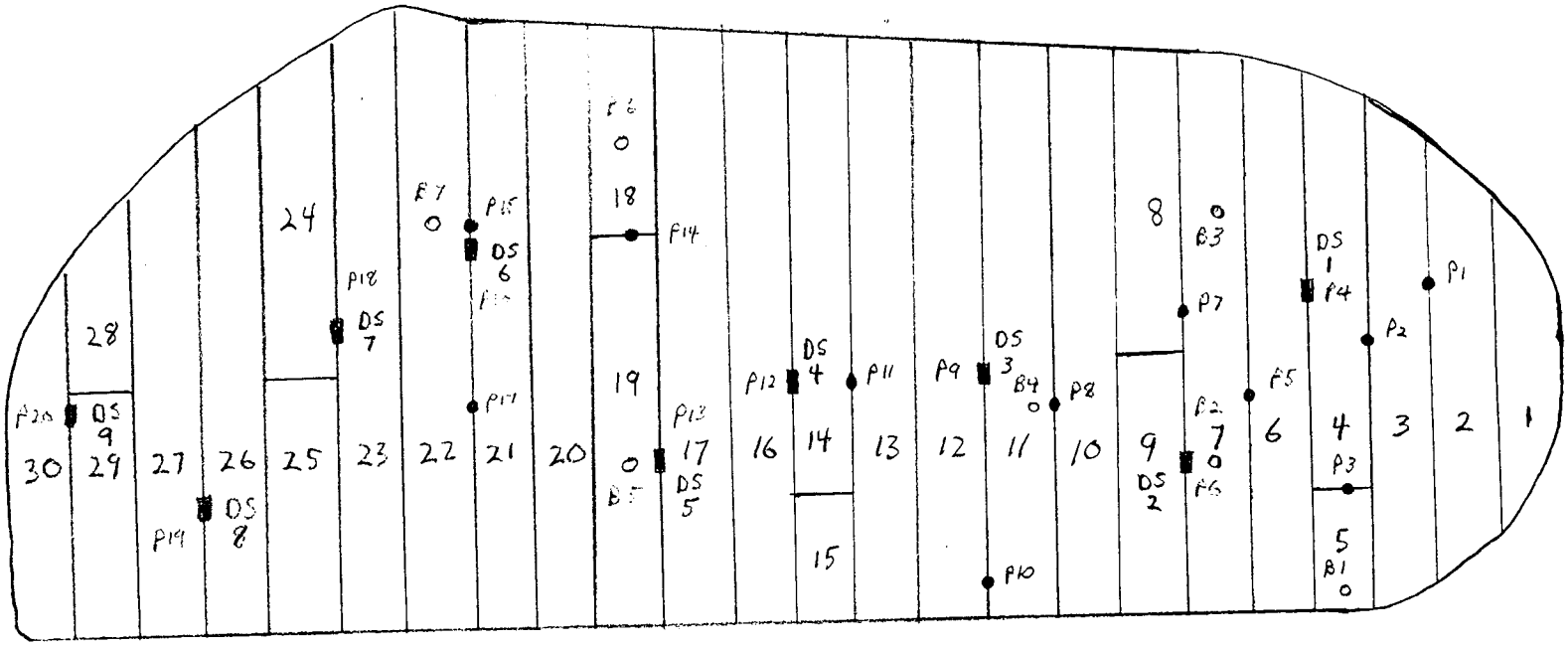
Joseph Guerriero

PRINTED NAME

12-2-02

DATE

:ECL SUBGRADE ACCEPTANCE FORM



NAVAL WEAPONS STATION EARLE
LANDFILL CAP SITE 10
EAST COAST LINER CO., INC.
AS BUILT

1" = 60'

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 19

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	December 21, 2002
TO:	DATE
M. DiGeambeardino (Hard Copy)	December 21, 2002

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic — DECEMBER 21, 2002
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10/13 , Specification Section 02323, Rip-Rap • Location of source and type • Grain size analysis • Soundness test • Gradation test • Certificate of cleanliness	James M. Lisic, CQA			No further action required

STAVOLA CONSTRUCTION MATERIALS, INC.

810 Thompson Ave.
Bound Brook, NJ. 08805
Phone (732) 356 - 5700, Fax (732) 356 - 2175

AGGREGATE ANALYSIS (ASTM D-5519)

Date: 12-12-02
Location: Bound Brook
Material: 3-5" Rip Rap (R-20)
Source: Stavola Construction Materials Inc., Bound Brook NJ
Technician: Ed Acquaro

Scale Location: Bound Brook Quarry Lab
Capacity: 125Lb. (0.1 Lb. accuracy)
Seal Date 1st Quarter, 2002

Soundness, % Loss (5 Cycles - Sodium Sulfate - ASTM C-88):	2.15	10.0	Max.
L.A. Abrasion, % Wear (ASTM C-131):	10.3	50.0	Max.
Specific Gravity (ASTM C-127):	2.92		
Water Absorption, % (ASTM C-127):	0.37		
Flat & Elongated, % (CRDC-119):	0.0		

Sieve Size		Weight Retained (lbs.)	% Retained	% Passing	Average Piece Mass (lb.)	Particle Count
7"	175mm	0.0	0.0	100.0		
6 1/2"	162.5	0.0	0.0	100.0		
6"	150	0.0	0.0	100.0	0.0	0
5 1/2"	137	205.0	43.8	56.2	13.5	15
5"	125	116.1	24.8	31.4	11.0	11
4 1/2"	112.5	27.1	5.8	25.6	7.5	4
4"	100	49.1	10.5	15.1	5.0	10
3 1/2"	87.5	37.9	8.1	7.0	3.2	12
3	75	18.7	4.0	3.0	2.2	9
2 1/2"	62.5	0.0	0.0	3.0		
2"	50	0.0	0.0	3.0		
1 1/2"	37.5	0.0	0.0	3.0		
1"	25	0.0	0.0	3.0		
3/4"	19	0.0	0.0	3.0		
1/2"	12.5	14.0	3.0			

Total Weight: 467.9

E Acquaro
Q.C. TECHNICIAN

Stavola Company, Inc.

PO Box 482, Red Bank, NJ 07701 (732)542-2328 Fax(732)389-5372

October 23, 2002

RAM Trucking
Fax (732) 938-3632

Re: Earle Naval Weapon Station

Dear Frank:

This is to certify that 1 ½" clean stone supplied to you, meets New Jersey Department of Transportation standard specifications and quality requirements. The most recent gradation is as follows:

1 1/2" CLEAN STONE

SIEVE SIZE	% PASSING	SPECIFICATION
2 ½"	100	100
2"	98.1	95 - 100
1 ½"	59.6	25 - 70
1"	3.0	0 - 15
½"	.5	0 - 5

Please be advised that the material supplied from our Stavola Construction Material Quarry, Lot 15, Block 6401, Bridgewater Township, is free of any hazardous materials or contamination and is considered to be clean virgin material.

If any further information should be required concerning this material, please feel free to contact me at (732) 542-2328, extension 236.

Respectfully submitted,

Stavola Construction Materials, Inc.

Lee Parisi

Lee Parisi

Quality Control Coordinator

LP/cf

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 20

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM: **Foster Wheeler Environmental Corp.: Site QC Manager James Lisic**	DATE January 3, 2003
TO: **M. DiGeambeardino (Hard Copy)**	DATE January 3, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic — JANUARY 3, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-12 , Specification Section 02771, HDPE Liner • Seam destruct tests • Geomembrane thickness tests	James M. Lisic, CQA			No further action required

GeoTesting Express
1145 Mass Avenue - Boxborough, MA 01719
(978) 635-0424 - Fax (978) 635-0266

LETTER OF TRANSMITTAL

TO:

Mr. Rick Woodworth
Foster Wheeler Environmental
One Oxford Valley
Suite 200
2300 Lincoln Highway
Langhorne, PA 19047

DATE: 12/06/02 | GTX NO: 4366

RE: Site 10 NWS Earle Project

Pages (excluding transmittal): 27

We are sending you ☑ Attached ☐ Under separate cover via _____ the following items:
☑ Test results ☐ Proposal ☑ Report ☐ Samples ☐ Specifications ☐ Invoice
☐ Copy of letter ☐ Change order
☐ Other

COPIES	DATE	DESCRIPTION
1	12/06/02	December 2002 Laboratory Test Reports
		9 Seam Destructive Tests (ASTM D 4437)
		14 Thickness of Textured Geomembrane (GRI method GM8)
		4 Thickness of Smooth Geomembranes (ASTM D 5199)

THESE ITEMS ARE TRANSMITTED as checked below:
☐ For approval ☐ Approved as submitted ☐ Resubmit _____ Copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ Copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return
☐ For review and comment
☐ For bids due _____, 20
☐ _____

REMARKS

_____

_____

_____

COPY TO _____

SIGNED _____

Joseph D. Tomei – Laboratory Manager

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Colts Neck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 1 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS1
Seam: 6/4
Machine ID: 137

Date Sampled: 12/02/02
Welder ID: PK

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	94	---	FTB/SE1	120	---	FTB/SE1	140	---	*
2	116	---	FTB/SE1	113	---	FTB/SE1	143	---	*
3	116	---	FTB/SE1	115	---	FTB/SE1	144	---	*
4	120	---	FTB/SE1	119	---	FTB/SE1	140	---	FTB/BRK
5	109	---	FTB/SE1	112	---	FTB/SE1	139	---	*
Average	**111**	---	---	**116**	---	---	**141**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 2 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS2
Seam: 7/9
Machine ID: 190

Date Sampled: 12/03/02
Welder ID: JK

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	117	---	FTB/SE1	120	---	FTB/SE1	139	---	*
2	96	---	FTB/SE1	119	---	FTB/SE1	142	---	*
3	117	---	FTB/SE1	114	---	FTB/SE1	144	---	*
4	112	10	FTB/AD-BRK	109	---	FTB/SE1	139	---	*
5	109	---	FTB/SE1	120	---	FTB/SE1	138	---	*
Average	**110**	---	---	**116**	---	---	**140**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 3 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS3
Seam: 12/11
Machine ID: 190

Date Sampled: 12/03/02
Welder ID: JK

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	108	---	FTB/SE1	125	---	FTB/SE1	137	---	*
2	111	---	FTB/SE1	110	---	FTB/SE1	140	---	*
3	102	---	FTB/SE1	108	---	FTB/SE1	140	---	*
4	120	---	FTB/SE1	113	---	FTB/SE1	137	---	*
5	124	---	FTB/SE1	113	---	FTB/SE1	137	---	*
Average	**113**	---	---	**114**	---	---	**138**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 4 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS4
Seam: 14/16
Machine ID: 139

Date Sampled: 12/03/02
Welder ID: PK

	Peel Strength						Shear Strength		
	Weld A			Weld B					
Specimen Number	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	115	---	FTB/SE1	116	---	FTB/SE1	137	---	*
2	113	---	FTB/SE1	115	---	FTB/SE1	140	---	*
3	123	---	FTB/SE1	109	---	FTB/SE1	141	---	*
4	119	---	FTB/SE1	103	60	FTB/AD-BRK	136	---	*
5	97	---	FTB/SE1	116	---	FTB/SE1	136	---	*
Average	**113**	---	---	**112**	---	---	**138**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 5 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS5
Seam: 19/17
Machine ID: 190

Date Sampled: 12/03/02
Welder ID: JK

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	115	---	FTB/SE1	104	---	FTB/SE1	138	---	*
2	97	---	FTB/SE1	115	---	FTB/SE1	140	---	*
3	104	---	FTB/SE1	110	---	FTB/SE1	142	---	*
4	115	---	FTB/SE1	110	---	FTB/SE1	135	---	*
5	106	---	FTB/SE1	108	---	FTB/SE1	135	---	*
Average	**107**	---	---	**109**	---	---	**138**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: —

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 6 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Welc

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS6
Seam: 21/22
Machine ID: 190

Date Sampled: 12/04/02
Welder ID: JK

	Peel Strength						Shear Strength		
	Weld A			Weld B					
Specimen Number	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	124	---	FTB/SE1	106	---	FTB/SE1	140	---	*
2	120	---	FTB/SE1	108	---	FTB/SE1	143	---	*
3	119	---	FTB/SE1	110	---	FTB/SE1	145	---	*
4	124	---	FTB/SE1	111	---	FTB/SE1	139	---	*
5	110	---	FTB/SE1	112	---	FTB/SE1	140	---	*
Average	**119**	---	---	**109**	---	---	**141**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 7 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS7
Seam: 25/23
Machine ID: 190

Date Sampled: 12/04/02
Welder ID: JK

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	107	---	FTB/SE1	110	---	FTB/SE1	139	---	*
2	108	---	FTB/SE1	111	---	FTB/SE1	141	---	*
3	110	---	FTB/SE1	103	---	FTB/SE1	141	---	*
4	117	---	FTB/SE1	102	---	FTB/SE1	135	---	*
5	113	---	FTB/SE1	110	---	FTB/SE1	136	---	*
Average	**111**	---	---	**107**	---	---	**138**	---	---

Comments:
Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 8 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS8
Seam: 26/27
Machine ID: 137

Date Sampled: 12/04/02
Welder ID: PK

	Peel Strength						Shear Strength		
	Weld A			Weld B					
Specimen Number	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	124	---	FTB/SE1	114	---	FTB/SE1	138	---	*
2	105	---	FTB/SE1	115	---	FTB/SE1	141	---	*
3	118	---	FTB/SE1	97	---	FTB/SE1	142	---	*
4	112	---	FTB/SE1	110	---	FTB/SE1	137	---	*
5	111	---	FTB/SE1	109	---	FTB/SE1	137	---	*
Average	**114**	---	---	**109**	---	---	**139**	---	---

Comments:

Tested By: RMT
Checked By: JDT

* = test halted after 2 inches of dispiacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

Client: Foster Wheeler Environmental
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ
Installer: ---

GTX #: 4366
Test Date: 12/05/02
Report #: 1
Page: 9 of 9

Upper Geomembrane: 60 mil textured HDPE
Lower Geomembrane: 60 mil textured HDPE
Seaming Method: Dual Hot-Wedge Weld

Testing Machine: Instron 1123
Testing Speed: 2 in/min

Grips: ATS pneumatic
Specimen Size: 1 in x 8 in

Sample ID: DS9
Seam: 30/29
Machine ID: 137

Date Sampled: 12/04/02
Welder ID: PK

	Peel Strength						Shear Strength		
	Weld A			Weld B					
Specimen Number	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb /in	Delamination, %	Failure Type
1	116	---	FTB/SE1	109	---	FTB/SE1	140	---	*
2	108	---	FTB/SE1	116	---	FTB/SE1	141	---	*
3	106	---	FTB/SE1	108	---	FTB/SE1	144	---	*
4	111	---	FTB/SE1	114	---	FTB/SE1	138	---	*
5	101	---	FTB/SE1	115	---	FTB/SE1	138	---	*
Average	**108**	---	---	**112**	---	---	**140**	---	---

Comments:

Tested By: RMT
Checked By JDT

* = test halted after 2 inches of displacement

Notes: These results apply only to the sample tested for the specific test conditions. The test procecures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS1 Panel #4		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	65.1
2	63.0
3	64.8
4	64.5
5	65.4
6	63.1
7	65.1
8	69.4
9	62.1
10	66.0
Average	64.9
Standard Deviation	2.02
Coefficient of Variation	3.11

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting Express, Inc. • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS1 Panel #6		
Sample Description:	60 mil textured HDPE geomembrane (smooth seaming edge tested. see note below)		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	63-65 g
Presser Foot:	0.25 in. diameter	**Loading Time:**	5 sec

Measurement Number	Thickness, mil
1	65.7
2	61.1
3	62.8
4	64.5
5	61.6
6	66.4
7	64.6
8	64.5
9	63.9
10	61.6
Average	63.6
Standard Deviation	1.81
Coefficient of Variation	2.84

Comments:

Tested By: mch
Checked By: jdt

Note: **Only the smooth seaming edge of this panel was provided for testing, therefore testing method for smooth geomembrane was followed.**

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the ind cated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS2 Panel #7		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	62.6
2	61.8
3	64.3
4	62.2
5	62.3
6	61.6
7	60.5
8	60.8
9	60.3
10	60.6
Average	61.7
Standard Deviation	1.23
Coefficient of Variation	1.99

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS2 Panel #9		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	63.7
2	60.4
3	60.5
4	62.4
5	60.0
6	60.4
7	64.0
8	57.1
9	57.0
10	60.7
Average	60.6
Standard Deviation	2.36
Coefficient of Variation	3.89

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS3 Panel #11		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	64.0
2	64.1
3	60.1
4	59.6
5	59.2
6	60.5
7	59.9
8	60.7
9	61.8
10	60.3
Average	61.0
Standard Deviation	1.75
Coefficient of Variation	2.87

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS3 Panel #12		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	60.5
2	60.2
3	56.4
4	60.2
5	60.0
6	60.1
7	61.2
8	60.0
9	31.5
10	60.3
Average	60.0
Standard Deviation	1.37
Coefficient of Variation	2.28

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS4 Panel #14
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	61.1
2	57.8
3	58.4
4	57.6
5	62.6
6	60.1
7	62.5
8	60.8
9	63.1
10	61.4
Average	60.6
Standard Deviation	1.92
Coefficient of Variation	3.17

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS4 Panel #16
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.1
2	60.8
3	60.7
4	60.1
5	60.7
6	59.8
7	59.9
8	60.3
9	58.0
10	62.3
Average	60.2
Standard Deviation	1.06
Coefficient of Variation	1.80

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS5 Panel #17
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.3
2	62.3
3	60.9
4	60.3
5	62.0
6	60.6
7	59.7
8	62.7
9	59.9
10	61.5
Average	61.0
Standard Deviation	1.04
Coefficient of Variation	1.71

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS5 Panel #19
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	61.8
2	61.9
3	60.0
4	60.7
5	60.8
6	61.1
7	61.1
8	60.9
9	61.8
10	60.5
Average	61.0
Standard Deviation	0.61
Coefficient of Variation	1.00

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS6 Panel #21
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.3
2	61.7
3	60.9
4	59.4
5	61.2
6	62.1
7	61.6
8	60.9
9	59.7
10	60.5
Average	60.8
Standard Deviation	0.86
Coefficient of Variation	1.42

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Colineck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS6 Panel #22
Sample Description: 60 mil textured HDPE geomembrane (smooth seaming edge tested, see note below)

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: 0.25 in. diameter

Pressure: 63-65 g
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	63.4
2	59.8
3	62.9
4	61.5
5	64.2
6	61.7
7	62.2
8	59.3
9	63.4
10	62.6
Average	62.1
Standard Deviation	1.60
Coefficient of Variation	2.57

Comments:

Tested By: mch
Checked By: jdt

Note: **Only the smooth seaming edge of this panel was provided for testing, therefore testing method for smooth geomembrane was followed.**

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS7 Panel #23
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.4
2	62.3
3	61.4
4	61.0
5	62.6
6	62.1
7	60.1
8	60.9
9	61.2
10	59.9
Average	61.2
Standard Deviation	0.93
Coefficient of Variation	1.52

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS7 Panel #25
Sample Description: 60 mil textured HDPE geomembrane (smooth seaming edge tested, see note below)

Testing Machine: Mitutoyo Digimatic Indicator, Model #. IDC-112E
Presser Foot: 0.25 in. diameter

Pressure: 63-65 g
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	62.5
2	58.4
3	58.5
4	63.3
5	61.7
6	62.9
7	61.4
8	62.2
9	62.4
10	62.1
Average	61.5
Standard Deviation	1.71
Coefficient of Variation	2.79

Comments:

Tested By: mch
Checked By: jdt

Note: **Only the smooth seaming edge of this panel was provided for testing, therefore testing method for smooth geomembrane was followed.**

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS8 Panel #26
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.5
2	58.9
3	60.8
4	60.1
5	58.4
6	62.2
7	62.3
8	63.2
9	60.8
10	61.0
Average	60.8
Standard Deviation	1.49
Coefficient of Variation	2.46

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS8 Panel #27		
Sample Description:	60 mil textured HDPE geomembrane (smooth seaming edge tested, see note below)		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	63-65 g
Presser Foot:	0.25 in. diameter	**Loading Time:**	5 sec

Measurement Number	Thickness, mil
1	62.8
2	61.6
3	61.1
4	58.9
5	62.6
6	60.5
7	61.3
8	60.0
9	61.4
10	60.8
Average	61.1
Standard Deviation	1.15
Coefficient of Variation	1.89

Comments:

Tested By: mch
Checked By: jdt

Note: **Only the smooth seaming edge of this panel was provided for testing, therefore testing method for smooth geomembrane was followed.**

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client:	Foster Wheeler	**GTX #:**	4366
Project Name:	Site 10 NWS Earle	**Test Date:**	12/05/02
Project Location:	Coltneck, NJ		
Sample ID:	DS9 Panel #29		
Sample Description:	60 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	59.9
2	62.7
3	58.7
4	61.7
5	60.0
6	61.6
7	61.6
8	60.9
9	59.2
10	60.9
Average	60.7
Standard Deviation	1.26
Coefficient of Variation	2.07

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by GRI method GM8 (ASTM D 5994)

Client: Foster Wheeler
Project Name: Site 10 NWS Earle
Project Location: Coltneck, NJ

GTX #: 4366
Test Date: 12/05/02

Sample ID: DS9 Panel #30
Sample Description: 60 mil textured HDPE geomembrane

Testing Machine: Mitutoyo Digimatic Indicator, Model #: IDC-112E
Presser Foot: cone point
Specimen Size: 2 inch diameter

Pressure: 2.0 oz
Loading Time: 5 sec

Measurement Number	Thickness, mil
1	60.8
2	61.2
3	61.9
4	59.4
5	60.9
6	62.3
7	59.2
8	60.2
9	62.5
10	62.8
Average	61.1
Standard Deviation	1.25
Coefficient of Variation	2.05

Comments:

Tested By: mch
Checked By: jdt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 21

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 3, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 3, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M Lisic JANUARY 3, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02/10 , Specification Section 02501, Reinforced Concrete pipe and Headwalls • Manufacturer's specifications • Concrete test results	James M. Lisic, CQA			No further action required

Garden State PRECAST INC

STREET ADDRESS:
1630 Wycoff Road
Wall, NJ 07719

MAILING ADDRESS:
P.O. Box 702
Farmingdale, NJ 07727

PHONE:
(732) 938-4436
TOLL FREE:
(800) 501-9522
FAX:
(732) 938-6069

FAX TRANSMITTAL

Date: 12-3-03

To: Foster Wheeler

Attention: Jim

Fax #: 732-761-8514

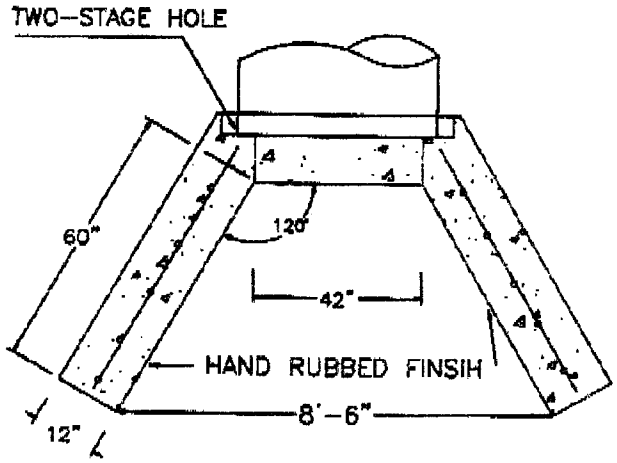
Number of pages including cover: 3

Description of items being faxed:

Please reply to: Diane

PIPE DIA.	STANDARD HOLE SIZE *	DIM "A"	DIM "B"
24"RCP	24"/34"	38"	12"
27"RCP	27"/36"	36"	12"
30"RCP	30"/42"	30"	12"
36"RCP	36"/48"	27"	9"

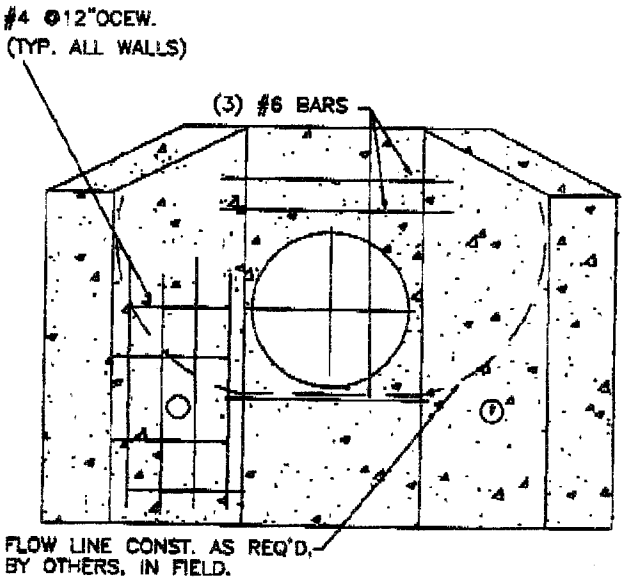
* HOLE SIZE CAN BE MODIFIED TO ACCOMODATE OTHER TYPES OF PIPE.



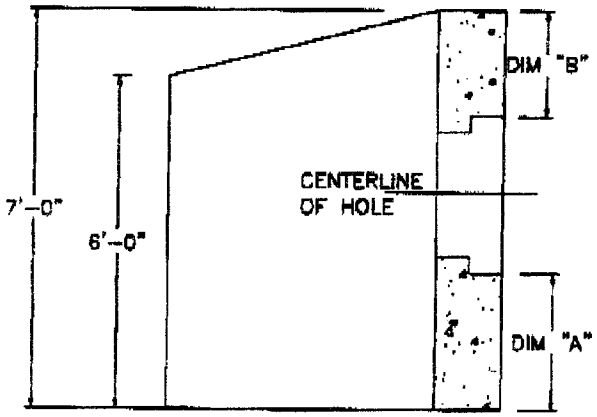
PLAN

NOTE:

1). 4000 PSI CONCRETE @ 28DAYS.
2). REINFORCING STEEL PER ASTM A-615.
3). WEIGHT: 6.2 TONS.
4). 1" CHAMFER ON EXPOSED EDGES.
5). NOT TO SCALE.
6). ANY DEVIATION FROM THIS DRAWING MUST BE IN WRITING PRIOR TO PRODUCTION.
7.) HEADWALLS DESIGNED BY A NJ PROFESSIONAL ENGINEER IN ACCORDANCE WITH ASTM C-890 DESIGN LOADING, COPIES AVAILABLE BY REQUES



FRONT VIEW



SECTION

HEADWALL "B"
WITH STEP HOLE

GARDEN STATE PRECAST
FARMINGDALE, N.J.
PHONE #: 732-938-4436
FAX #: 732-938-6069

HDWBSTEP

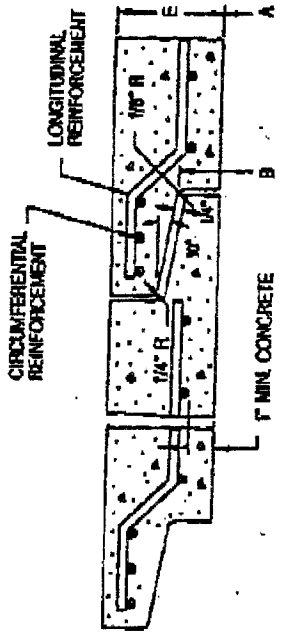
VIANINI PIPE, INC.

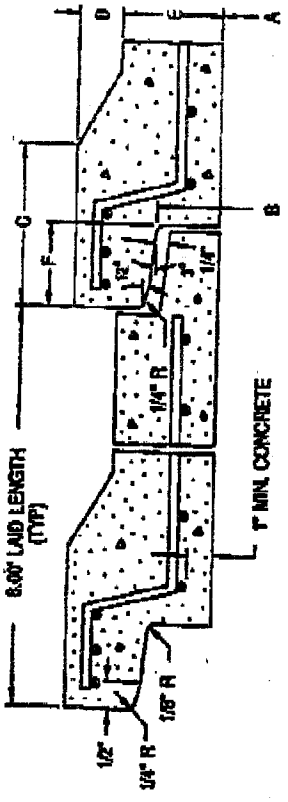
Section V Page 2

VIANINI REINFORCED CONCRETE PIPE

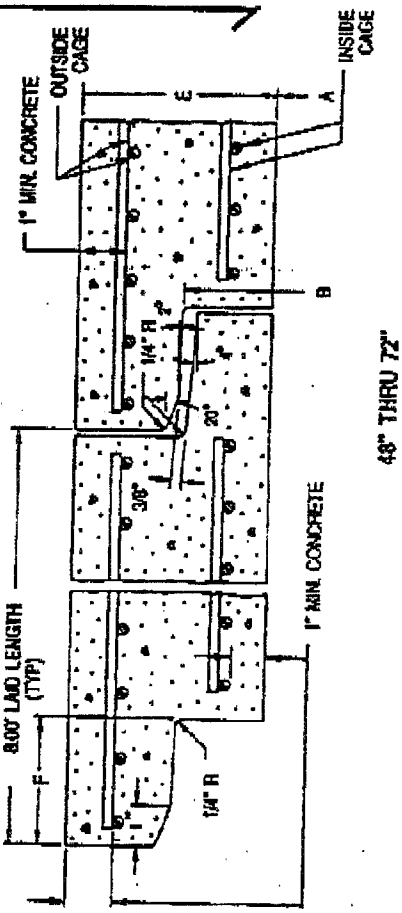
V-8
Slip-Joint

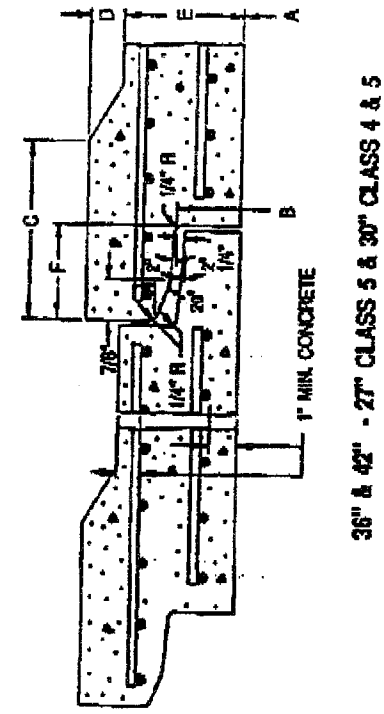
21" & 24"





36" & 42" - 27" CLASS 5 & 30" CLASS 4 & 5





48" THRU 72"

A	INSIDE DIA.	IN.	12	15	18	21	24	27	30	36	42	48	54	60	66	72	78
B	JOINT DIA.	IN.	14.16	17.06	20.06	23.41	26.41	30.71	34.00	40.00	46.28	52.78	58.71	65.21	71.38	77.88	84.38
C	BELL MOD. LENGTH	IN.	4.75	4	4	-	-	6.50	7	7.50	7.50	-	-	-	-	-	-
D	BELL MOD. RISE	IN.	.75	0.75	0.75	-	-	1.25	1.25	0.75	0.50	-	-	-	-	-	-
E	WALL 'T'	IN.	2	2.25	2.50	2.75	3	3.25	3.50	4	4.50	5	5.50	6	6.50	7	7.50
F	JOINT DEPTH	IN.	2	2	2	3.50	3	3.50	3.50	3.50	4	4	5	5	5	5	5
	WEIGHT PER FOOT	IN.	104	129	169	230	282	350	406	552	714	896	1110	1342	1604	1862	2194
A.S.T.M. C - 76 STL. REINFORCED IN. SQ./FT.	CLASS 3	INSIDE	0.07	0.07	0.07	0.07	0.07	0.16	0.18	0.17	0.21	0.24	0.29	0.34	0.41	0.49	0.57
		OUTSIDE	-	-	-	-	-	-	-	0.10	0.13	0.14	0.17	0.20	0.25	0.29	0.34
	CLASS 4	INSIDE	0.07	0.10	0.14	0.20	0.27	0.31	0.24	0.30	0.35	0.42	0.50	0.59	0.69	0.79	
		OUTSIDE	-	-	-	-	-	-	0.14	0.18	0.21	0.25	0.30	0.35	0.41	0.47	
	CLASS 5	INSIDE	0.10	0.14	0.19	0.24	0.30	0.38	0.41	0.50	0.60	0.73	0.82	0.98			
		OUTSIDE	-	-	-	-	-	0.23	0.25	0.30	0.36	0.44	0.49	0.59			

Garden State Precast, Inc.

1630 WYCKOFF RD.
WALL TWP., NJ 07719
PHONE 732-938-4436

P.O. BOX 702
FARMINGDALE, NJ 07727
FAX 732-938-6069

FAX TRANSMITTAL

DATE: 1-6-03 FAX# 732-761-8514

COMPANY FOSTER WHEELER

ATTN: JIM LISIC

MESSAGE: HERE IS THE CONCRETE TEST REPORT FOR THE 7 DAY BREAKS ON THE HEADWALLS YOU ASKED FOR. IF YOU NEED THE 28 DAY BREAK REPORT, PLEASE LET ME KNOW AND I WILL SEND THEM WHEN I RECIEVE THEM.

Jerry A. Fagan

Q/C

PLEASE REPLY TO:

NO. OF PAGES INCLUDING COVER 3

Garden State PRECAST INC

GARDEN STATE PRECAST

CYLINDER TESTS

DATE CAST 12-10-2 DATE SENT 12-16-02

PROJECT Hill 5000 psi CTL# C-61

CYL. MARK GSP 108E-H SLUMP 4.5"

TEMP. 63° BREAK 7/28 DAYS

AIR CONTENT 5.3% UNIT WIEGHT 144.9

SUPER "P": YES ____ NO X

CTL
CERTIFIED TESTING LABORATORIES, INC.

CLIENT: Garden State Pre-Cast, Inc.
P.O. Box 702
Farmingdale, NJ 0772

DATE CAST: 12-10-02
DATE REC'D: 12-16-02
LAB NO: B-706-02
REPORT NO: C-61
SAMPLED BY: client

PROJECT: Garden State Pre-Cast
TEST REQUIRED: Compressive Strength: 5000 PSI
MATERIAL: Concrete
LOCATION OF POUR: -

SPECIMEN NO.	CONDITION OF SPECIMEN	AREA OF SPECIMEN	DATE TESTED	AGE OF SPECIMEN	TYPE OF FRACTURE	TOTAL LOAD LBS.	COMPRESSIVE STRENGTH PSI
G-61	Satis.	28.27	12-17	7	Cone	117,000	4140
			12-17	7	Cone	120,000	4250
			1-17	28			
			1-17	28			

SET NO.: 108E-108H
SLUMP (ASTM C143): 4 ½"
AIR CONTENT (ASTM C231/C173): 5.3%
TEMPERATURE OF CONCRETE (ASTM C1064): 63°
AMBIENT TEMPERATURE: -
TRUCK NO.:
TIME OF CASTING: 2:30

Specimen cured in accordance with ASTM C31/C192.

RESPECTFULLY SUBMITTED,
Certified Testing Laboratories, Inc.

Terry Kifer, General Manager

REPORTED TO: /ae

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL CONTROL NO. 22

EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 02830, Cable Fence and Vehicle Gate • Manufacturer's product data	James M. Lisic, CQA			No further action required

ATTN: JIM LISIC

Stephens Pipe & Steel, LLC.
P.O. Box 618, 2224 East Highway 619
Russell Springs, Kentucky 42642
270 866 3331 800 451 2612 Fax 270 866 4412

1/7/2003

To:
H.KEES & SONS, INC
183 ASBURY ROAD
FARMINGDALE, NJ 07727

REF: Materials delivered to H.KEES & SONS, INC
Invoice # 1216363, Dated: 12/17/2002

To Whom It May Concern:

This is to certify that the above referenced material(s) meet the following specifications:

Steel Pipe Framework:
RR-F-191/3D Grade A * ASTM F-1083
* AASHTO M181-81 Galvanized 1.8 oz

Thank you,

Terry L. Stephens, President
Stephens Pipe & Steel, LLC

P.O. Box 277 • East St. Louis, IL 62202 • (618) 274-6520 • Fax (618) 274-6786

COMMODITY GALVANIZED AIRCRAFT CABLE

CONSTRUCTION 7 x 19 ORDER NO. 9558

STRENGTH & DIMENSIONAL PORTIONS MIL-W-83420E GRADE GA770

LUBRICATION DRY

LENGTH 5,000 Ft. R REEL #(S) 569-574

NET WEIGHT 646.85 Lbs GROSS WEIGHT 692.10 Lbs

TEST RESULTS

DIAMETER OF ROPE 1/4"-5/16" Actual .541 in/inch

KIND OF ROPE LAY REGULAR LAY LENGTH 4.128 in/inch

BREAKING STRENGTH OF ROPE (specific) 7,000 Actual 7,110 Lbs. Lbs

NOMINAL DIAMETER OF WIRE .042 in/inch

TENSILE STRENGTH OF WIRE 180 Lbs/PSI

NUMBER OF TORSION OF WIRES 34 Times

WEIGHT OF ZINC COATING .46 gal/ft² Preformed GOOD

CHEMICAL ANALYSIS OF WIRE ROD

HEAT NO.	C	Si	Mn	P	S
X 84001	0.61	0.19	0.48	0.020	0.006

REMARKS : L/O NO : 6A3S6074

1/4"-5/16" PVC COATED CLEAR

CHIEF OF QUALITY CONTROL DEPT

H. KEES AND SONS, INC.

FENCES OF ALL TYPES SINCE 1964

COMMERCIAL - INDUSTRIAL - RESIDENTIAL - AUTOMATIC GATE SYSTEMS

183 ASBURY ROAD FARMINGDALE, N.J. 07727

732-938-4955 732-531-9193 FAX 732-462-5152 www.hkees.com

"SERVICE IS OUR MOST IMPORTANT PRODUCT"

1-9-03

ATTN: JIM LISIK

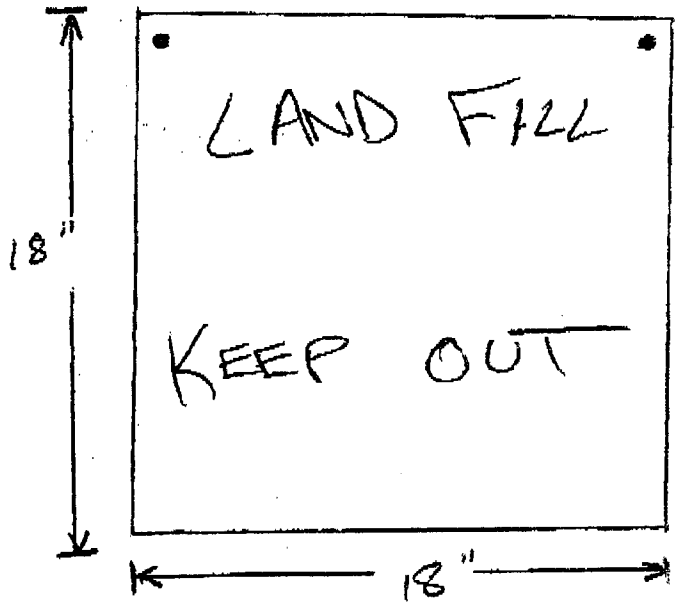
@ FOSTER WHEELER ENVIRONMENT CORPORATION

RE: NAVAL WEAPONS STATION EARLE

COLTS NECK, NEW JERSEY

UNIT 6 SITES 3 AND 10

THE FOLLOWING SIGNS ARE TO BE PLACED EVERY 200 LINEAL FEET ON 4' HIGH CABLE FENCE.



ALUMINUM SIGNS
YELLOW LETTERS
ON BLACK
BACK GROUND

Barbara Kees

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL CONTROL NO. 23

EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

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COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-05, Specification Section 03300, Cast in Place Concrete • Mix design for the cable fence posts	James M. Lisic, CQA			No further action required

CENTRAL
CONCRETE AND SUPPLY CORP
a U.S. CONCRETE COMPANY

PO Box 932 * Farmingdale, NJ 07727
Tel: 732/919-0170 Fax: 732/919-1812

Facsimile

Date: 1-10-03

To: Jim / FOSTER WHEELER Fax: 732-761-8514

From: Bill RE: DESIGN 2500 PSI

Total Pages Including cover sheet: 1

DESIGN WEIGHTS 2500 PSI CONCRETE

CEMENT 380
STONE 1759
COARSE SAND 1526
AIR 2 oz
NC 534 ACEL 12 oz/100/cem
WATER 22 GAL.

POZZOLITH® NC 534

Non-chloride accelerating admixture

DESCRIPTION:

POZZOLITH NC 534 ready-to-use, non-chloride liquid admixture is formulated to accelerate setting times, increasing early and ultimate strengths in cold weather. POZZOLITH NC 534 complies with ASTM C-494 requirements for Type C accelerating admixtures.

RECOMMENDED FOR:

- Use in concrete applications where accelerated setting time and increased early strengths are desired.

FEATURES/BENEFITS:

- Accelerates setting times across a wide range of temperatures.
- Increases early and ultimate compressive and flexural strengths.
- Earlier finishing of flatwork.
- Earlier stripping and reuse of forms.
- Earlier finishing of slabs — reduced labor costs.
- Compatible with concrete containing other admixtures.

PACKAGING/ESTIMATING:

POZZOLITH NC 534 non-chloride admixture is supplied in 55 U.S. gallon (208 liter) drums and by bulk delivery.

POZZOLITH NC 534 admixture has a recommended dosage rate ranging from 10 to 45 fl oz per 100 lbs (650 to 2940 mL/100 kg) of cement.

PERFORMANCE DATA[1]:

Mix Design	Setting Time Initial Set Hours:Minutes	Setting Time Difference Hours:Minutes
Plain Concrete	6:50	—
POZZOLITH NC 534/Concrete		
13 fl oz/cwt (848 mL/100 kg)	5:07	-1:43
26 fl oz/cwt (1695 mL/100 kg)	3:48	-3:02

Mix Design	Compressive Strength 3 Days PSI	MPa	%	7 Days PSI	MPa	%	28 Days PSI	MPa	%
Plain Concrete	1830	12.6	100	4350	30	100	6050	41.7	100
POZZOLITH NC 534/Concrete									
13 fl oz/cwt (848 mL/100 kg)	2150	14.8	117	4810	33.2	111	6080	41.9	101
26 fl oz/cwt (1695 mL/100 kg)	2220	15.3	121	5170	35.7	119	5750	46.6	112

[1]The data shown is based on controlled laboratory tests using the following mix data: 564 lbs of Type I cement per cubic yard (335 kg/m³), slump of 6 inches (152 mm), non-air-entrained concrete, concrete temperature 65 °F (18 °C), ambient temperature 50 °F (10 °C).

RELATED BULLETINS:

Data Sheet – POZZOLITH NC 534 (form PNC-534)
Material Safety Data Sheet – POZZOLITH NC 534

CONCRETE PAVERS • BLOCK • BRICK • SAND • STONE •
• PYTHIQ IF GARDEN WALL STONES •

CONCRETE

Experience Personal Service

Fast Delivery Available
1-800-662-7383

CENTRAL MARTIN
and
LANDSCAPE CENTER
ROUTE 33, MILLSTONE
[illegible]
MASON CURRLY
OPEN 7 DAYS

Central Concrete Corp.
Corners of Yellowbrook &
[illegible]
732-919-0170

Walling Bros. Block Co.
1778 Highway 9S Union Beach
732-888-9440

Central Concrete Corp.
17 Central Ave., Red Bank
732-842-1984

LOAD TICKET

PLANT	TIME	MAILER NO.	TRUCK NO.	DRIVER	DATE	TICKET NO.
3	07:58		106	Gerry Graham	08-Jan-03	664

[illegible] 343.40 for X-Ray [illegible]

[illegible] DATE MIXED WILL CALL 6:30-7

CONTRACT NO.	PROJECT NO.			

				DESCRIPTION	COUNTY
	3.00	3.00	3.00		

QUANTITY	U/M	PRODUCT NO.	DESCRIPTION	UNIT PRICE	TOTAL
3.00	CY	25	2500 5/8	67.00	201.00
1.00	ea	FUEL		19.00	19.00
		WINTER C	WINTER CONCRETE CHARGE		9.00
				Sub Total	304.25
				Tax:	15.32
				Today:	319.57

					RETURN PLANT
		8:15	11:00		

SIX MINUTES PER YARD UNLOADING TIME ALLOWED - EXCESS TIME (TAX REQUIRED)

10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES	Excess TIME
$15.50	$31.00	$47.50	$63.00	63.00

+ 45 min of [illegible]

WEIGHTS CERTIFIED BY

RECEIVED BY

CK #2474

41132

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 24

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

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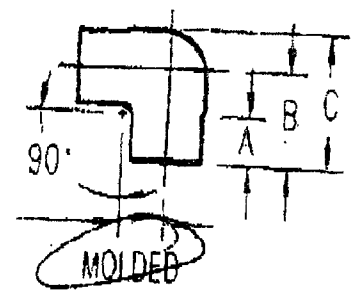
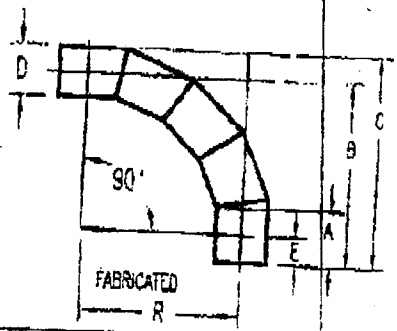
COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 15010, Gas Management Piping • HDPE pipe • 3/4" clean aggregate	James M. Lisic, CQA			No further action required

ATTN: BOB SEBOLD





Nominal Size (in.)	# of Rib	Dimension Ratio	Type **	WPR* @ 73.4°F	Dimensions, Inches R	A	B	C	E	Weight Lbs.	UPE
3/4	s	11	molded	180	1.4	1.8	3.2	3.8		0.1	yes
1	s	11	molded	180	1.4	1.8	3.2	3.8		0.1	yes
1-1/4	s	11	molded	180	1.4	1.8	3.2	3.8		0.1	yes
1-1/2	s	11	molded	180	1.4	1.8	3.2	3.8		0.1	yes
2	s	9.3	molded	180	2.0	2.9	4.5	5.7		0.1	yes
	s	11		160						1	yes
	na	7	fabricated	200	6.7	3	10.2	11.4	1.8	1	yes
	s	11		120						1	
3	s	9.3	molded	180	2.5	3	6.1	6.9		2	yes
	s	11		160						2	
	s	17		100						1	
	na	7	fabricated	200	9.3	3	10.8	12.8	1.8	3	yes
	s	11		120						2	
	na	17		75						2	
4	s	9.3	molded	180	3	3.9	6.8	8.0		3	yes
	s	11		160						3	
	s	17		100						3	
	na	7	fabricated	200	14.8	5.0	17.3	19.8	2.5	8	yes
	s	11		120						7	
	na	17		75						6	
5	na	11	fabricated	120	16.6	6.0	17.9	20.7	2.5	8	yes
6	s	9.3	molded	150	4.4	3.0	7.0	10.6		9	yes
	s	11		140						9	
	s	17		100						9	
	na	7	fabricated	200	16.4	6.0	21.4	24.7	3.0	21	yes
	s	11		120						14	
	na	17		75						10	
8	s	11	molded	160	9.0	5.0	18.0	18.5		36	yes
	na	7	fabricated	200	18.4	6.0	22.4	26.7	3.0	37	yes
	s	11		120						23	
	s	17		75						17	
	na	26		48						13	
10	s	11	molded	160	7.3	6.0	19.3	19.8		41	yes
	na	7	fabricated	200	20.5	6.0	23.5	26.8	3.0	61	no
	s	11		120						41	
	s	17		75						26	
	na	26		48						18	

* WPR = Working Pressure Rating, psig

** Fabbed ells are not fully pressure rated. See "Technical Considerations"

s or ns = Stocked or Non-Stocked Item

DRISCOPIPE

4100 Series
NSF/AWWA Potable Water Pipe
Effective 1/1/97

Nom. Size (in)	DR	Weight lb/100ft	Dimensions, Inches OD	Approx. ID	Min.Wall	Coil/ Joint Feet
4	9.0	274	4.500	3.500	0.500	365/450/475/600 20 40
4	11.0	229	4.500	3.682	0.409	365/450/475/600 20 40
4	13.5	190	4.500	3.834	0.333	365/450/475/600 20 40
4	17.0	154	4.500	3.970	0.265	365/450/475/600 20 40
4	21.0	126	4.500	4.072	0.214	20 40
4	26.0	103	4.500	4.134	0.173	20 40
5	9.0	418	5.563	4.327	0.618	20/40/50
	11.0	351		4.511	0.526	20/40/50
	13.5	291		4.739	0.412	20/40/50
	17.0	235		4.909	0.327	20/40/50
	21.0	193		5.033	0.265	20/40/50
	26.0	157		5.135	0.214	20/40/50
6	9.0	593	6.625	5.153	0.736	20/40/50
	11.0	497		5.421	0.602	20/40/50
	13.5	413		5.643	0.491	20/40/50
	17.0	334		5.846	0.390	20/40/50
	21.0	275		5.994	0.316	20/40/50
	26.0	223		6.115	0.255	20/40/50
7	9.0	806	7.125	5.541	0.792	20/40/50
	11.0	676		5.826	0.648	20/40/50
	13.5	478		6.069	0.528	20/40/50
	17.0	386		6.287	0.420	20/40/50
	21.0	316		6.445	0.340	20/40/50
	26.0	259		6.577	0.274	20/40/50
8	9.0	1005	8.625	6.709	0.958	20/40/50
	11.0	842		7.057	0.784	20/40/50
	13.5	700		7.347	0.639	20/40/50
	17.0	585		7.611	0.507	20/40/50
	21.0	484		7.803	0.411	20/40/50
	26.0	379		7.961	0.332	20/40/50

4000(DIPS) - 4100(IPS) series Data Sheet

Customer Benefits

High quality Driscopipe® 4000 and 4100 are manufactured from high-density PE 3408 polyethylene pipe grade resin.

Butt Fusion Conditions: 75 psig interfacial fusion pressure required at 375-400°F

This high density polyethylene pipe exhibits:

- Excellent Environmental Stress Cracking Resistance
- Outstanding Chemical & Corrosion Resistance
- Superior Toughness & Ductility
- Exceptional Resistance to Rapid Crack Propagation
- Extended Physical & Hydrostatic Strength
- Superb Abrasion Resistance / Endurance
- Fatigue Resistant
- Color Coded for easy identification
- Wide Operational Temperature Range
- Flexible and Lightweight
- Superior Tensile Strength For Trenchless Rehabilitation Applications

Suggested Applications

- **Water transmission pipelines**
- **Raw water gathering pipelines**
- **Pipeline rehabilitation**
- **Trenchless "no-dig" technology**
- **Water Mains**
- **Water distribution pipe systems**
- **Municipal water utilities**
- **Rural water district / utilities**

Specification Data

The high-density resin meets these important requirements:

- AWWA C906 (all product)
- NSF, Standard #14 & #16 (by size, per order)
- PPI Designation: PE 3408 (all product)
- Cell Classification ASTM D3350- PE 345464C
- Material Description: ASTM D3350- Type III, Grade PE34

PRISMA ISO 9001 CERTIFIED DRISCOPIPE

A Division of Phillips Petroleum Company

Effective: 5-18-99

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 25

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 15100, Modification of Existing Monitoring Wells • Drilling subcontractor information	James M. Lisic, CQA			No further action required

The drilling contractor for T.O. 40, NWS Earle:

B&B Drilling,Inc.
54 Route 206
Stanhope, NJ 07874

STATE OF NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL PROTECTION

State Well Drillers and Pump Installers Examining and Advisory Board

This Certifies

That DOUGLAS MYERCHIN LICENSE #M1277

of HOPE, NEW JERSEY has been duly examined in accordance with the provisions of the N.J.S.A. 58:4A-5 et seq. and found qualified to practice as a

Master Well Driller

CHAIRMAN

SECRETARY

COMMISSIONER

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 26

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

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COPY TO:
☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 15100, Modification to Existing Monitoring Wells • Drillers reports	James M. Lisic, CQA			No further action required

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE
Client: FOSTER WHEELER ENVIRONMENTAL

Date: Tues 11/12/02
Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			2
Helper	PETER LEE	8			2
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials	1	EACH	mobe to NWS
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04	8.5'	feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time		hour	

Douglas Myerchin
For : B & B Drilling, Inc.

Lisa
For: FOSTER WHEELER ENVIRONMENTAL

mobe to site - meet w/ FW
begin well mod @ MW3-04 - ready mod for MW3-07
broke off 4' below grade - area to be excavated to do well repair

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Wed 11/13/02

Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	24	feet	MW3-09
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	3	hour	wait for well layout / el. of mod

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

meet w/ Foster Wheeler Rep. in regard to dev. changes & additional well to be modified @ sta #3 - discuss gas vent wells & loc. of new wells to be installed - set up @ 1st loc. @ 1:30 pm

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Thurs 11/14

Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,5]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	24 & 24 (48')	feet	MW3-10 @ 24' MW3-11
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)	3	hours	MW3-9 / MW3-10 / n
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.	1	each	construct pad
Standby Time		hour	

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

construct decon pad & decon drill tools & equip
build & install MW 10 & MW 11 & decon between holes. Set up MW 12

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Fri 11/15/02

Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-~~04~~ 06	2'	feet	4" pvc & 6" steel
2. MW3-05	4'	feet	4" pvc & 6" steel
3. MW3-07	~~5~~ 13'	feet	4" pvc & 6" steel
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	27	feet	MW 3-12
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)	1	hours	MW3-12
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time		hour	

Douglas Myerchin
For : B & B Drilling, Inc.

Lee
For: FOSTER WHEELER ENVIRONMENTAL

drill & install MW 3-12 - complete monitor well modification
install concrete pad & pad casing @ MW 9-10-12

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: WED 11/18/07

Rig: 201 / 109

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed	4 @ 10'ea = 40'	feet	area #D + u bend
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	4	hour	wait for gas vent layout + back fill

Days as required

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

Q sets - wait for gas vent layout & not back fill
install 1 gas vent w/B-61 remaining three had to be dug by hand
10' ea + u bend

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Wed 11/19/02
Rig: 201 109

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	6		3	
Helper	PETER LEE	6		2	
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02	5'	feet	MW10-02 4" pvc x 6" sch
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	2	hour	wait for clearance to get onto site

Douglas Myerchin
For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

wait for clearance to get onto site
install casing & pad @ BMW12
clean up & load for demob

complete well set @ MW10-02

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL CONTROL NO. 27

EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
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2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M. Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

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COPY TO:

☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 02600, Monitoring Well Installation • Drilling subcontractor information	James M. Lisic, CQA			No further action required

The drilling contractor for T.O. 40, NWS Earle:

B&B Drilling,Inc.
54 Route 206
Stanhope, NJ 07874

STATE OF NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL PROTECTION

State Well Drillers and Pump Installers Examining and Advisory Board

This Certifies

That DOUGLAS MYERCHIN LICENSE #M1277

of HOPE, NEW JERSEY has been duly examined in accordance with the provisions of the N.J.S.A. 58:4A-5 et seq. and found qualified to practice as a

Master Well Driller

CHAIRMAN

SECRETARY

COMMISSIONER

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 28

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

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3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M Lisic — JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

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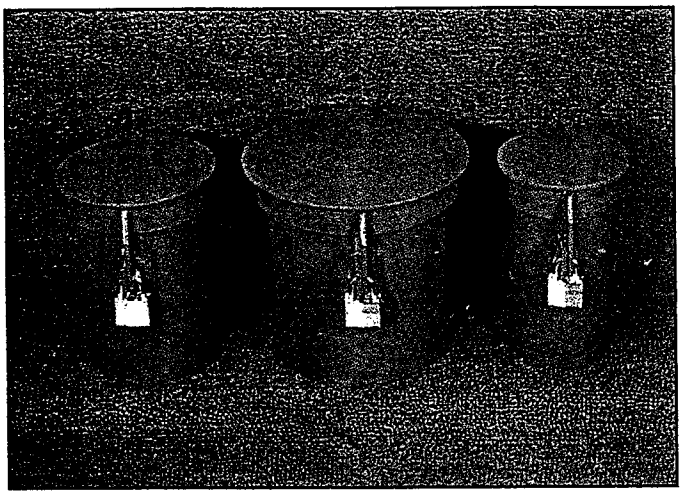
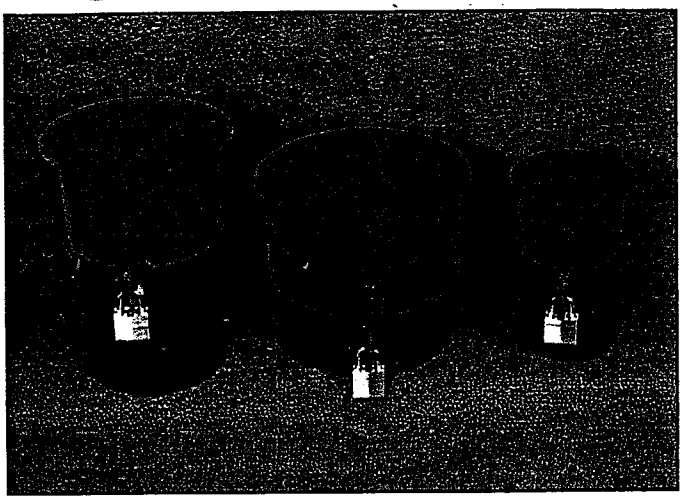
FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 02600, Monitoring Well Installation • Catalogue information	James M. Lisic, CQA			No further action required

MORRIS
ABOVE GROUND
PROTECTIVE CASINGS

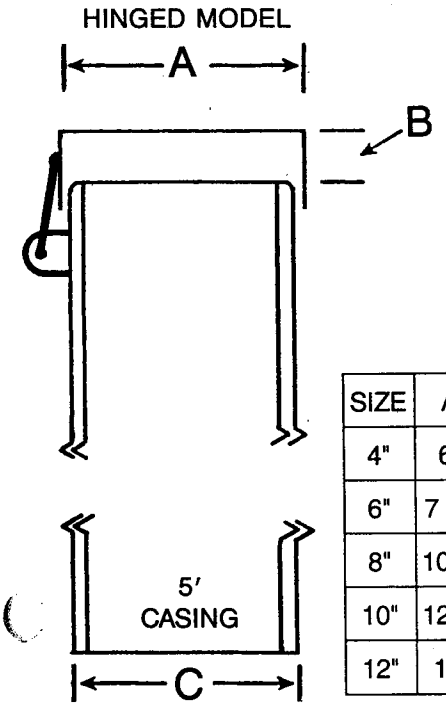


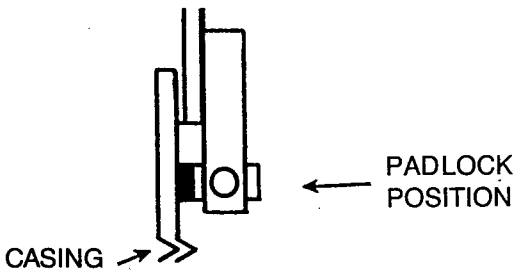


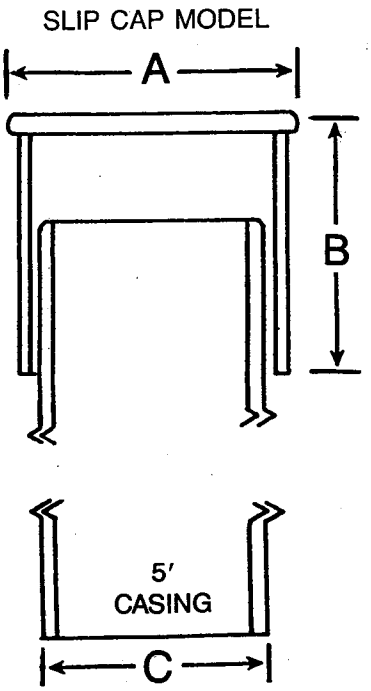
HINGED MODELS

SLIP CAP MODELS

- All Models Made From WELDED STEEL Construction
- Tamper Proof
- All 4″, 6″, 8″ and 10″ Models In Stock
- Custom Sizes Available on Special Order







DIMENSIONS

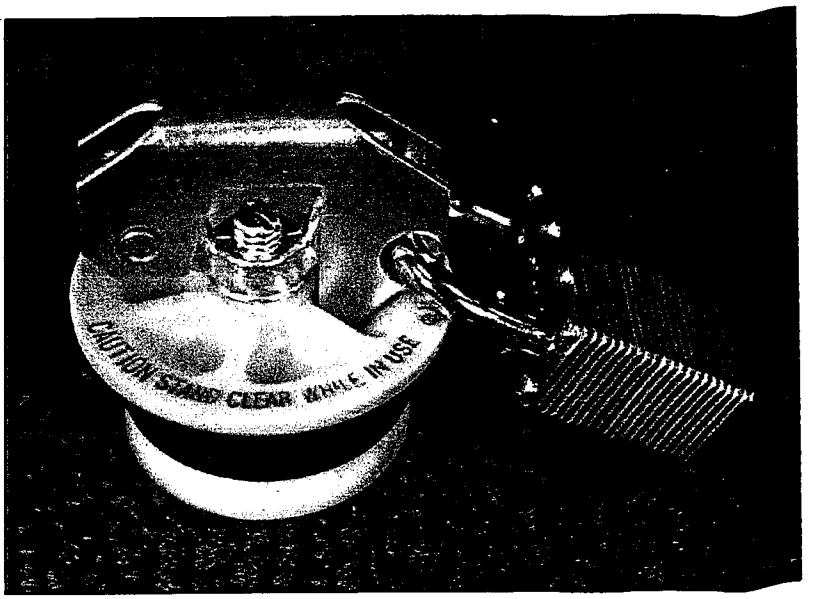
SIZE	A	B	C
4"	6"	1½"	4½"
6"	7 ⅜"	1½"	6"
8"	10¾"	1½"	8 ⅝"
10"	12½"	1½"	10¾"
12"	15"	2"	12¾"

SIZE	A	B	C
4"	6"	3½"	4½"
6"	8"	5"	6"
8"	10¾"	5"	8 ⅝"
10"	12½"	5"	10¾"

MORRIS END OF PIPE LOCKING PLUG

THE MORRIS END OF PIPE LOCKING PLUG IS AVAILABLE IN 2, 3, 4, 6, AND 8" SIZES.

THIS PLUG NEEDS NO ADAPTER. IT FITS INTO STANDARD PVC PIPE SIZES. IT EXPANDS ON THE INSIDE DIAMETER OF PIPE TO PROVIDE WATER AND VAPORTIGHT SEAL.



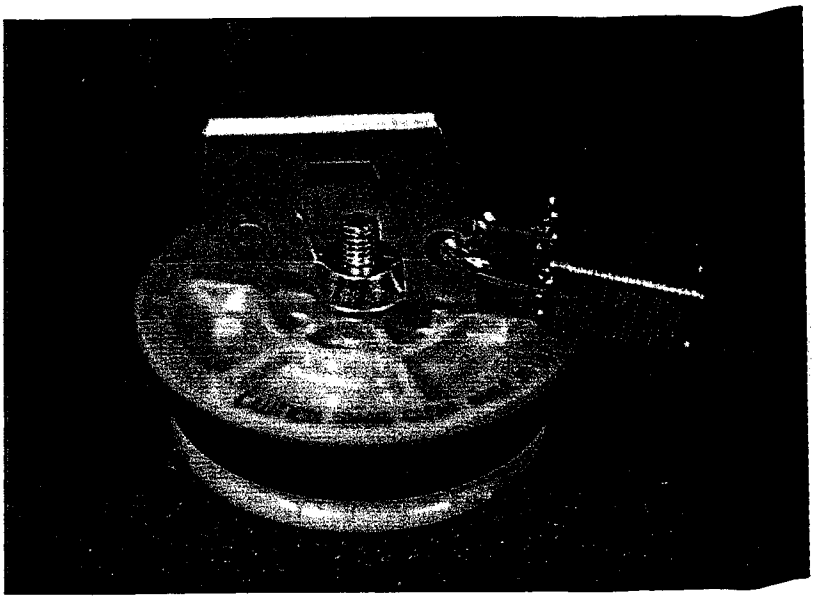
2" MODEL

FEATURES INCLUDE:

- CORROSION PROOF PLASTIC BODY
- RUBBER ALL WEATHER SEAL
- ZINC PLATED WING NUT AND HINGED LOCK DEVICE FOR CORROSION RESISTANCE

WITH PADLOCK IN PLACE, PLUG CANNOT BE REMOVED.

PADLOCK NOT INCLUDED
PLUGS ALSO AVAILABLE WITHOUT LOCKING DEVICE



4" MODEL

ITEM#	DESCRIPTION	BOX QTY.
318002001	2" LOCKING PLUG	10
318003301	3" LOCKING PLUG	10
→ 318004001	4" LOCKING PLUG	10
318006001	6" LOCKING PLUG	5
318008001	8" LOCKING PLUG	1

Standard Specifications

SCHEDULE 40, 80, 120 PVC PIPE

Scope: This specification covers requirements for Schedule 40, 80, and 120 PVC pressure pipe as described in ASTM D-1785.
Material: PVC used is of Type I, Grade 1 compound as stated in ASTM D-1784.
Dimensions: Dimensions and tolerances shall be as shown in the following tables when measured according to Method D-2122. Tolerances for out-of-roundness shall apply only to pipe prior to shipment.
Marking: Indicates manufacturer's name, material designation code, nominal pipe size, Schedule size with pressure rating in PSI for water at 73°F, ASTM designation number D-1785, NSF seal for potable water, and manufacturing date code.

Outside Diameters and Tolerances

Nominal Pipe Size	Outside Diameter	Tolerances			
		Average	For Maximum and Minimum Diameter (Out-of-Roundness)		
			Schedule 40	Schedule 80	Schedule 120
1/8	0.405	±0.004	±0.008	±0.008	±0.008
1/4	0.540	±0.004	±0.008	±0.008	±0.008
3/8	0.675	±0.004	±0.008	±0.008	±0.008
1/2	0.840	±0.004	±0.008	±0.008	±0.008
3/4	1.050	±0.004	±0.010	±0.010	±0.010
1	1.315	±0.005	±0.010	±0.010	±0.010
1 1/4	1.660	±0.005	±0.012	±0.012	±0.012
1 1/2	1.900	±0.006	±0.012	±0.012	±0.012
2	2.375	±0.006	±0.012	±0.012	±0.012
2 1/2	2.875	±0.007	±0.015	±0.015	±0.015
3	3.500	±0.008	±0.015	±0.015	±0.015
3 1/2	4.000	±0.008	±0.050	±0.015	±0.015
4	4.500	±0.009	±0.050	±0.015	±0.015
5	5.563	±0.010	±0.050	±0.030	±0.030
6	6.625	±0.011	±0.050	±0.035	±0.035
8	8.625	±0.015	±0.075	±0.075	±0.045
10	10.750	±0.015	±0.075	±0.075	±0.050
12	12.750	±0.015	±0.075	±0.075	±0.060
14	14.000	±0.015	±0.100	±0.100	–
16	16.000	±0.019	±0.160	±0.160	–
18	18.000	±0.019	±0.180	±0.180	–
20	20.000	±0.023	±0.200	±0.200	–
24	24.000	±0.031	±0.240	±0.240	–

Wall Thicknesses and Tolerances

Nominal Pipe Size	Wall Thickness					
	Schedule 40		Schedule 80		Schedule 120	
	Minimum	Tolerance	Minimum	Tolerance	Minimum	Tolerance
1/8	0.068	+0.020	0.095	+0.020	–	–
1/4	0.088	+0.020	0.119	+0.020	–	–
3/8	0.091	+0.020	0.126	+0.020	–	–
1/2	0.109	+0.020	0.147	+0.020	0.170	+0.020
3/4	0.113	+0.020	0.154	+0.020	0.170	+0.020
1	0.133	+0.020	0.179	+0.021	0.200	+0.024
1 1/4	0.140	+0.020	0.191	+0.023	0.215	+0.026
1 1/2	0.145	+0.020	0.200	+0.024	0.225	+0.027
2	0.154	+0.020	0.218	+0.026	0.250	+0.030
2 1/2	0.203	+0.024	0.276	+0.033	0.300	+0.036
3	0.216	+0.026	0.300	+0.036	0.350	+0.042
3 1/2	0.226	+0.027	0.318	+0.038	0.350	+0.042
4	0.237	+0.028	0.337	+0.040	0.437	+0.052
5	0.258	+0.031	0.375	+0.045	0.500	+0.060
6	0.280	+0.034	0.432	+0.052	0.562	+0.067
8	0.322	+0.039	0.500	+0.060	0.718	+0.086
10	0.365	+0.044	0.593	+0.071	0.843	+0.101
12	0.406	+0.049	0.687	+0.082	1.000	+0.120
14	0.437	+0.053	0.750	+0.090	–	–
16	0.500	+0.060	0.843	+0.101	–	–
18	0.562	+0.067	0.937	+0.112	–	–
20	0.593	+0.071	1.031	+0.124	–	–
24	0.687	+0.082	1.218	+0.146	–	–

Note: The minimum is the lowest wall thickness of the pipe at any cross section. The maximum permitted wall thickness, at any cross section, is the minimum wall thickness plus the stated tolerance. All tolerances are on the plus side of the minimum requirement. These dimensions conform to nominal IPS dimensions, with the exception that Schedule 120 wall thickness for pipe sizes 1/2 to 3 1/2 in., inclusive, are special PVC plastic pipe size.

PVC PIPE SPECIFICATIONS

PVC Schedule 40

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/8	.405	.261	.068	.045	810
1/4	.540	.354	.088	.081	780
3/8	.675	.483	.091	.109	620
1/2	.840	.608	.109	.161	600
3/4	1.050	.810	.113	.214	480
1	1.315	1.033	.133	.315	450
1 1/4	1.660	1.364	.140	.426	370
1 1/2	1.900	1.592	.145	.509	330
2	2.375	2.049	.154	.682	280
2 1/2	2.875	2.445	.203	1.076	300
3	3.500	3.042	.216	1.409	260
3 1/2	4.000	3.520	.226	1.697	240
4	4.500	3.998	.237	2.006	220
5	5.563	5.017	.258	2.726	190
6	6.625	6.031	.280	3.535	180
8	8.625	7.943	.322	5.305	160
10	10.750	9.976	.365	7.532	140
12	12.750	11.890	.406	9.949	130
14	14.000	13.072	.437	11.810	130
16	16.000	14.940	.500	15.416	130
18	18.000	16.809	.562	20.112	130
20	20.000	18.743	.593	23.624	120
24	24.000	22.544	.687	32.873	120

PVC Schedule 80

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/8	.405	.203	.095	.058	1230
1/4	.540	.288	.119	.100	1130
3/8	.675	.407	.126	.138	920
1/2	.840	.528	.147	.202	850
3/4	1.050	.724	.154	.273	690
1	1.315	.935	.179	.402	630
1 1/4	1.660	1.256	.191	.554	520
1 1/2	1.900	1.476	.200	.673	470
2	2.375	1.913	.218	.932	400
2 1/2	2.875	2.289	.276	1.419	420
3	3.500	2.864	.300	1.903	370
3 1/2	4.000	3.326	.318	2.322	350
4	4.500	3.786	.337	2.782	320
5	5.563	4.767	.375	3.867	290
6	6.625	5.709	.432	5.313	280
8	8.625	7.565	.500	8.058	250
10	10.750	9.492	.593	11.956	230
12	12.750	11.294	.687	16.437	230
14	14.000	12.410	.750	19.790	220
16	16.000	14.214	.843	25.430	220
18	18.000	16.014	.937	31.830	220
20	20.000	17.814	1.031	40.091	220
24	24.000	21.418	1.218	56.882	210

PVC Schedule 120

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/2	.84	.480	.170	.223	1010
3/4	1.050	.690	.170	.295	770
1	1.315	.891	.200	.440	720
1- 1/4	1.660	1.204	.215	.614	600
1-1/2	1.900	1.423	.225	.744	540
2	2.375	1.845	.250	1.052	470
2-1/2	2.875	2.239	.300	1.529	470
3	3.500	2.758	.350	2.184	440
4	4.500	3.572	.437	3.516	430
6	6.625	5.434	.562	6.759	370

SDR 21 - W.P. 200 PSI (Water @ 73.4°F.)

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.
3/4	1.050	.910	.060	.129
1	1.315	1.169	.063	.170
1 1/4	1.660	1.482	.079	.263
1 1/2	1.900	1.700	.090	.339
2	2.375	2.129	.113	.521
2 1/2	2.875	2.581	.137	.754
3	3.500	3.146	.167	1.106
3 1/2	4.000	3.596	.190	1.443
4	4.500	4.046	.214	1.825
5	5.563	5.001	.265	2.792
6	6.625	5.955	.316	3.964
8	8.625	7.755	.410	6.679

SDR 26 - W.P. 160 PSI (Water @ 73.4°F.)

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.
1	1.315	1.175	.060	.164
1 1/4	1.660	1.512	.064	.221
1 1/2	1.900	1.734	.073	.284
2	2.375	2.173	.091	.432
2 1/2	2.875	2.635	.110	.622
3	3.500	3.210	.135	.915
3 1/2	4.000	3.672	.154	1.183
4	4.500	4.134	.173	1.494
5	5.563	5.109	.214	2.288
6	6.625	6.085	.255	3.228
8	8.625	7.921	.332	5.468
10	10.750	9.874	.413	8.492
12	12.750	11.710	.490	11.956
14	14.000	12.860	.538	14.430
16	16.000	14.696	.615	18.810
18	18.000	16.534	.692	23.860
20	20.000	18.370	.769	29.470
24	24.000	22.043	.923	42.520

CLEAR PVC Schedule 40

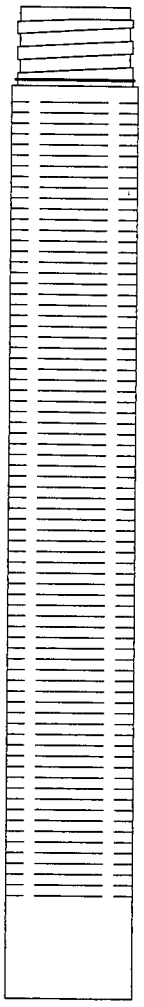
Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/4	.540	.354	.088	.081	390
3/8	.675	.483	.091	.109	310
1/2	.840	.608	.109	.161	300
3/4	1.050	.810	.113	.214	240
1	1.315	1.033	.133	.315	220
1 1/4	1.660	1.364	.140	.429	180
1 1/2	1.900	1.592	.145	.509	170
2	2.375	2.049	.154	.682	140
2 1/2	2.875	2.445	.203	1.076	150
3	3.500	3.042	.216	1.409	130
3 1/2	4.000	3.520	.226	1.697	120
4	4.500	3.998	.237	2.006	110
6	6.625	6.031	.280	3.535	90
6 x 1/8	6.625	6.355	.125	1.647	45
8	8.625	7.943	.322	5.305	80

*** Note:** All pressure ratings are for water at 73.4° with solvent cemented joints.

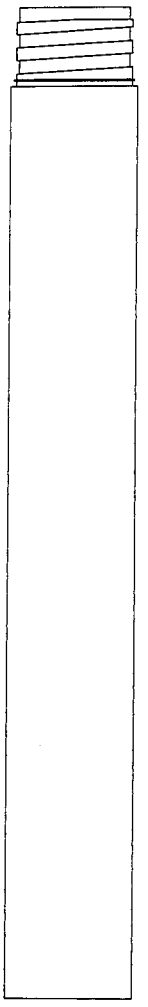
Bell and Gasket PVC Pipe is available in Schedules 40, 80, 120 and SDR's 21, 26, 35, 41 and C-900.
Compounds used in the manufacture of PVC and CPVC Pipe meet ASTM Standard D-1784.
Schedules 40, 80 and 120 PVC Pipe meet ASTM Standard D-1785.
Pressure Rated (SDR Series) PVC Pipe meets ASTM Standard D-2241.
ASTM Standard D-1784 classification equivalents:
PVC Normal Impact = Type I Grade I = PVC 1120 = Cell Classification 12454-B
For more complete information, request "Condensed Catalog HPB-103-A&B"

FLUSH THREAD PVC SCREEN AND CASING

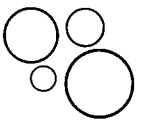
- ✓ Monoflex CNC computer lathed flush threads follow ASTM recommendations for reliable, consistent results on the job site.
- ✓ Our close tolerances provide a strong connection while retaining ease of assembly.
- ✓ Manufactured from quality PVC pipe; Monoflex flush thread screens and casings are available in diameters of ½" through 12" with 2, 4, or 8 threads per inch stocked in schedules 40 & 80. Other schedules and SDR's are available in PVC and high density polyethylene.
- ✓ Laying length is standard for 2" and 4" schedule 40 PVC. Other sizes are end to end length. Custom lengths are available in all diameters.
- ✓ All standard Monoflex PVC threads are compatible with other materials threaded to ASTM recommendations, with the same TPI.
- ✓ All standard screens provide maximum net open area. A wide variety of slot sizes and spacings is available to adapt to various site conditions.
- ✓ 2" and 4" schedules 40 and 80 screens & casings are supplied with Buna-N O-rings at no additional charge. Buna-N O-rings are available for all other sizes for a nominal charge.
- ✓ All flush thread well screens and casings are Envirowrapped and hermetically sealed at both ends as a standard practice.



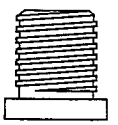
Flush Thread Screen



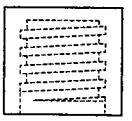
Flush Thread Casing



Buna-N O-Rings



Male Plug (solid)

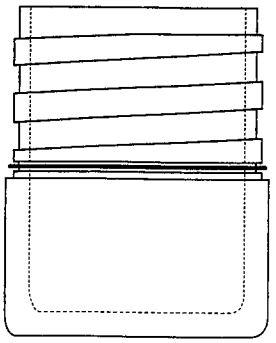


Female Cap (solid)

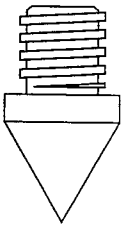
PLEASE SPECIFY PART NUMBER WHEN ORDERING.

The following pages list flush thread PVC screens and casings along with the appropriate Buna-N O-rings, and flush thread caps, plugs, and points.

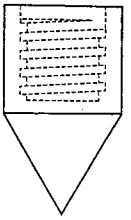
Custom lengths, threads and adapters available.



Male Plug (molded)



Male Point (solid)



Female Point (solid)

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 29

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-18, Specification Section 02600, Monitoring Well Installation • Drillers reports	James M. Lisic, CQA			No further action required

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Tues 11/12/02

Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			2
Helper	PETER LEE	8			2
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials	1	EACH	mobe to NWS
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04	8.5'	feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time		hour	

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

mobe to site - meet w/ FW
begin well mod @ MW3-04 - ready mod for MW3-07
broke up 4 below grade - area to be excavated to do well repair

B & B Drilling, Inc.

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Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Wed 11/13/
Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	24	feet	MW3-09
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	3	hour	wait for well layout/el. c

Dwayne Myerchin
For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTA

meet w/ Foster Wheeler Rep. in regard to dev. changes & additional well to be modified @ site #3 - discuss gas vent wells & loc. of New wells to be installed - set up @ 1st loc. @ 1:30 pm

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Thurs 11/14
Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	24 @ 24 (48')	feet	MW3-10 @ 24' MW3-11
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)	3	hours	MW3-9 / MW3-10
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.	1	each	construct pad
Standby Time		hour	

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

construct decon pad & decon drill tools & equip
drill & install MW 10 & MW 11 & decon between holes set up MW 12

B & B Drilling, Inc.

PO Box 8
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PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Tue 11/15/02
Rig: 201

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-~~04~~ 06	2'	feet	4" pvc & 6" steel
2. MW3-05	4'	feet	4" pvc & 6" steel
3. MW3-07	~~8~~ 13'	feet	4" pvc & 6" steel
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed	27	feet	MW 3-12
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)	1	hours	MW3-12
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time		hour	

For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

drill & install MW 3-12 - complete monitor well modification
install concrete pad & pad casing @ MW 9-10-12

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: TUS 11/18/03
Rig: 201 / 109

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	8			
Helper	PETER LEE	8			
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02		feet	
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed	4 @ 10'ea = 40'	feet	area #10 + u bend
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	4	hour	wait for gas vent layout + backfill

Doug Myerchin
For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTAL

@ site - wait for gas vent layout & wait for backfill
install 1 gas vent w/ B.61 remaining three had to be dug by hand
10' ea + u bend

B & B Drilling, Inc.

PO Box 8
Netcong, New Jersey 07857
PH (973) 347-2250 - FX (973) 347-3864
www.hrsdrilling.com

Daily Quantity Verification (QV) Data Sheet

Project: WELL DRILLING SERVICES
NWS EARLE SITE

Client: FOSTER WHEELER ENVIRONMENTAL

Date: Wed 11/19/
Rig: 201 109

Crew:	Name	Site Work		Travel	
		ST	OT	ST	OT
Driller	DOUG MYERCHIN	6		3	
Helper	PETER LEE	6		2	
Technician					
Other					

Work Performed This Date

Item Description	Quantity	Units	Location & Comments
Mobilization/Demobilization			
a) Personnel, equipment, and materials		EACH	
Includes Site restoration.			
b) Per Diem for 2-man crew	1	man days	
Monitoring Well Modification [2,3]			
Four (4) existing monitoring wells to be extended			
1. MW3-04		feet	
2. MW3-05		feet	
3. MW3-07		feet	
4. MW10-02	5'	feet	MW10-02 4" pvc x 6
Monitoring Well Installation [2,3]			
Four (4) monitoring wells to be installed		feet	
Gas Vent Installation [2,3]			
Four (4) gas vents to be installed		feet	
Decontamination of Equipment [2]			
a) Pressure Washing (1 hour/location)		hours	
Includes all supplies and labor.			
b) Construction, materials, pump-out, and removal of decon pad.		each	
Standby Time	2	hour	wait for clearance to get onto site

Douglas Myerchin
For : B & B Drilling, Inc.

For: FOSTER WHEELER ENVIRONMENTA

wait for clearance to get onto site
install casing & pad @ BMW12
clean up load for demob

complete well set @ MW10-02

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 30

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
Foster Wheeler Environmental Corp.: Site QC Manager James Lisic	January 10, 2003
TO:	DATE
M. DiGeambeardino (Hard Copy)	January 10, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO

James M Lisic JANUARY 10, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:

☐ ROICC ☐ DESIGNER

SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

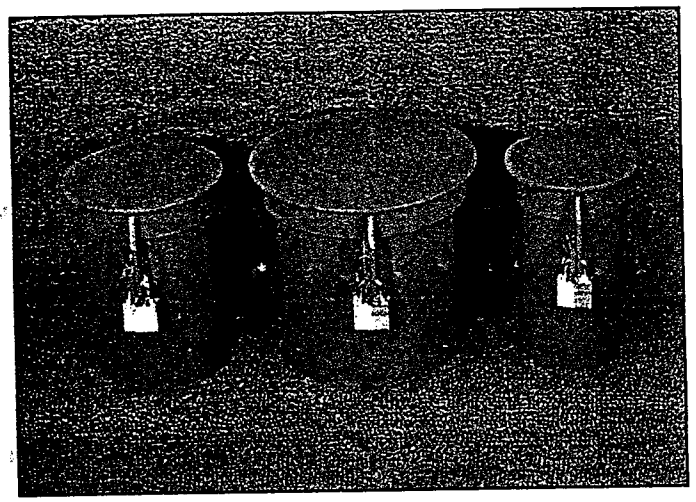
COPY TO:

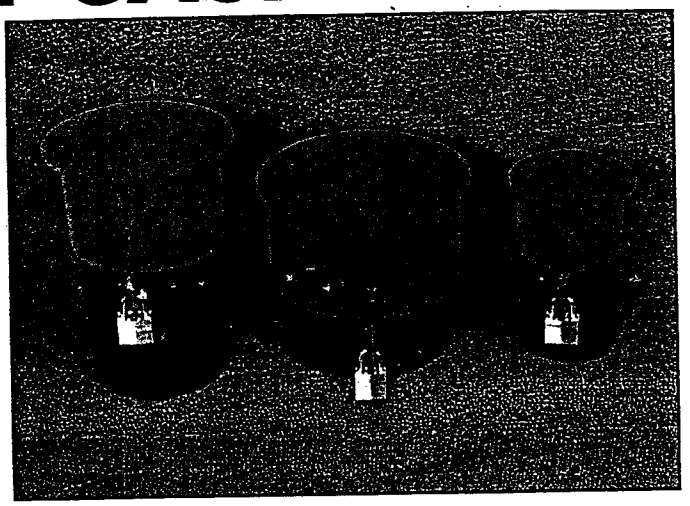
☐ ROICC ☐ OTHER

FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-02, Specification Section 15100, Modification of existing Monitoring Wells • Catalogue sheets	James M. Lisic, CQA			No further action required

MORRIS
ABOVE GROUND
PROTECTIVE CASINGS



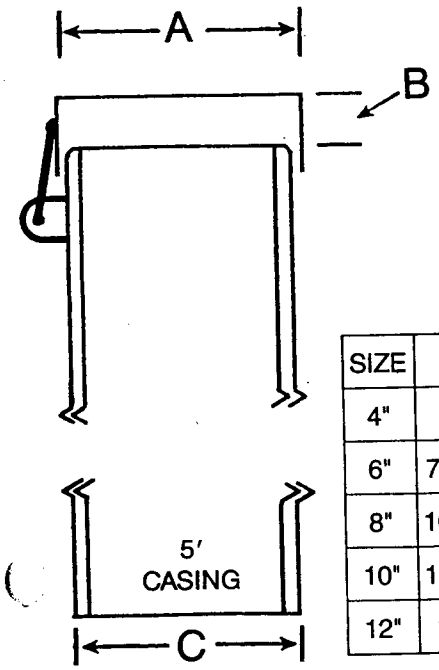


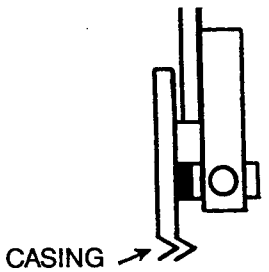
HINGED MODELS

SLIP CAP MODELS

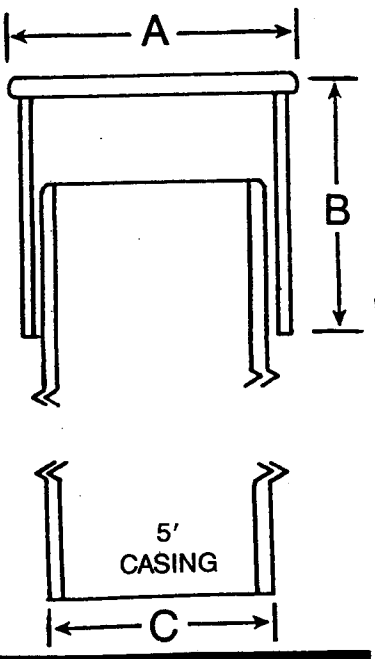
- All Models Made From WELDED STEEL Construction
- Tamper Proof
- All 4", 6", 8" and 10" Models In Stock
- Custom Sizes Available on Special Order

HINGED MODEL





SLIP CAP MODEL



DIMENSIONS

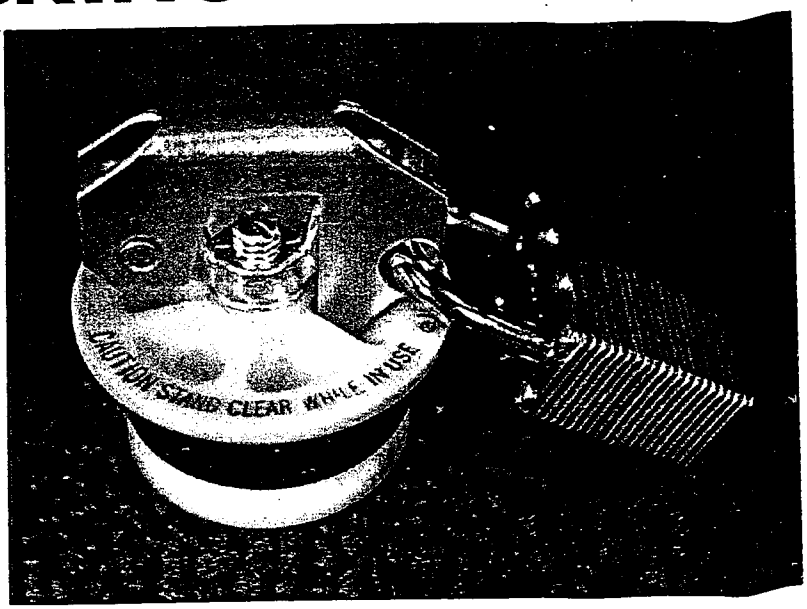
SIZE	A	B	C
4"	6"	1½"	4½"
6"	7 3/8"	1½"	6"
8"	10¾"	1½"	8 5/8"
10"	12½"	1½"	10¾"
12"	15"	2"	12¾"

SIZE	A	B	C
4"	6"	3½"	4½"
6"	8"	5"	6"
8"	10¾"	5"	8 5/8"
10"	12½"	5"	10¾"

MORRIS END OF PIPE LOCKING PLUG

THE MORRIS END OF PIPE LOCKING PLUG IS AVAILABLE IN 2, 3, 4, 6, AND 8" SIZES.

THIS PLUG NEEDS NO ADAPTER. IT FITS INTO STANDARD PVC PIPE SIZES. IT EXPANDS ON THE INSIDE DIAMETER OF PIPE TO PROVIDE WATER AND VAPORTIGHT SEAL.



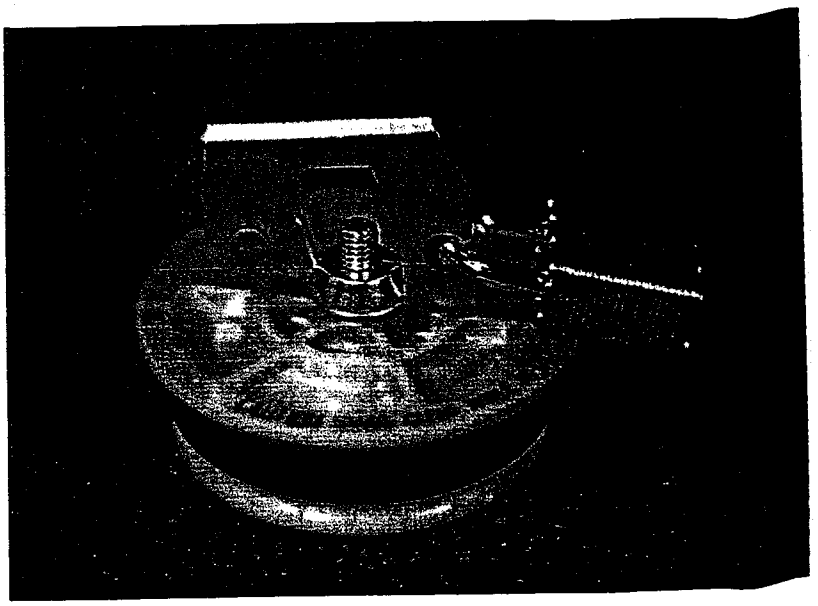
2" MODEL

FEATURES INCLUDE:

- CORROSION PROOF PLASTIC BODY
- RUBBER ALL WEATHER SEAL
- ZINC PLATED WING NUT AND HINGED LOCK DEVICE FOR CORROSION RESISTANCE

WITH PADLOCK IN PLACE, PLUG CANNOT BE REMOVED.

PADLOCK NOT INCLUDED
PLUGS ALSO AVAILABLE WITHOUT LOCKING DEVICE



4" MODEL

ITEM#	DESCRIPTION	BOX QTY.
318002001	2" LOCKING PLUG	10
318003301	3" LOCKING PLUG	10
→ 318004001	4" LOCKING PLUG	10
318006001	6" LOCKING PLUG	5
318008001	8" LOCKING PLUG	1

Standard Specifications

SCHEDULE 40, 80, 120 PVC PIPE

Scope: This specification covers requirements for Schedule 40, 80, and 120 PVC pressure pipe as described in ASTM D-1785.
Material: PVC used is of Type I, Grade 1 compound as stated in ASTM D-1784.
Dimensions: Dimensions and tolerances shall be as shown in the following tables when measured according to Method D-2122. Tolerances for out-of-roundness shall apply only to pipe prior to shipment.
Marking: Indicates manufacturer's name, material designation code, nominal pipe size, Schedule size with pressure rating in PSI for water at 73°F, ASTM designation number D-1785, NSF seal for potable water, and manufacturing date code.

Outside Diameters and Tolerances

Nominal Pipe Size	Outside Diameter	Tolerances			
		Average	For Maximum and Minimum Diameter (Out-of-Roundness)		
			Schedule 40	Schedule 80	Schedule 120
1/8	0.405	±0.004	±0.008	±0.008	±0.008
1/4	0.540	±0.004	±0.008	±0.008	±0.008
3/8	0.675	±0.004	±0.008	±0.008	±0.008
1/2	0.840	±0.004	±0.008	±0.008	±0.008
3/4	1.050	±0.004	±0.010	±0.010	±0.010
1	1.315	±0.005	±0.010	±0.010	±0.010
1 1/4	1.660	±0.005	±0.012	±0.012	±0.012
1 1/2	1.900	±0.006	±0.012	±0.012	±0.012
2	2.375	±0.006	±0.012	±0.012	±0.012
2 1/2	2.875	±0.007	±0.015	±0.015	±0.015
3	3.500	±0.008	±0.015	±0.015	±0.015
3 1/2	4.000	±0.008	±0.050	±0.015	±0.015
4	4.500	±0.009	±0.050	±0.015	±0.015
5	5.563	±0.010	±0.050	±0.030	±0.030
6	6.625	±0.011	±0.050	±0.035	±0.035
8	8.625	±0.015	±0.075	±0.075	±0.045
10	10.750	±0.015	±0.075	±0.075	±0.050
12	12.750	±0.015	±0.075	±0.075	±0.060
14	14.000	±0.015	±0.100	±0.100	–
16	16.000	±0.019	±0.160	±0.160	–
18	18.000	±0.019	±0.180	±0.180	–
20	20.000	±0.023	±0.200	±0.200	–
24	24.000	±0.031	±0.240	±0.240	–

Wall Thicknesses and Tolerances

Nominal Pipe Size	Wall Thickness					
	Schedule 40		Schedule 80		Schedule 120	
	Minimum	Tolerance	Minimum	Tolerance	Minimum	Tolerance
1/8	0.068	+0.020	0.095	+0.020	–	–
1/4	0.088	+0.020	0.119	+0.020	–	–
3/8	0.091	+0.020	0.126	+0.020	–	–
1/2	0.109	+0.020	0.147	+0.020	0.170	+0.020
3/4	0.113	+0.020	0.154	+0.020	0.170	+0.020
1	0.133	+0.020	0.179	+0.021	0.200	+0.024
1 1/4	0.140	+0.020	0.191	+0.023	0.215	+0.026
1 1/2	0.145	+0.020	0.200	+0.024	0.225	+0.027
2	0.154	+0.020	0.218	+0.026	0.250	+0.030
2 1/2	0.203	+0.024	0.276	+0.033	0.300	+0.036
3	0.216	+0.026	0.300	+0.036	0.350	+0.042
3 1/2	0.226	+0.027	0.318	+0.038	0.350	+0.042
4	0.237	+0.028	0.337	+0.040	0.437	+0.052
5	0.258	+0.031	0.375	+0.045	0.500	+0.060
6	0.280	+0.034	0.432	+0.052	0.562	+0.067
8	0.322	+0.039	0.500	+0.060	0.718	+0.086
10	0.365	+0.044	0.593	+0.071	0.843	+0.101
12	0.406	+0.049	0.687	+0.082	1.000	+0.120
14	0.437	+0.053	0.750	+0.090	–	–
16	0.500	+0.060	0.843	+0.101	–	–
18	0.562	+0.067	0.937	+0.112	–	–
20	0.593	+0.071	1.031	+0.124	–	–
24	0.687	+0.082	1.218	+0.146	–	–

Note: The minimum is the lowest wall thickness of the pipe at any cross section. The maximum permitted wall thickness, at any cross section, is the minimum wall thickness plus the stated tolerance. All tolerances are on the plus side of the minimum requirement. These dimensions conform to nominal IPS dimensions, with the exception that Schedule 120 wall thickness for pipe sizes 1/2 to 3 1/2 in., inclusive, are special PVC plastic pipe size.

PVC PIPE SPECIFICATIONS

PVC Schedule 40

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/8	.405	.261	.068	.045	810
1/4	.540	.354	.088	.081	780
3/8	.675	.483	.091	.109	620
1/2	.840	.608	.109	.161	600
3/4	1.050	.810	.113	.214	480
1	1.315	1.033	.133	.315	450
1 1/4	1.660	1.364	.140	.426	370
1 1/2	1.900	1.592	.145	.509	330
2	2.375	2.049	.154	.682	280
2 1/2	2.875	2.445	.203	1.076	300
3	3.500	3.042	.216	1.409	260
3 1/2	4.000	3.520	.226	1.697	240
4	4.500	3.998	.237	2.006	220
5	5.563	5.017	.258	2.726	190
6	6.625	6.031	.280	3.535	180
8	8.625	7.943	.322	5.305	160
10	10.750	9.976	.365	7.532	140
12	12.750	11.890	.406	9.949	130
14	14.000	13.072	.437	11.810	130
16	16.000	14.940	.500	15.416	130
18	18.000	16.809	.562	20.112	130
20	20.000	18.743	.593	23.624	120
24	24.000	22.544	.687	32.873	120

PVC Schedule 80

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/8	.405	.203	.095	.058	1230
1/4	.540	.288	.119	.100	1130
3/8	.675	.407	.126	.138	920
1/2	.840	.528	.147	.202	850
3/4	1.050	.724	.154	.273	690
1	1.315	.935	.179	.402	630
1 1/4	1.660	1.256	.191	.554	520
1 1/2	1.900	1.476	.200	.673	470
2	2.375	1.913	.218	.932	400
2 1/2	2.875	2.289	.276	1.419	420
3	3.500	2.864	.300	1.903	370
3 1/2	4.000	3.326	.318	2.322	350
4	4.500	3.786	.337	2.782	320
5	5.563	4.767	.375	3.867	290
6	6.625	5.709	.432	5.313	280
8	8.625	7.565	.500	8.058	250
10	10.750	9.492	.593	11.956	230
12	12.750	11.294	.687	16.437	230
14	14.000	12.410	.750	19.790	220
16	16.000	14.214	.843	25.430	220
18	18.000	16.014	.937	31.830	220
20	20.000	17.814	1.031	40.091	220
24	24.000	21.418	1.218	56.882	210

PVC Schedule 120

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/2	.84	.480	.170	.223	1010
3/4	1.050	.690	.170	.295	770
1	1.315	.891	.200	.440	720
1- 1/4	1.660	1.204	.215	.614	600
1-1/2	1.900	1.423	.225	.744	540
2	2.375	1.845	.250	1.052	470
2-1/2	2.875	2.239	.300	1.529	470
3	3.500	2.758	.350	2.184	440
4	4.500	3.572	.437	3.516	430
6	6.625	5.434	.562	6.759	370

SDR 21 - W.P. 200 PSI (Water @ 73.4°F.)

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.
3/4	1.050	.910	.060	.129
1	1.315	1.169	.063	.170
1 1/4	1.660	1.482	.079	.263
1 1/2	1.900	1.700	.090	.339
2	2.375	2.129	.113	.521
2 1/2	2.875	2.581	.137	.754
3	3.500	3.146	.167	1.106
3 1/2	4.000	3.596	.190	1.443
4	4.500	4.046	.214	1.825
5	5.563	5.001	.265	2.792
6	6.625	5.955	.316	3.964
8	8.625	7.755	.410	6.679

SDR 26 - W.P. 160 PSI (Water @ 73.4°F.)

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.
1	1.315	1.175	.060	.164
1 1/4	1.660	1.512	.064	.221
1 1/2	1.900	1.734	.073	.284
2	2.375	2.173	.091	.432
2 1/2	2.875	2.635	.110	.622
3	3.500	3.210	.135	.915
3 1/2	4.000	3.672	.154	1.183
4	4.500	4.134	.173	1.494
5	5.563	5.109	.214	2.288
6	6.625	6.085	.255	3.228
8	8.625	7.921	.332	5.468
10	10.750	9.874	.413	8.492
12	12.750	11.710	.490	11.956
14	14.000	12.860	.538	14.430
16	16.000	14.696	.615	18.810
18	18.000	16.534	.692	23.860
20	20.000	18.370	.769	29.470
24	24.000	22.043	.923	42.520

CLEAR PVC Schedule 40

Nominal Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nominal Wt./ft.	Max. W./P. PSI*
1/4	.540	.354	.088	.081	390
3/8	.675	.483	.091	.109	310
1/2	.840	.608	.109	.161	300
3/4	1.050	.810	.113	.214	240
1	1.315	1.033	.133	.315	220
1 1/4	1.660	1.364	.140	.429	180
1 1/2	1.900	1.592	.145	.509	170
2	2.375	2.049	.154	.682	140
2 1/2	2.875	2.445	.203	1.076	150
3	3.500	3.042	.216	1.409	130
3 1/2	4.000	3.520	.226	1.697	120
4	4.500	3.998	.237	2.006	110
6	6.625	6.031	.280	3.535	90
6 x 1/8	6.625	6.355	.125	1.647	45
8	8.625	7.943	.322	5.305	80

*** Note:** All pressure ratings are for water at 73.4° with solvent cemented joints.

Bell and Gasket PVC Pipe is available in Schedules 40, 80, 120 and SDR's 21, 26, 35, 41 and C-900.
Compounds used in the manufacture of PVC and CPVC Pipe meet ASTM Standard D-1784.
Schedules 40, 80 and 120 PVC Pipe meet ASTM Standard D-1785.
Pressure Rated (SDR Series) PVC Pipe meets ASTM Standard D-2241.
ASTM Standard D-1784 classification equivalents:
PVC Normal Impact = Type I Grade I = PVC 1120 = Cell Classification 12454-B
For more complete information, request "Condensed Catalog HPB-103-A&B"

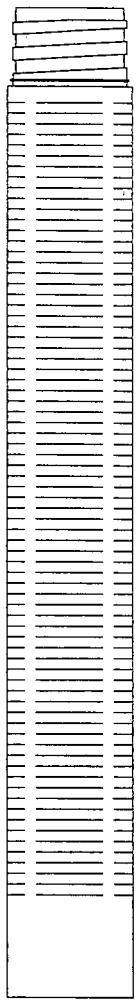
FLUSH THREAD PVC SCREEN AND CASING

- ✓ Monoflex CNC computer lathed flush threads follow ASTM recommendations for reliable, consistent results on the job site.
- ✓ Our close tolerances provide a strong connection while retaining ease of assembly.
- ✓ Manufactured from quality PVC pipe; Monoflex flush thread screens and casings are available in diameters of ½" through 12" with 2, 4, or 8 threads per inch stocked in schedules 40 & 80. Other schedules and SDR's are available in PVC and high density polyethylene.
- ✓ Laying length is standard for 2" and 4" schedule 40 PVC. Other sizes are end to end length. Custom lengths are available in all diameters.
- ✓ All standard Monoflex PVC threads are compatible with other materials threaded to ASTM recommendations, with the same TPI.
- ✓ All standard screens provide maximum net open area. A wide variety of slot sizes and spacings is available to adapt to various site conditions.
- ✓ 2" and 4" schedules 40 and 80 screens & casings are supplied with Buna-N O-rings at no additional charge. Buna-N O-rings are available for all other sizes for a nominal charge.
- ✓ All flush thread well screens and casings are Envirowrapped and hermetically sealed at both ends as a standard practice.

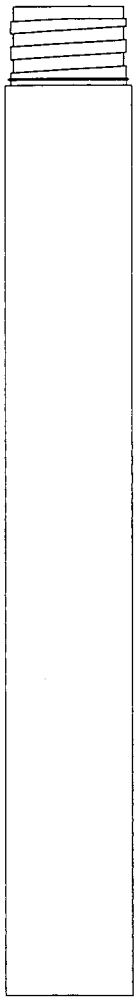
PLEASE SPECIFY PART NUMBER WHEN ORDERING.

The following pages list flush thread PVC screens and casings along with the appropriate Buna-N O-rings, and flush thread caps, plugs, and points.

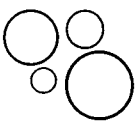
Custom lengths, threads and adapters available.



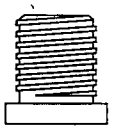
Flush Thread Screen



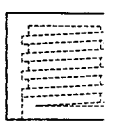
Flush Thread Casing



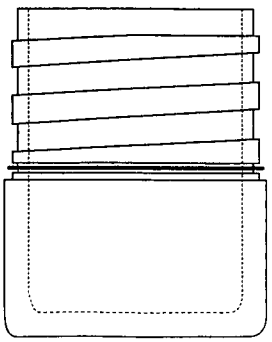
Buna-N O-Rings



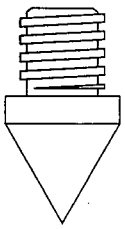
Male Plug (solid)



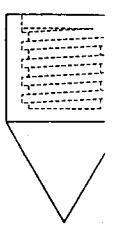
Female Ca (solid)



Male Plug (molded)



Male Point (solid)



Female Po (solid)

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 31

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	**0040**	**Naval Weapons Station Earle – Colts Neck, NJ**

PROJECT TITLE:
Landfill Capping OU-6, Sites 3 & 10

FROM:	DATE
FWENC : Site QC Manager James Lisic	April 24, 2003
TO:	**DATE**
M. DiGeambeardino (Hard Copy)	April 24, 2003

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.

2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

3. _____

E-COPY TO: **EFANE:**
NWS-Earle:

HARD COPY TO: **EFANE:** Jim Davis
FWENC: Rick Woodworth

☐ ROICC ☐ RPM ☐ CSO APRIL 23, 2003
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

2. _____

COPY TO:
☐ ROICC ☐ DESIGNER
SIGNATURE AND DATE

FROM:	DATE
TO:	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:
☐ ROICC ☐ OTHER

James M. Lisic 4/23/04
FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-10, Specification Section 02800, Top Soil • Topsoil composition test reports • PH test reports	James M. Lisic, CQA			No further action required

AMERICAN GEOTECH, INC.
Engineers, Consultants, and Material Testing Laboratories
Main Office: 1601 Penn Ave., Wyomissing Hills, PA 19609; Tel.: (610) 670-9055 / Fax: (610) 678-2719
Branch Office: 209 Main Street, Woodbridge, NJ 07095; Tel.: (908) 750-1658

Particle Size Analysis of Soils

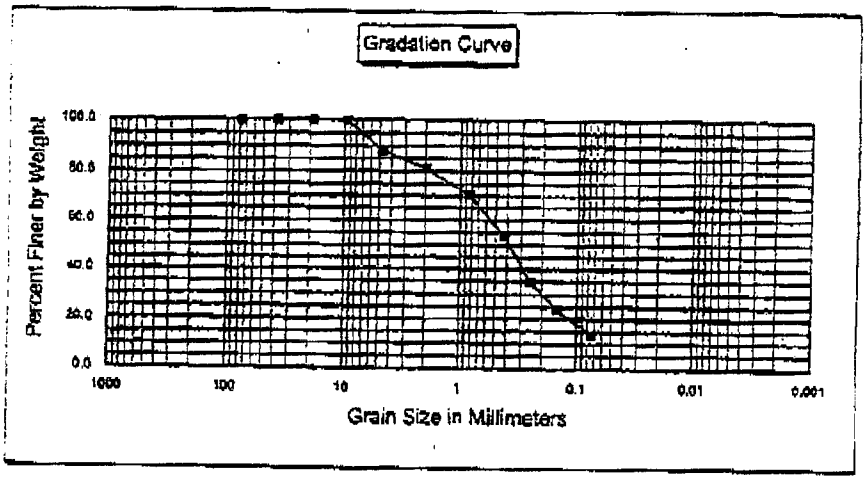
(In accordance with ASTM D 422)

Client:	Foster Wheeler	Boring Number:	
Project:	Navy - NJ	Sample Number: Maman / Top Soil #4	
Location:	NJ	Sample Depth:	
AGI Project No.:		Date(s) Tested:	12/21/02

TEST DATA:

Sieve Opening Inches	Sieve Opening Millimeter	U.S Standard Sieve Size or Number	Weight Retained on Sieve	Cumulative Weight Retained	Cumulative Percent Retained	Percent Finer by Weight	Total Weight of Sieve + Soil	Sieve Weight
3.00	76	3"	0.0	0.0	0.0	100.0		
1.50	38	1 1/2"	0.0	0.0	0.0	100.0		
0.75	19.1	3/4"	0.0	0.0	0.0	100.0		
0.375	9.52	3/8"	0.0	0.0	0.0	100.0		
0.187	4.76	No. 4	17.5	17.5	11.8	88.2	516.5	501.0
0.079	2	No. 10	10.0	27.5	18.6	81.4	454.7	444.7
0.033	0.84	No.20	16.5	44.0	29.8	70.2	445.1	428.6
0.0165	0.42	No.40	25.0	69.0	46.7	53.3	380.3	355.3
0.0098	0.25	No. 60	27.6	96.6	65.4	34.6	396.9	369.3
0.0059	0.149	No. 100	15.2	111.8	75.6	24.4	378.6	358.4
0.0029	0.074	No. 200	15.7	127.5	86.3	13.7	518.8	503.1
		Pan	127.5 20.3				356.5	346.3
Total Sample Weight in Grams			147.8					bw

194.4



Gradation by Descriptive Component: Sandy Organic Silt "OL"

	Boulders	Cobbles	Gravel		Sand			Silt and Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Range	> 12"	12" - 3"	3" - 3/4"	3/4" - #4	#4 - #10	#10 - #40	#40 - #200	< #200
% Retained	0	0	0	12	7	26	40	14

D_{10}= D_{30}= D_{60}=

C_u= C_c=

Tested By: mh Date: 12/21/02
Reviewed By: ML Date: 12/24/02

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Branch Office: 209 Main Street, Woodbridge, NJ 07095; Tel.: (908) 750-1668

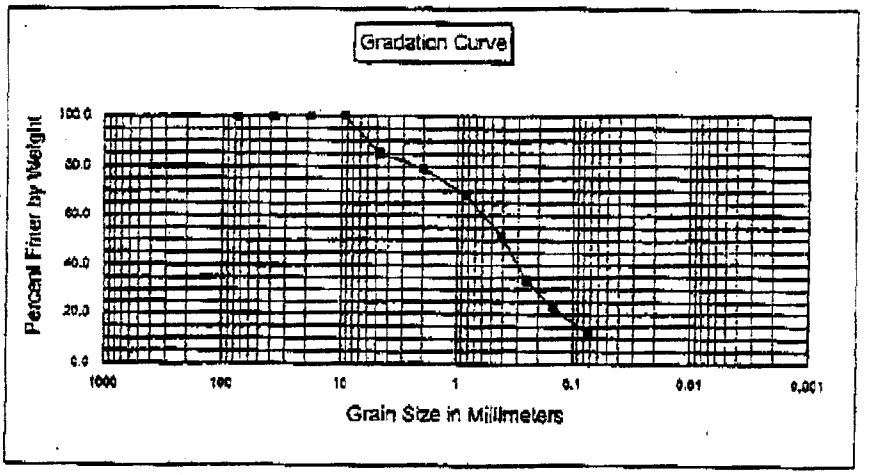
Particle Size Analysis of Soils

(In accordance with ASTM D 422)

Client:	Foster Wheeler	Boring Number:	
Project:	Navy - NJ	Sample Number: Herman / Top Soil #3	
Location:	NJ	Sample Depth:	
AGI Project No.:		Date(s) Tested:	12/21/02

TEST DATA:

Sieve Opening Inches	Sieve Opening Millimeter	U.S. Standard Sieve Size or Number	Weight Retained on Sieve	Cumulative Weight Retained	Cumulative Percent Retained	Percent Finer by Weight	Total Weight of Sieve + Soil	Sieve Weight
3.00	76	3"	0.0	0.0	0.0	100.0		
1.50	38	1 1/2"	0.0	0.0	0.0	100.0		
0.75	19.1	3/4"	0.0	0.0	0.0	100.0		
0.375	9.52	3/8"	0.0	0.0	0.0	100.0		
0.187	4.76	No. 4	20.8	20.8	15.0	85.0	521.8	501.0
0.079	2	No. 10	8.0	28.8	20.8	79.2	452.7	444.7
0.033	0.84	No.20	15.0	43.8	31.7	68.3	443.6	428.6
0.0165	0.42	No.40	22.3	66.1	47.8	52.2	377.6	355.3
0.0098	0.25	No. 60	25.4	91.5	66.2	33.8	394.7	369.3
0.0059	0.149	No. 100	15.5	107.0	77.4	22.6	373.9	358.4
0.0029	0.074	No. 200	14.0	121.0	87.5	12.5	517.1	503.1
		Pan	121.0 17.3				365.6	348.3
Total Sample Weight in Grams			138.3					



"OL"

Gradation by Descriptive Component: Sandy Organic Silt with Gravel

	Boulders	Cobbles	Gravel		Sand			Silt and Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Range	> 12"	12" - 3"	3" - 3/4"	3/4" - #4	#4 - #10	#10 - #40	#40 - #200	< #200
% Retained	0	0	0	15	6	27	40	13

D_{10}= D_{30}= D_{60}=

C_u= C_c=

Tested By: mh Date: 12/21/02
Reviewed By: HL Date: 12/24/02

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Branch Office: 209 Main Street, Woodbridge, NJ 07095; Tel.: (908) 750-1663

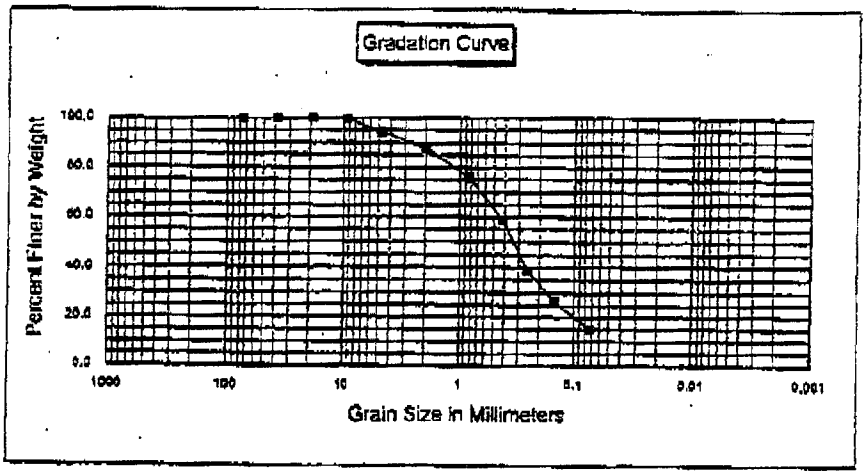
Particle Size Analysis of Soils

(In accordance with ASTM D 422)

Client:	Foster Wheeler	Boring Number:	
Project:	Navy - NJ	Sample Number: Herman / Top Soil #2	
Location:	NJ	Sample Depth:	
AGI Project No.:		Date(s) Tested:	12/21/02

TEST DATA:

Sieve Opening Inches	Sieve Opening Millimeter	U.S. Standard Sieve Size or Number	Weight Retained on Sieve	Cumulative Weight Retained	Cumulative Percent Retained	Percent Finer by Weight	Total Weight of Sieve + Soil	Sieve Weight
3.00	76	3"	0.0	0.0	0.0	100.0		
1.50	38	1 1/2"	0.0	0.0	0.0	100.0		
0.75	19.1	3/4"	0.0	0.0	0.0	100.0		
0.375	9.52	3/8"	0.0	0.0	0.0	100.0		
0.187	4.76	No. 4	8.5	8.5	5.7	94.3	509.6	501.0
0.079	2	No. 10	9.7	18.2	12.2	87.8	464.4	444.7
0.033	0.84	No.20	17.3	35.5	23.7	76.3	445.9	428.6
0.0165	0.42	No.40	25.1	61.6	41.2	58.8	381.4	356.3
0.0098	0.25	No. 60	29.8	91.4	61.1	38.9	393.1	363.3
0.0059	0.149	No. 100	18.2	109.6	73.3	26.7	376.6	358.4
0.0039	0.074	No. 200	17.1	126.7	84.7	15.3	520.2	503.1
			126.7					
		Pan	22.8				369.1	346.3
Total Sample Weight in Grams			149.5					



Gradation by Descriptive Component: Sandy Organic Silt "OL"

	Boulders	Cobbles	Gravel		Sand			Silt and Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Range	> 12"	12" - 3"	3" - 3/4"	3/4" - #4	#4 - #10	#10 - #40	#40 - #200	< #200
% Retained	0	0	0	6	5	29	44	15

D_{10}= D_{30}= D_{60}=

C_u= C_c=

Tested By: mh Date: 12/21/02
Reviewed By: ML Date: 12/21/02

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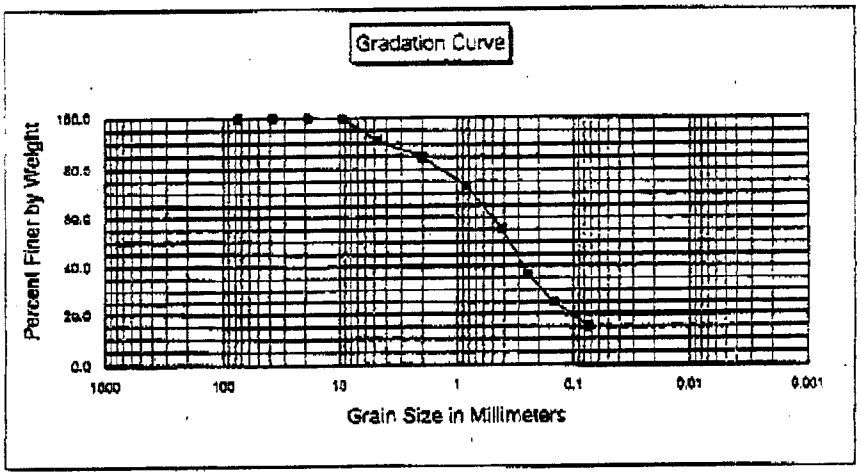
Particle Size Analysis of Soils

(In accordance with ASTM D 422)

Client:	Foster Wheeler	Boring Number:	
Project:	Navy - NJ	Sample Number: Herman / Top Soil #1	
Location:	NJ	Sample Depth:	
AGI Project No.:		Date(s) Tested:	12/21/02

TEST DATA:

Sieve Opening Inches	Sieve Opening Millimeter	U.S. Standard Sieve Size or Number	Weight Retained on Sieve	Cumulative Weight Retained	Cumulative Percent Retained	Percent Finer by Weight	Total Weight of Sieve + Soil	Sieve Weight
3.00	76	3"	0.0	0.0	0.0	100.0		
1.50	38	1 1/2"	0.0	0.0	0.0	100.0		
0.75	19.1	3/4"	0.0	0.0	0.0	100.0		
0.375	9.52	3/8"	0.0	0.0	0.0	100.0		
0.187	4.76	No. 4	14.3	14.3	8.5	91.5	515.3	501.0
0.079	2	No. 10	14.9	29.2	15.6	84.4	456.6	444.7
0.033	0.84	No.20	16.9	46.1	28.9	73.1	447.5	428.6
0.0165	0.42	No.40	29.4	74.5	44.5	55.5	384.7	355.3
0.0098	0.25	No. 60	31.8	106.3	63.4	36.6	401.1	369.3
0.0059	0.149	No. 100	19.3	125.6	74.9	25.1	377.7	358.4
0.0029	0.074	No. 200	16.8	142.5	85.0	15.0	520.0	503.1
		Pan	142.5 25.1				371.4	346.3
Total Sample Weight in Grams			167.6					



Gradation by Descriptive Component: Sandy Organic Silt "OL"

	Boulders	Cobbles	Gravel		Sand			Silt and Clay
			Coarse	Fine	Coarse	Medium	Fine	
Sieve Range	> 12"	12" - 3"	3" - 3/4"	3/4" - #4	#4 - #10	#10 - #40	#40 - #200	< #200
% Retained	0	0	0	9	7	29	41	15

D_{10}= D_{30}= D_{60}=

C_u= C_c=

Tested By: mh Date: 12/21/02
Reviewed By: AL Date: 12/21/02

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pH TEST

(USING pHTestr 2 / pHTestr 3)

Project Name: Navy - NJ
Project Number:

Client: Foster Wheeler
Location: Herman

SAMPLE NO.	WEIGHT OF CAN (grams)	WEIGHT OF CAN AND WET SOIL (grams)	WEIGHT OF CAN AND DRY SOIL (grams)	DRY WEIGHT OF SOIL (grams)	WEIGHT OF WATER (grams)	MOISTURE CONTENT (percent)	pH
Top Soil #1							6.64
Top Soil #2							6.68
Top Soil #3							6.63
Top Soil #4							6.69
Cover Soil #1							6.94
Cover Soil #2							6.89
Cover Soil #3							5.20
Cover Soil #4							5.00
Cover Soil #5							5.28
Cover Soil #6							5.02

Remarks:

Tested By: mi
Reviewed By: MC

Date: 12/21/02
Date: 12/21/02

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TOTAL ORGANIC CONTENT (TOC)

Project Name: Navy - NJ
Project Number:

Client: Foster Wheeler
Location: Herman

SAMPLE NO.	CAN NO.	WEIGHT OF CAN (grams)	WEIGHT OF CAN AND DRY SOIL W/ ORG. (grams)	WEIGHT OF CAN AND DRY SOIL (grams)	DRY WEIGHT OF SOIL (grams)	WEIGHT OF ORGANIC (grams)	TOC %
Top Soil #1	2	51.8	224.0	213.8	162.1	10.1	6.23
Top Soil #2	A13	52.2	205.8	196.8	144.6	9.0	6.22
Top Soil #3	16	52.0	193.9	185.2	133.2	8.7	6.53
Top Soil #4	102	51.2	202.7	194.4	143.2	8.3	5.80

Remarks:

Tested By: ML/HH
Reviewed By: HL

Date: 12/21/02
Date: 12/21/02

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LIQUID LIMIT AND PLASTIC LIMIT OF SOILS

(In Accordance With ASTM D4318)

Project Name: **Navy - NJ** Client: **Foster Wheeler**
Project Number:

SAMPLE NO.	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	CLASSIFICATION FOR FINES
Topsoil #1	Non-plastic	-	0.0	OL
Topsoil #2	Non-plastic	-	0.0	OL
Topsoil #3	Non-plastic	-	0.0	OL
Topsoil #4	Non-plastic	-	0.0	OL
Coversoil #1	Non-plastic	-	0.0	ML
Coversoil #2	Non-plastic	-	0.0	ML
Coversoil #3	Non-plastic	-	0.0	ML
Coversoil #4	Non-plastic	-	0.0	ML
Coversoil #5	Non-plastic	-	0.0	ML
Coversoil #6	Non-plastic	-	0.0	ML

Tested By: mh
Computed By: mh
Reviewed By: MC

Date: 12/21/02
Date: 12/21/02
Date: 12/21/02

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LIQUID LIMIT AND PLASTIC LIMIT OF SOILS
(In Accordance With ASTM D4318)

Project Name: Navy - NJ
Project Number:

Client: Foster Wheeler

LIQUID LIMIT

SAMPLE NO.	NO. OF BLOWS	WEIGHT OF CAN (grams)	WEIGHT OF CAN AND WET SOIL (grams)	WEIGHT OF CAN AND DRY SOIL (grams)	DRY WEIGHT OF SOIL (grams)	WEIGHT OF WATER (grams)	MOISTURE CONTENT (percent)	LIQUID LIMIT (percent)
Topsoil#1								Non-plastic
Topsoil#2								Non-plastic
Topsoil#3								Non-plastic
Topsoil#4								Non-plastic
Coversoil#1								Non-plastic
Coversoil#2								Non-plastic
Coversoil#3								Non-plastic
Coversoil#4								Non-plastic
Coversoil#5								Non-plastic
Coversoil#6								Non-plastic

PLASTIC LIMIT

SAMPLE NO.	WEIGHT OF CAN (grams)	WEIGHT OF CAN AND WET SOIL (grams)	WET OF CAN AND DRY SOIL (grams)	DRY WEIGHT OF SOIL (grams)	WEIGHT OF WATER (grams)	MOISTURE CONTENT (percent)	PLASTICITY INDEX	
Topsoil#1							0.0	
Topsoil#2							0.0	
Topsoil#3							0.0	
Topsoil#4							0.0	
Coversoil#1							0.0	
Coversoil#2							0.0	
Coversoil#3							0.0	
Coversoil#4							0.0	
Coversoil#5							0.0	
Coversoil#6							0.0	

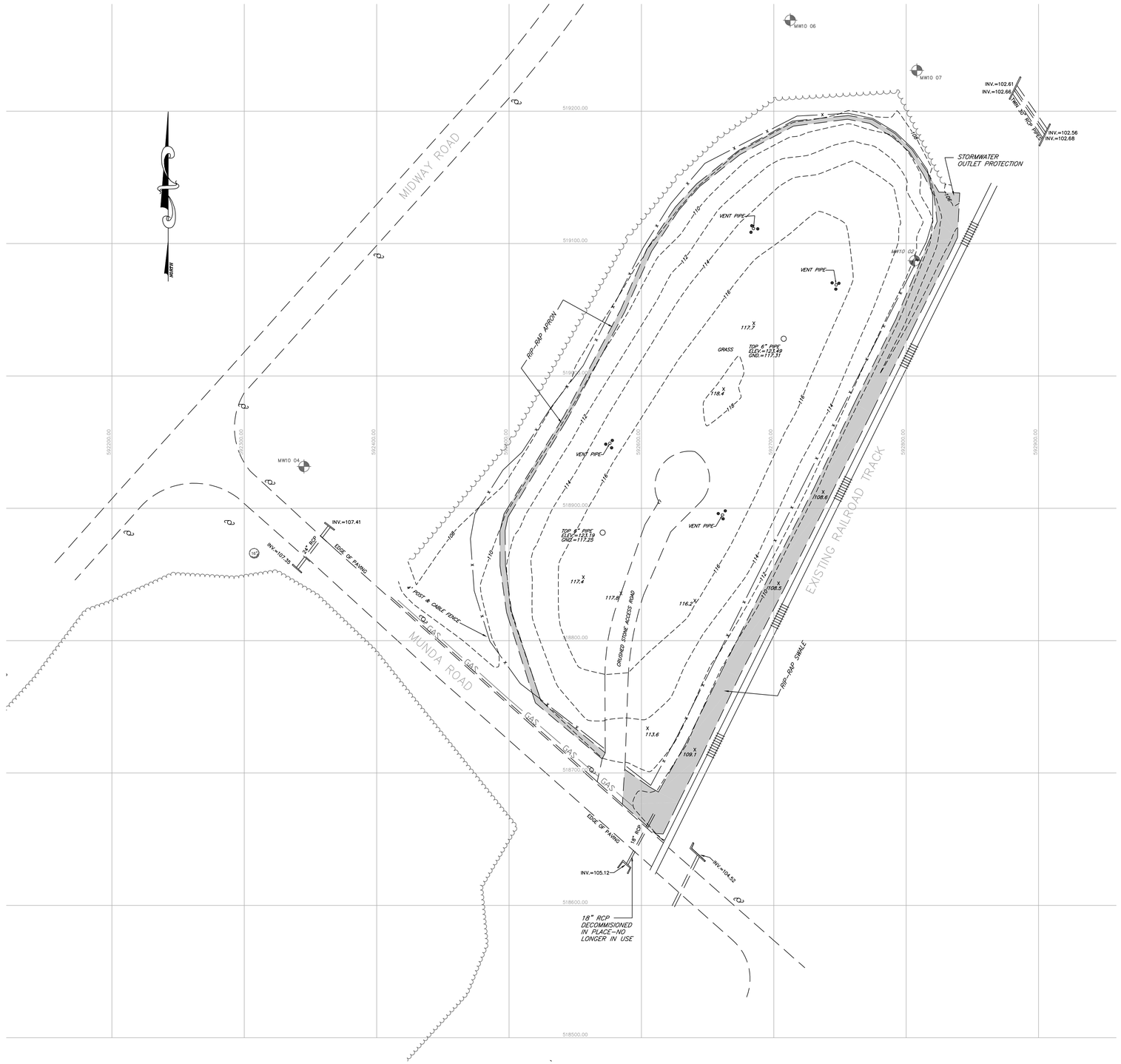
Remarks:

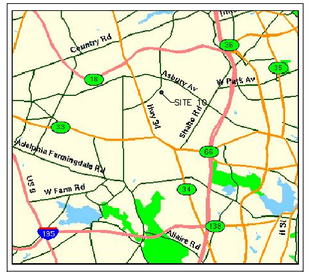
Tested By: mh
Computed By: mh
Reviewed By: MC

Date: 12/21/02
Date: 12/21/02
Date: 12/24/02

APPENDIX D

Site 10 – As-Built Drawings





LOCATION MAP
NOT TO SCALE

Legend

- MONITORING WELL
- BOLLARD
- 6" ROUND CAST IRON SETTLEMENT MONUMENT
- EDGE OF STONE
- TREELINE
- RIP-RAP SWALE
- SPOT ELEVATION (x 117.4)
- PERIMETER CABLE FENCE

Monitoring Well Locations

Description	Northing	Easting	Top Cap El	Top PVC
MW10 02	519087.1190	592806.4220	115.36	115.17
MW10 04	518931.5588	592545.0954	113.10	112.95
MW10 06	519268.7400	592712.3900	106.54	106.52
MW10 07	519230.8600	592807.9400	108.24	108.01

NOTE: MW10 02 EXTENDED DURING CONSTRUCTION TO MATCH NEW LANDFILL ELEVATIONS

General Notes

1. TOPOGRAPHIC DATA SHOWN HEREON BASED UPON A FIELD SURVEY CONDUCTED BY BOUCHER & JAMES, INC. ON JUNE 17, 2003.

2. HORIZONTAL DATUM BASED UPON NEW JERSEY STATE PLANE COORDINATES NAD83 AND VERTICAL DATUM BASED UPON NAVD88 AS FURNISHED BY THE ROICC OFFICE AT THE NAVAL WEAPONS STATION – EARLE FOR THE FOLLOWING MONITORING WELLS:

SITE NO. 3

MW03-04	510703.97	591611.40	122.90
MW03-08	510626.47	591620.78	118.84

SITE NO. 10

MW10-06	519268.74	592712.39	106.50
MW10-07	519230.86	592807.94	108.20

3. THE EXISTENCE OF A 100 YEAR FLOOD ZONE AT SITE NO. 10 IS UNDETERMINED AT THIS TIME, ACCORDING TO THE INDEX SHEET OF THE FLOOD INSURANCE RATE MAP FOR THE TOWNSHIP OF COLTS NECK, MONMOUTH COUNTY, COMMUNITY–PANEL NUMBER 340291 0009C HAS NOT BEEN PRINTED.

4. THE CONTOURS SHOWN HEREON ARE AT 2 FOOT INTERVALS.

5. ANYONE USING THIS DRAWING FOR CONSTRUCTION IS ADVISED TO CALL 1–800–272–1000 FOR UNDERGROUND UTILITY LOCATIONS PRIOR TO EXCAVATION IN ACCORDANCE WITH NEW JERSEY ONE CALL SYSTEM, INC.

CALL BEFORE YOU DIG!
UNDERGROUND UTILITY PROTECTION ACT REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP CALL
New Jersey One Call System, Inc.
1–800–272–1000

Revisions

Date	Description

Project : NAVAL WEAPON'S STATION–EARLE
COLT'S NECK TOWNSHIP
MONMOUTH COUNTY, NJ

Owner : TETRA TECH FW, INC.
2300 LINCOLN HIGHWAY EAST
ONE OXFORD VALLEY, SUITE 200
LANGHORNE, PA 19047–1829

Job No.: 010412
Drawn by: DR–BY
Checked by: CH–BY
Scale: SCALE
Plan Status: FINAL PLAN

Title: SITE NO. 10 - AS-BUILT PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
Doylestown, PA Quakertown, PA Stroudsburg, PA

Project Name : NAVAL WEAPON'S STATION–EARLE

Sheet: 1 OF 1

Date: DATE

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APPENDIX E

Copy of FWENC UXO Log Book

OPERATIONAL SUMMARY OF ORDNANCE AVOIDANCE AT SITE 10 FOR PERIOD 13 OCTOBER 2002 THRU 27 NOVEMBER 2002

ENCLOSURE (1) DAILY REPORT OF ITEMS OF INTEREST.

ENCLOSURE (2) COPIES OF DAILY LOG.

ORDNANCE AVOIDANCE WAS CONDUCTED DURING ALL INTRUSIVE AND WELL DRILLING AT SITE 10.

ORDNANCE RELATED ITEMS LOCATED (40 MM CARTRIDGE CASES, 20 MM CARTRIDGE CASES, AND 1- 3" CARTRIDGE CASE) WERE ALL EXPENDED (INERT).

OTHER DUTIES WERE COMPLETED AS REQUIRED BY THE PROJECT.

SUBMITTED BY:

/Thomas Brennan

THOMAS BRENNAN
SENIOR UXO SUPERVISOR

encl (1)

DEPLOYMENT TO NWS EARLE, NEW JERSEY ON 13 OCTOBER, 2002

TRAVEL FROM ASHLAND CITY TENNESSEE TO TINTON FALLS, NEW JERSEY; 920 MILES.

CHARGE NUMBER; 2282-0401-9202-00000

13 OCTOBER 2002 8 HR TRAVEL

14 OCTOBER 2002 HOLIDAY, NO WORK.

15 OCTOBER 2002 MOBILIZE , SITE AS SPECIFIC, DAILY SAFETY TRAINING, START WORK IN AREAS 3 AND 10 AS UXO TECH FOR ORDNANCE AVOIDANCE. 10 HOURS.

16 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.

17 OCTOBER 2002. DAILY WORK SCHEDULE. 10 HOURS.

18 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.

TOTAL HOURS FOR THE WEEK; 48

21 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS

22 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS
LOCATED 13- 40 MM CRTGS (INERT) AT SITE 10 IN THE AM.
LOCATED 7 - 20 MM, AND 6- 40 MM CARTRIDGES (INERT).

23 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS
LOCATED 11 - 40 MM CARTRIDGES (INERT).

24 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
LOCATED 2 - 40 MM CARTRIDGES (INERT).

TOTAL HOURS FOR THE WEEK; 40 HOURS.

28 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
LOCATED AND IDENTIFIED (2) 40 MM CARTRIDGE CASES,(INERT).

29 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
LOCATED AND INDENTIFIED (4) 40 MM CARTRIDGE CASES. INERT.

30 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
LOCATED AND IDENTIFIED (2) 40 MM CARTRIDGE CASES, INERT.

31 OCTOBER 2002 DAILY WORK SCHEDULE. 10 HOURS.

TOTAL HOURS FOR THE WEEK; 40 HOURS.

4 NOVEMBR 2002 DAILY WORK SCHEDULE . 10 HOURS
3 TRENCHS WITH MANY 40 MM CARTRIDGE CASES LOCATED NEAR THE REAR CENTER OF THE LANDFILL. ALL INERT.

5 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
SEVERAL 40 MM CARTRIDGE CASES LOCATED, ALL INERT.
ORDERED SCHONSTEDT AND DOWN HOLE MAGNATOMETER FROM UXO MANAGER.

6 NOVEMBER 2002 DAILY WORK SCHEDULE , HEAVY RAIN. 10 HOURS.
RAIN STOPPED EARLY, REAL MUDDY, SECURED TRUCKS EARLY, CONTINUED WITH CUT AND FILL AT SITE 10.

7 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
WINDY, GOOD DRYING DAY, CONTINUED WITH CUT AND FILL AT SITE 10.

8 NOVEMBER 2002 DAILY WORK SCHEDULE, OT 10 HOURS.
SITE 10 ONLY AREA WORKING THIS DAY, CUT AND FILL.

TOTAL WORK HOURS THE WEEK; 50 HOURS

12 NOVEMBER 2002 DAILY SCHEDULE, 10 HOURS. WORK
HEAVY RAIN, SECURED TRUCKS AND EQUIPMENT AT SITE 10 AT 1135.

13 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
RAIN CONTINUES. SECURED OPERATORS AND TRUCKERS DUE TO OVERLY WET CONDITIONS. WELL DRILLERS STARTED DRILLING AT SITE 3.

14 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
CLEAR DAY, GOOD DRYING. STILL TO WET FOR FINISH WORK.
WELL DRILLERS WORKED AT SITE 3.

15 NOVEMBER 2002 DID NOT WORK THIS DATE, NO UXO WORK.

TOTAL WORK HOURS THIS WEEK; 30 HOURS. TOOK 10 HOURS FROM BANK, TOTAL 40 HR.

18 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.

19 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
WORKED WITH THE DRILLERS SETTING 4 GAS WELL VENTS AT SITE 10. PACKAGED SCHONSTEDT AND MG-220 FOR SHIPMENT TO DAVE KELLER.

20 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
TOOK SAMPLE AT TRUCK LAYDOWN AREA AND DELIVERED SAME.

21 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
LOCATED AND IDENTIFIED 1 - 40 MM CARTRIDGE CASE AND 1 - 3" CARTRIDGE CASE. BOTH WERE INERT.

TOTAL WORK HOURS THIS WEEK; 40 HOURS.

25 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
IMPORTING SAND AT SITE 10, SHOULD FINISH INTRUSIVE WORK 11/26/02.

26 NOVEMBER 2002 DAILY WORK SCHEDULE. 10 HOURS.
COMPLETED INTRUSIVE WORK AT SITE 10.

27 NOVEMBER 2002 DEMOBILIZE, TRAVEL TO HOME.

WORK HOURS THIS WEEK INCLUDING TRAVEL 28 HOURS.

ENCL (2)

DHL Address.

Tele: (732)-761-1582

ACCT # 758734237

FOSTER WHEELER ENVIRO.

OFF TRAIL NAVAL

WEAPONS STATION,

EARLE.

201 Highway 34 S

Colts Neck, NJ.

07722902

NWS EARLE VISUCI 02

10/13 TRAVEL TO EARLE/ARRIVE, (8hr-920 Miles)

10/14 Holiday

10/15 Mobilization

Charge Number 2282-0401-9202-00000

Temp 38°-

OFFICE-732-761-1582 FT- 215-702-4049

RICK Woodworth C- 215-776-0629

JON CARY C-401-965-8675

JOHN LANE 917-975-6651

JIM LISIC 360-908-1489

TOM BRENNAN 732-389-8100 EXT 111

REMEDIAL ACTION AT

OPERABLE UNIT 6

(SITES 3 AND 10

NAVAL WEAPONS STATION

EARLE, COLTS NECK,

NEW JERSEY.

15 OCT 2002 cloudy TUE

0600 AT GATE for PASS.
- ✓ ATTENDED site specific and safety brief.
- ✓ TO ENTERPRISE RENTAL for vehicle.
- ✓ MADE TOUR of All sites
- ✓ MET with EOD personnel and DISCUSSED disposition of any ordnance found.

1230 ✓ Visited each site.
1445 Visited each site.
1510 CALLED H R office for a E-MAIL copy of my resume
- ✓ MOVED vehicles to motel.

1700 Secured 10 hr

16 OCT 02 HEAVY RAIN WED

0600 ON SITE.
0615 SIGNED IN LABORS AT GATE.
0630 ATTENDED Daily Safety brief.
0650 DOWN LOAD MESSAGES ON COMPUTER.
0750 TOUR All sites
0840 RETURN TO OFFICE. WORK ON UP DATING RESUME FOR HR.
1230 TOUR of All sites
1400 BACK AT office HEAVY RAIN, SOME flooding.
1500 Checked Trailers STILL RAINING
1700 SECURED
* LATE ENTRY: completed up date of RESUME, 10 hr

17 OCT 02 45°-60° CLOUDY

0600 ON SITE.
0630 ATTENDED Daily SAFETY BRIEF.
0730 VISITED SITE 10; GRADING ROAD; FILLING POT HOLES; REPAIRING SILT FENCE.
0900 VISITED SITE 3, CHIPPING.
0930 RETURN TO OFFICE, CHECK E-MAIL.
0900 TO THE Field SITES 3 & 10
1030 BACK TO 3
1115 RETURN TO OFFICE
1215 TO THE Field, SITES 3 & 10
1345 RETURN TO OFFICE.
1430 TO THE Field.
1600 RETURN TO OFFICE
1630 CHECKED MESSAGES
1700 SECURE 10 HR

Thur 18 OCT 02 46°-58° FRI

0600 ON SITE
0630 ATTENDED DAILY SAFETY BRIEF.
0700 TO TRUCK HOLDING AREA.
0800 TO SITE 10
0900 AT TLA
0930 TO OFFICE
1000 TO SITE 10 WITH FUEL TRK.
1100 TO TLA & SITE 10
1215 BACK TO OFFICE
1245 TO TLA & 10
1315 WALKED ENTIRE SITE TLA
1445 WALKED ENTIRE SITE 10
1600 RETURN TO OFFICE.
1700 SECURE 10 HR

21 OCT 02

0600 ON SITE
0630 ATTENDED Daily SAFETY brief
0730 Picked up personnel at MAIN GATE.
0830 TO AREA 10
0930 TO TLA # 10 -
1100 RETURN TO OFFICE
1115 TO TRUCK LAY down AREA & SITE 10
1200 RETURN TO OFFICE
1230 TO AREA 10
1411 TO TLA
1500 TO AREA 10
1600 BACK TO THE OFFICE
1700 SECURE 10 hr

MON 22 OCT 02 TUESday

0600 ON SITE
checked E-mail
0630 ATTENDED Daily SAFETY brief.
0700 TO TRUCK LAY down AREA AND AREA 3
0730 TO SITE 10, INTRUSIVE, LOCATED and identified 13
b 40 ~~50~~ mm CARTRIDGES (INERT)
1130 TO OFFICE FOR LUNCH
1230 TO SITE 10
LOCATED 7 - 20 MM CARTG's
b 6 - ~~50~~ 40 mm CTG's, All INERT.
1630 TO THE OFFICE
1700 SECURED 10 hr

23 OCT 02 — Wednesday

0600 ON SITE
CHECK E-MAIL
made copy of DISCRIPTION of
b 40 ~~50~~ mm proj & CARTRIDGE
0630 ATTENDED daily SAFETY BRIEF.
PROVIDED INFORMATION ON
b 40 ~~50~~ MM CRTGS.
0645 REFUELED RENTAL CAR
0700 TO SITE 10
b 0745 TOOK PICTURES OF 40 ~~50~~ MM
& 30 MM CRTGS.
b 1150 LOCATED 2- 40 ~~60~~ MM THIS AM
1200 TO OFFICE LUNCH
1230 TO SITE 10
b LOCATED 9- 40 ~~50~~ MM CARTGS.
1630 RETURNED TO OFFICE.
1700 SECURED 10 HR

24 OCT, 02 — Thursday

0600 ON SITE, CHECK E-MAIL
0630 ATTEND Daily SAFETY BRIEF.
PROVIDE UXO SAFETY BRIEF.
0645 TO SITE 10.
0915 ESCORT FOR ACE, All SITES,
1030 TO SITE 10
1100 E-MAIL ADDRESS TO
Polsburo, WA
1130 LUNCH
1230 SITE 10
LOCATED 2- 40 MM
CARTRIDGE CASES (INERT),
1630 RETURN TO OFFICE -
1700 SECURED 10 HR.

28 OCT 02

0600 ON SITE
0630 ATTENDED SAFETY BRIEF.
COMPLETED EXPENSE REPORT.
0715 TO SITE 10.
0845 ESCORT FUEL TRUCK
0915 BACK TO SITE 10
0930 ESCORT UNITED FROM 3 TO THE GATE.
1000 TO THE OFFICE
1030 TO SITE 10
1145 BACK TO OFFICE
LUNCH
1230 TO SITE 10 & AREA 3
1400 LOCATED & IDENTIFIED (2) 40 mm CARTRIDGE CASES (INERT)
1600 TO OFFICE
1700 SECURE 10 hr

Monday 29 OCT 02 Tuesday

0606 ON SITE.
0630 ATTENDED DAILY SAFETY BRIEF.
0645 TO SITE 10 & AREA 3
0900 TO TRUCK LOADING AREA.
1000 ESCORT FOR FUEL TRUCK TO ALL AREAS.
1200 TO GATE WITH FUEL TRUCK.
LUNCH
1230 TO SITE 10
LOCATED & IDENTIFIED (4) 40 MM CARTRIDGE CASES, INERT.
1345 TO TRUCK LOADING AREA.
1530 STARTING TO SLEET.
1550 TO OFFICE.
1700 SECURE 10 hr

30 OCTOBER 2002 Wednesday

0600 ON SITE CHECK E-MAIL
0630 ATTENDED DAILY SAFETY BRIEF
0645 TO SITE 10 — AREA VERY WET
0900 ESCORT AND BACK
1100 LOG TRUCKS IN..
1230 TO OFFICE TO PICKUP LABORERS. BACK TO SITE 10
1300 LUNCH
1330 AT SITE 10
1500 RETURNED RENTAL
1615 BACK TO OFFICE -
1700 SECURED 10 HR

(2) 40 mm CARTRIDGES (INERT)

31 OCTOBER 2002 Cloudy, Thursday

0540 ON SITE, CHECK EMAIL.
0630 ATTENDED DAILY SAFETY BRIEF.
0635 DEPARTED TO SITE 10.
0830 TO SITE 3 AND BACK
0945 TRANSPORT LABORERS TO TRAILER FOR BREAK.
1015 BACK TO SITE 10
1145 TO OFFICE LUNCH WITH LABORERS.
1245 RETURN LABORERS TO SITE 10 & TRUCK LAYDOWN AREA.
BACK TO SITE 10
1620 BACK TO OFFICE.
1700 SECURED 10 hr.

7 OCT 2002 Clear to Cloudy MONDAY

0530 ON SITE CHECK E-MAIL
COMPLETE EXPENSE REPORT.
0630 ATTENDED DAILY SAFETY BRIEF.
0645 TO SITE 10
1100 3 TRENCHES CONTAINING
EMPTY, RUSTED INERT 40 MM
CARTRIDGE CASES.
1200 OFFICE FOR LUNCH
1235 TO SITE 10 & 3
1325 TO OFFICE
1345 TO SITE 10
1425 TO CLINIC
1630 AT OFFICE
1700 SECURED 10 HR

5 NOV 2002 Tuesday

0530 ON SITE, CHECK E-MAIL
0630 ATTENDED DAILY SAFETY BRIEF.
0645 TO SITE 10
1100 ESCORT TRUCK W/ TRAC HOE
1215 TO OFFICE, LUNCH
1250 TO SITE 10
1430 ESCORT UNITED RENTALS
1530 BACK TO SITE 10
1600 CALLED DAVE FOR SCHONSTEDT
AND DOWN HOLE MAGNOTOMITOR.
DUE TO ARRIVE MONDAY NEXT.
1615 BACK TO OFFICE
1700 SECURED 10 HR

6 NOV 2002 (HEAVY RAIN) WED.

0530	ON SITE, CHECK E-MAIL
0630	ATTENDED DAILY SAFETY BRIEF
0645	TO SITE 10
0830	ESCORT FUEL TRUCK
0945	TO SITE 3
1030	TO SITE 10
1130	TO OFFICE TRUCKS SECURED
1200	TO SITE 10
1500	TO OFFICE & REFUEL
1530	TO SITE 10
1600	TO OFFICE
1700	SECURED 10 HR

7 NOV 2002 THUR

0530	ON SITE, CHECK E-MAIL
0630	ATTENDED DAILY SAFETY BRIEF
0645	TO SITE 10, LOG IN TRUCKS. 21 TRUCKS TOTAL
1130	TO OFFICE, LUNCH
1235	ESCORT UNITED RENTAL PICKUP OF ROLLER.
1315	TO SITE 10
1600	TO OFFICE
1700	SECURED 10 HR

8 NOV 2002 CLEAR FRI

0530 ON SITE, CHECK E-MAIL
0630 ATTENDED DAILY SAFETY BRIEF
0645 TO SITE 10
1030 ESCORT EQUIPMENT DELIVERY TO AND FROM SITE LAYDOWN AREA
1115 TO SITE 10
1130 ESCORT TRUCK TO GATE
1145 OFFICE, LUNCH
1205 ESCORT TRUCK W/TRACHOE TO TRUCK LAYDOWN AREA.
1230 CONTINUED ONTO AREA 3 TO PICKUP ROLLER.
1300 OFFICE
1315 TO SITE 10
1615 TO OFFICE
1700 SECURED 10 HR
X 50 HR THIS WEEK

12 NOV 2002 RAIN TUESDAY

0545 ON SITE, COMPLETE EXPENSE REPORTS, E-MAIL.
RECEIVED SCHONSTEDT #173143,
" MG-22D # 114329
FROM DAVE KELLER
0630 ATTENDED DAILY SAFETY BRIEF.
0645 TO SITE 10
0940 TRUCKS COULD NOT GET INTO SITE 10, SENT THEM BACK TO SITE 3, CALLED JOHN, 8 LOADS HAULED BY #40 & 94 TOTAL. T-ROX STILL HAULING.
1135 CALL FROM OFFICE, STOP WORK AT SITE 10.
1200 TOOK JIM TO TIRE SHOP FOR 2 TIRES FOR RENTAL CAR.
1445 RETURNED TO BASE
1500 TALKED TO AUTUM ABOUT THE TRAINING IN DECEMBER
TALKED TO DAVE ON PORS FOR DALHGREN.
1700 SECURED 10 HR

13 NOV 2002 — RAIN

0535	ON SITE, CHECK E-MAIL
0630	ATTENDED DAILY SAFETY BRIEF
0640	TO SITE 10
0720	SECURED FROM SITE 10
	BACK TO TRAILER.
	RAIN CONTINUES.
0800	TO GATE FOR EXTENDED
	PASS.
	FUEL RENTAL
0845	TO SITE 3 WITH DRILLERS.
1110	TO OFFICE
	JIM WITH DRILLERS
1200	TO SITE 3
1330	TO OFFICE
1400	TO SITE 3
1500	ESCORTED DRILLERS TO GATE.
1700	SECURED 10 HR.

14 NOV 2002 — CLEAR - WARM 50's

0530	ON SITE, CHECK E-MAIL
0630	ATTENDED DAILY SAFETY BRIEF
0750	TO SITE 10.
0840	TO OFFICE
0845	ESCORT FUEL TRUCK TO ALL AREAS,
1000	BACK AT SITE 10
1010	ESCORT UNITED RENTALS
1200	BACK TO OFFICE
1240	TO SITE 10
1445	TO OFFICE
1500	TO TRK LOADING AREA & SITE 3 + 10.
1620	TO OFFICE
1700	SECURED 10 HR

18 NOV 2002 cloudy MON

0530 ON Site, Check E-Mail
0630 ATTENDED Daily SAFETY brief.
0715 Picked up HOT WORK permit
0730 TO Site 3.
0800 TO OFFICE, Pickup 2
- ✓ LABORERS, TAKE TO GATE,
- ✓ ESCORT Fuel TRUCK
1110 TO OFFICE
1115 TO Site 3
1220 BACK TO OFFICE.
1245 TO Site 3
1315 TO Site. GATE
1330 TO OFFICE, Resume (CRINO)
1510 TO Site 3, ORTS D GATE. Site 10
1605 BACK TO OFFICE
1700 SECURED 10 hr

19 NOV 2002 cloudy/clear TUESDAY

0545 ON Site, check E-mail
0630 ATTENDED Daily SAFETY brief.
0635 TO Site 10
0930 TO site 3 ORTS D and OFFICE TO LOCATED (2) 300' TAPS
1000 BACK TO Site 10 with the DRILLERS AND JIM MARKING well SITES, SET 1.
1215 ESCORT Fuel TRUCK
1245 AT Site 10 SET 3 REMAINING GASBUGGY WELLS.
1430 GOT Fuel
1450 TO Site 10.
1515 TO OFFICE.
1530 PACKAGED Schonstedt # 173143 AND MG-220 # 114329 FOR Shipment TO DAVE.
1600 TO Site 3 + Lay down AREA
1620 TO OFFICE
1700 SECURE 10 hr
TALKED TO DAVE about MEETING in Bethel.

20 NOV 2002 Clear

0530 ON SITE, CHECK E-MAIL
0630 ATTENDED SAFETY BRIEF.
0650 TO SITE 3 & 10
0730 TO OFFICE
0735 TO HARDWARE STORE
0800 TO SITE 10
0850 PICKED UP (1) THERMOMETER, (1) BAR of TWINE, (1) 5 GAL PAIL FOR SAMPLES
0950 BACK AT SITE 10
1030 ESCORTING FUEL TRUCK AND DRILLERS.
1100 GOT SAMPLE AT LAYDOWN AREA, CALLED FOR PICKUP
1200 TO SITE 10 W/ DRILLERS
1220 TO OFFICE, LUNCH
1300 ESCORT DUTY
1330 SITE 10
1625 OFFICE
1700 SECURED 10 HR

Wed 21 NOV 2002 Thursday

0530 ON SITE, CHECK E-MAIL
✓ E-MAIL TO COACH ON TRANSPORTATION AT SOATAC.
0630 ATTENDED Daily Safety BRIEF.
0900 TO SITE 10
0720 TO ROUTE 34 WITH GAS FOR JOHN LANE
0740 TO SITE 3 TO CHECK CART, CASES. PICKED UP (1) 40 MM CRTG CASE, (1) 34 CART CASE, BOTH INERT.
0830 TO GATE WITH 1 LABORER,
0850 TO SITE 10
1015 TO OFFICE, SITE 3 WITH GEO PAPER WORK.
1105 TO GATE, PICKUP FUEL TRUCK, ESCORT TO ALL AREAS.
1300 TO GATE WITH FUEL TRUCK GET GAS FOR RENTAL
1330 TO SITE 3 & 10
1615 TO OFFICE.
1700 SECURED 10 HR
40 HR THIS WEEK

25 NOV 2002 CLEAR MON

0530 ON SITE CHECK E-MAIL
0630 ATTENDED DAILY SAFETY BRIEF.
0645 TO SITE 10
0945 TO OFFICE
1000 TO SITE 10
1100 TO SITE 3
1115 TO SITE 10
1140 TO GATE, ESCORT
UNITED RENTALS TO SITE
LAYDOWN AREA, QRTS D GATE
1245 TO OFFICE
1250 TO QRTS & WITH TRAILER
RENTAL PERSONNEL FOR REPAIRS
1345 TO GATE FOR FUEL TRUCK
1400 AT OFFICE
1700 SECURED 10 HR

26 NOV 2002 TUESDAY

0530 ON SITE, CHECK E-MAIL
WORK ON END OF PROJECT
REPORT.
0630 ATTEND DAILY SAFETY BRIEF
0635 TOOK 1 LABORER TO SITE 3
0651 BACK AT OFFICE.
0710 TO SITE 10
0915 TO GATE, ESCORT TAYLOR OIL
TO SITES 3 & 10, LAYDOWN AREA,
AND QRTS D GATE
1115 AT OFFICE TO SITE 10
1300 BACK TO OFFICE
1310 DEPART TO WAIT TO TURN
IN RENTAL.
1420 RETURN FROM VEHICLE TURN IN,
1425 TO SITE 10
1615 TO OFFICE
1700 SECURE

27 NOV 2002
Demobilize / Travel
To Home.