FINAL

NON-TIME CRITICAL REMOVAL ACTION CERTIFICATION REPORT CAUSEWAY CONSTRUCTION

PHASES I AND II

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Prepared for:

U.S. Army Corps of Engineers – New England District
Concord, Massachusetts

DECEMBER 2003

Harding ESE
A MACTEC COMPANY

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By:
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December 23, 2003

Project 53955-03

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EXECUTIVE SUMMARY

The United States Army Tank-automotive and Armaments Command (U.S. ARMY), has implemented a Non-time Critical Removal Action (NCRA) for the Causeway at the Stratford Army Engine Plant in Stratford (SAEP), Connecticut. The Causeway is an approximate two acre parcel of land originally constructed to launch seaplanes from the SAEP facility.

Investigations and chemical sampling of soil from the Causeway identified various contaminants which exceeded State and Federal criteria for protection of human health and the environment. This NCRA provides for protection of the public health and adjacent marine resources via contaminant source control and installation of a cover system.

The U.S. ARMY with the concurrence of the U.S. Environmental Protection Agency (USEPA) and the Connecticut Department of Environmental Protection (CTDEP) designed and constructed the NCRA in conformance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), National Contingency Plan (NCP) and Base Closure and Realignment Act (BRAC) requirements.

The purpose of this report is to document construction activities, quality assurance and quality control for the NCRA. Harding ESE, Inc., a MACTEC Company (Harding ESE) (formerly Harding Lawson Associates [HLA]) was contracted through the U.S. ARMY for construction technical support activities throughout the contract period.

The construction contract was executed by the U. S. Army Corp of Engineers New England District (CENAE) and the Remedial Action Contractor (RAC) was Weston Solutions, Inc. (formerly R. F. Weston, Inc.) of Glastonbury Connecticut. The RAC was responsible for the scheduling, layout, installation, and testing of the NCRA which generally consists of the following components:

Phase I:

- Installation of erosion and sediment control measures,
- Clearing of trees and brush,
- Installation and baseline monitoring of heave monitoring platforms,
- Demolition and disposal of specified buildings and utilities, and
- Removal and disposal of oversized debris from the Causeway surface.

Phase II:

- Regrading of surface soils,
- Installation of lower cover system components,
- Installation of upper cover system components,
- Placement of subgrade fill, and
- Vegetative support components.

The components of the cover system were installed and tested by the RAC and its subcontractors using standard construction materials, methods and procedures. Detailed progress and test reporting and final record documentation are on file with CENAE. Construction materials testing and inspections indicate that the cover system was constructed in conformance with the contract drawings and technical specifications.

The cover system was placed into service and the RAC was awarded substantial completion in October 2002 by CENAE.

While not part of the NCRA, the Town of Stratford, CT provided causeway surface design features, under a contract modification, which were installed to support long-term plans for the Causeway, as a public access area. The surface design portion of the work is described for completeness in this document.

1.0 INTRODUCTION

Harding ESE, Inc., a MACTEC Company (Harding ESE) (formerly Harding Lawson Associates [HLA]) was contracted to provide engineering services related to the Non-time Critical Removal Action (NCRA) for the Causeway at the Stratford Army Engine Plant (SAEP) in the Town of Stratford, Fairfield County, Connecticut (Figure 1-1). The NCRA was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the Base Realignment and Closure (BRAC) Cleanup Plan Guidebook, and the Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations (RSR).

The purpose of this certification report is to document that the removal, handling, and disposal of impacted soils from the Causeway have been implemented, and that the designed cover system components have been constructed in compliance with the approved Remedial Action Work Plan (RAWP), (R.F. Weston, Inc. [Weston], 2001), the remedial design (Harding, 2001) and appropriate regulatory guidance.

This report provides documentation that the requirements of the design have been complied with and that the NCRA was substantially complete.

2.0 BACKGROUND

SAEP consists of approximately 124 acres, of which an estimated 76 acres are improved land consisting of 49 buildings, paved roadways and grounds, and five paved parking lots (Figure 2-1). Included in the improved land are an estimated 10 acres along the Housatonic River where fill was placed over tidal sediments during the development of SAEP facility, including the Causeway. An estimated two acres of property compose the Causeway, constructed to provide access to the river channel (see Figure 2-2).

2.1 SITE HISTORY AND SELECTED REMEDY

The Causeway was initially constructed and used as a means of launching seaplanes in the 1930s. Materials, of unknown origin, were deposited along the northern edge of the Causeway during the 1950s and 1960s. The source of the fill used to construct the Causeway is unknown, but it has been found to contain soil, cobbles, and construction debris (e.g., concrete, brick, and asphalt). Smaller amounts of other material (e.g., wood, glass, cinders, ash, and rebar) have also been observed during field investigation activities. It was also reported that paint solvents and wastes were burned on the Causeway as part of fire-training operations (ABB-ES, 1996).

Building B-59, a concrete building with concrete blast walls, located near the origin of the Causeway from the facility, was constructed to house the nose cones of missiles, including the explosive charges used to open the nose cones. This building was removed as part of this NCRA. There is currently no known unexploded ordnance present at the SAEP facility.

Chemical sampling and analysis of soil samples collected from the Causeway identified concentrations of various contaminants that exceeded specific Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulation (RSR) criteria, prior to implementation of this NCRA. Low-level radiological contamination was also identified during prior sampling, and the affected areas were excavated, containerized and transported to an appropriate off-site disposal facility in March 2000. A summary of these removal activities is provided in a report titled "Radiological Chemical Characterization Summary" (HLA, 2000). Evaluation of chemical analytical data is discussed in the Final Causeway Pre-design Investigation Report (Foster Wheeler Environmental Corporation [FW]/HLA, 2000a).

Based on the results of chemical analysis performed on samples collected from the Causeway and presented in the Final Engineering Evaluation/Cost Analysis (EE/CA) report (FW/HLA, 2000b), it was recommended that an erosion control cover system be placed over the Causeway to prevent possible receptor contact with impacted soil.

Subsequent geotechnical investigations and evaluations were conducted to assess subsurface conditions proximal to the Causeway and to develop a feasible cover system. These evaluations and recommendations including cover thickness, removal of debris, distribution of fill materials and use of engineered cover materials versus traditional rip-rap resulted in evaluation of four possible cover system options presented in the EE/CA.

Evaluation of these options by the stakeholders, including the regulatory community and the public, led the US Army and the regulatory agencies to select a composite cover system to be further developed during the formal design process.

The final design consists of two types of cover, an upper cover system above elevation 6.0 MSL and a lower cover system below elevation 6.0 MSL. These two areas provide a composite cover system over the Causeway which conforms to CERCLA guidance and includes subgrade fill, rock drainage, bedding, armored layering, and vegetative support components. Layer materials vary dependent upon location within the cover system, a conceptual profile of which is indicated in Figure 2-3.

2.2 PROJECT REQUIREMENTS

Work described in the contract design documents are summarized in this subsection. The Summary of Work for the separate construction phases (i.e., Phase I and Phase II) are presented in Section 2.2.1 and 2.2.2, respectively. These Sections outline the project requirements addressed in subsequent Sections of this report. Major items incorporated into the design include the following:

- A geotechnical evaluation of cover system stability and settlement based on cover design;
- Sediment containment systems; included in the Basis of Design document for completeness, although the sediment containment system was not ultimately utilized during implementation;
- Supporting documents pertinent to the demolition of Building B-59, Building B-5, and the Causeway weather station; and the removal and off-site disposal of debris and some contaminated soil;
- Design for the construction of the Causeway cover system, including a wave analysis, an ice abrasion evaluation, and vegetative cover material selection;
- A split two-phase design to allow early initiation of preliminary construction activities; and
- Provisions for documentation necessary for application for a site-specific Environmental Land Use Restriction (ELUR).

2.2.1 Phase I General Description

The general description below provides the approximate scope of the Phase I portion of the project. The work in this contract consists of preliminary activities conducted to clear the SAEP Causeway and nearby portions of the facility of structures and materials that would impede the construction of the cover system. Activities conducted as part of this work included:

- Abandonment of an existing monitoring well;
- Installation and maintenance of erosion and sedimentation control measures;

- Clearing of trees and brush from the Causeway;

- Installation and baseline monitoring of heave platforms and stationary heave poles;

- Removal of the containment berm around the Building B-34 former aboveground storage tank (AST) farm and removal of associated protective posts and tank supports to existing ground surface, followed by paving of the former AST area to improve access to the Causeway;

- Demolition and off-site disposal of Building B-5, including existing utility demolition and paving of the area to improve access to the Causeway;

- Excavation and off-site disposal of soil in ten locations that contained contaminant concentrations exceeding specific CTDEP Remediation Standard Regulation (RSR) criteria, ten times the CTDEP Groundwater Protection Criteria, greater than 1 part per million (PPM) of polychlorinated biphenyls (PCBs), or where SPLP analytical results exceed the federal Ambient Water Quality Criteria (AWQC) – further details regarding excavation criteria may be found in Appendix F of the 100% Design (Harding, 2001);

- Demolition and off-site disposal of Building B-59 and the Causeway weather station, including removal of existing utilities;

- Removal and off-site disposal of oversized surface debris measuring greater than two feet in any dimension, including a deteriorated concrete ramp that was at the end of the Causeway; and

- Perform a topographic survey of the Causeway at the completion of the work.

2.2.2 Phase II General Description

The general description below is provided to indicate the approximate scope of this portion of the work. The work in this contract consists of activities conducted to construct an erosion control cover system on the SAEP Causeway. Activities conducted as part of this work included:

- Maintenance of erosion and sediment control measures placed during Phase I of the work;

- Excavation of soil located on the Causeway sideslopes, placement of satisfactory excavated material on the top of the Causeway, and grading of the Causeway to the elevations indicated on the drawings;

- Off-site transport and disposal of unsatisfactory excavated material;

- Removal and off-site disposal of oversized debris identified during Phase I activities and encountered during sideslope excavation;

- Placement of the lower cover system, consisting of geogrid composite and a rock-filled toe a woven geotextile, a rock-filled transition drainage layer, and polymeric marine mattress (PMM) baskets, on the excavated sideslopes of the Causeway;

- Placement of the upper cover system, consisting, from subgrade base to surface, of sand bedding, a non-woven geotextile, interlocking concrete blocks, interstitial gravel, and gravel over the concrete blocks; these activities included incorporation of elements of the Town of Stratford Causeway Surface Design;

- Placement of a rip-rap transition connecting the lower cover system to the upper cover system and the Causeway cover to the existing rip-rap at the origination of the Causeway from the flood control dike;

- Placement of a vegetative support layer including: vegetative support soil, suitable grass cover, and an erosion control mat;

- Monitoring well grade adjustments to four existing monitoring wells;

- Completion of site surveys during and following the completion of Phase II construction activities;

- Monitoring of heave platforms and stationary heave poles, installed during Phase I work, and installation and monitoring of temporary heave poles; and

- Demobilization activities, including removal of temporary facilities, removal of erosion control measures, heave monitoring points, and final site cleanup.

2.3 REMEDIAL CONSTRUCTION SEQUENCE

Construction of the project was planned for an approximate one-year period. A chronology and specific dates for contractual obligations, duration of construction events and milestones are discussed in Section 4.0 and 5.0, respectively. This subsection presents an overview of the general construction sequences and potential impacts that were identified during the design process.

The sequence of construction was executed in two distinct phases: Phase I provided for preliminary activities to clear the Causeway and nearby portions of the facility of structures and materials in preparation for construction of the erosion control cover system, and Phase II consisted of construction of the cover system components. Each construction phase required generation of specific plans and approvals, and Contracting Officer authorization prior to implementation. Although planned and executed separately, the two phases were executed to evaluate overlapping activities to the extent practical in the avoidance of conflicts.

Potential schedule impacts identified during the design phase, included:

- Phase I activities, could not be conducted during the CTDEP specified “closed” period below the primary erosion control silt fence, approximate elevation 6.0 Mean Sea Level (MSL).

The lower reaches of the Housatonic River, where construction work was conducted, include areas of shellfish and finfish resources. The CTDEP does not allow what it considers to be unconfined excavation or filling work in the lower reaches of the Housatonic during certain times in order to protect shellfish and finfish resources. The relevant "closed" period for unconfined dredging is from April 1 through September 30, (April 1 to June 30 for finfish and June 1 to September 30 for shellfish).

Work above the primary erosion control silt fence was acceptable at any time under the CTDEP requirements, and required best management practices which were followed during all site work.

- Phase II activities, and Phase I activities below the primary erosion control silt fence, including weather station demolition and oversized debris removal on the sideslopes of the Causeway, could not be completed during the "closed" period.

- Phase II excavation activities would be completed for an anticipated maximum of 5 hours each day, due to tidal fluctuations.

- The site is located in a tidal area and excavation activities near the identified toe of the Causeway could not be completed under water.

- On the side slopes of the Causeway, the area to be excavated in any given day, or tide cycle, could be no larger than that which could be covered with the lower cover system on the same day, or tide cycle.

- Placement of the vegetative support layer, including vegetative support soil, seed, and erosion control materials.

3.0 PROJECT ORGANIZATION

The contract documents required the construction contractor to execute specific, detailed, and specialized activities relative to environmental concerns, construction sequencing, material control, and quality control (QC). This section outlines the contractual and operational requirements, as well as planning and review requirements for these efforts.

3.1 OPERATIONAL RELATIONSHIPS

The Causeway construction activities were executed by CENAE and the Remedial Action Contractor (RAC), Weston of Glastonbury, Connecticut. Information relative to contract administration is discussed in Section 5.0.

The RAC employed several subcontractors and vendors during project execution. Subcontractors which were significant in the remediation and documentation of the project included but are not limited to the following:

1. Analytical laboratory services for the characterization of waste streams generated during execution of the work were provided by:
   - Mitkem Corporation; Warwick, RI

2. Disposal services for various waste streams generated at the site were coordinated and provided by:
   - Pheniox Corporation; Waterbury, CT
   - New England Waste Services of NY, Inc.; Angelica, NY
   - CWM Chemical Services, L.L.C.; Model City, NY

3. Professional land surveyor (PLS) services for site control and verification for final grading were provided by:
   - A.M. Engineering, Milford, CT

4. PMM components utilized in construction of the lower cover system were provided by:
   - TENSAR Corporation, Morrow, GA via distribution by American Excelsior Company, Arlington, TX

5. Articulating concrete block utilized in construction of the upper cover system was provided by:
   - Contech Construction Products, Inc./Armortec, Inc., West Hartford, CT

6. Subcontractors employed in field fabrication and final seaming of PMM components for the RAC:
   - Franklin Environmental, Meriden, CT
   - Mansfield Construction, Fairfield, CT

Remediation activities performed by the RAC and its subcontractors were directed by the RAC's Project Manager. Project task implementation, health and safety requirements, and remediation

quality control were the responsibility of the RAC's on-site construction superintendent, health and safety coordinator, and project QC officer(s).

Engineering support services were contracted to Harding via a contract with the U.S. Army Chemical Biological Defense Command, and included a resident project engineer for general engineering support activities during Phase I and II project execution and for collection of confirmation samples to be submitted for laboratory analytical testing during Phase I remedial excavation activities. Harding subcontracted laboratory analysis of confirmation samples to Severn Trent Laboratories, Shelton, Connecticut.

3.2 PROJECT PLANS

Design basis, formal design, technical specifications, and remedial construction drawings were developed by Harding and approved by the Connecticut Department of Environmental Protection and the U.S. Army. Regulatory acceptance of the plans was provided in October 2001 (Appendix A).

3.3 SPECIAL PLANS AND PROCEDURES

The RAC was required to provide special project plans outlining the intended approach to the project relative to specific tasks, health and safety, controlling spills of hazardous materials and substances, sampling and analysis, and QC procedures.

The RAC's project plans were submitted to CENAE for approval and Harding for technical review prior to initiating relevant portions of the work at the site. Initial submissions of these plans were provided in August 2001, and finalized in September 2001.

3.4 SHOP DRAWINGS, PROJECT DATA, AND SAMPLES

Detailed drawings, data, and documentation for fabricated items, equipment, and materials incorporated in the project were required from the RAC for the work. Submissions of these items were reviewed by the CENAE and Harding for compliance with the technical specifications prior to utilization in the project execution. Formal approval of these documents was provided by the U.S. Army Aberdeen Proving Ground Contracting Officer (CO).

Table 3-1 and 3-2 present the RAC's submittal record listings of required items for Phases I and II, respectively, and their review history as indicated by the RAC and CENAE project documents. All formal submittals provided by the RAC are available in the final project record documents on file with CENAE.

3.5 CENAE ACCEPTANCES AND DIRECTIVES

Due to the nature of the construction activity, rapid resolution of issues was required to avoid delay. Resolution of deficiencies and technical issues encountered at the site were typically achieved through the following sequence of actions:

- Field personnel observed deficiency in contractor's approach, or contractor indicated that a changed condition exists.

- If the identified problem was minor (i.e., resolution is allowed in the specifications), field engineering staff pointed out options to the contractor and adjustments are made and documented.

- Technical or operational problems that could not be resolved in the field were referred to project management and/or the appropriate technical discipline for identification of potential options or review of specific design requirements.

In all cases involving significant issues and directives relative to execution of the work that were outside the normal scope of day-to-day activity, the CO and his representatives were apprised of issues and options for resolution proposed by the project team.

Variances to the technical specifications; approvals for phased implementation of work efforts; resolution of contract issues and deficiencies; funding and Notice to Proceed (NTP) for modifications; acceptance of project submittals; review, reconciliation, and approval of project progress payments; and direction to the contractor for implementing these items as they affected the work in progress were provided by the CO and their representatives.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES

The following is a summary of the activities performed as required in the project contractor's design specifications and the approved RAC project plans. A summary Statement of the Work Execution and an Engineer's Certification are provided in Section 7.0.

4.1 CONSTRUCTION QUALITY ASSURANCE AND QUALITY CONTROL

Completion of remedial construction was documented by QA and QC records. The QA and QC documentation is specifically for the soils excavated, disposed or utilized in the subgrade development, as well as geosynthetic and manufactured materials installed in the composite cover system. Construction QA and QC are widely recognized as critical factors in overall quality management for construction projects and, in particular, environmentally protective constructions.

QA is a planned system of activities that provides assurance to the CENAE and permitting agencies that the facility was constructed as specified. QA refers to measures taken by CENAE to assess whether the contractor's efforts are in compliance with the contract documents.

QC is a planned system of inspections used to directly monitor the quality of the contractor's work. QC refers to measures taken by the contractor to verify compliance with selected requirements for materials and workmanship.

QC activities for the project were provided and executed in accordance with the Contractor Quality Control Plan (CQCP) (Weston, 2001a). The CQCP describes the procedures and organization required to ensure that the overall project quality objectives, as prescribed by the contract documents and standard industry practice, were met. The CQCP addressed remedial action operations, both on and off-site, including work by subcontractors, fabricators, and suppliers. The CQCP includes the following components:

- General program purpose statement.
- Description of the objectives of the QC program.
- The name, qualifications, responsibilities, and duties of the RAC's QC supervisor.
- Description and schedule of proposed reports and submittals.
- Procedures for QC task execution, inspection procedures for verification, and acceptance testing.

Subsection 4.2 provides a chronology of events and milestones for the project. QA/QC standards, acceptance criteria and performance criteria were provided in the contract specifications and drawings, as well as the RAC's plans discussed previously and identified in Table 3-1 and 3-2. These documents describe construction material specifications as well as installation, sampling, and testing requirements.

The RAC and CENAE followed the requirements of the document titled Construction Quality Management Process for Contractors (USACE 1997). This process identifies a three-phase control system which includes the following components:

- Preparatory Phase: Activities performed prior to beginning work on each major definable feature of the work to insure the contractor is prepared to execute feature components as specified, identified and mutually agreed to by project personnel.

- Initial Phase: Accomplished at the beginning of each major definable feature of the work to verify that controls are being implemented and the work is performed to the level of workmanship mutually agreed to during preparatory phase efforts.

- Follow-up Phase: Daily checks were performed to assure continuing compliance with the contract requirements, including control testing, until completion of a particular feature of work. These checks are a required feature of the CQCP documentation.

This system provided a management system for assuring that constructed features complied with the terms of the contract. It encompassed all phases of the work to verify that materials and installation performed produced the required end product. Appendix VI-B of the RAC's Project Completion Report (Weston, 2003) provides a summary listing of the preparatory, initial, and follow-up inspections performed by the RAC during execution of each definable feature of the work. Additionally, Appendices VI-C and VI-D of the RAC's Project Completion Report (Weston, 2003) present a QC sample collection and test log, as well as a deficiency identification and correction log which further document the RAC's QC efforts. CENAE personnel identified appropriate QA sample collection frequencies, and directed those samples to be collected during execution of the work to access acceptability of the RAC's work.

As indicated previously, QA and QC documentation presented in this report is specifically for the soils/rock excavated, disposed of off-site, or utilized in the subgrade development, as well as geosynthetic and other manufactured materials installed in the composite cover system. Harding provided technical review and recommendation to CENAE of the RAC submittals and data reports. Tables 4-1 and 4-2 provide a summary of the composite cover soil and geosynthetic material test requirements and frequencies as specified in the contract documents, as well as identification of material quantities utilized and the number of QC tests performed for verification. The aforementioned data acceptability review provides the basis of the engineer's certification presented in Section 7.0 of this report.

4.2 CHRONOLOGY OF EVENTS (MILESTONES)

This subsection outlines the approach implemented by the RAC for the various work elements executed during project performance. Specific activities, approach, procedures, quantities of materials utilized and waste streams generated are provided in the RAC Remedial Action Work Plans (Weston, 2001) and Project Completion Report (Weston, 2003).

4.2.1 Phase I - Site Preparation

Site preparation activities included initial mobilization, utility clearances (i.e., DIG SAFE), delineation of work zones (i.e., exclusion, contaminant reduction and, support), installation of heave monitoring structures, establishment of temporary site facilities, erosion and sedimentation controls, clearing and grubbing of the Causeway, surveys, monitoring well abandonment and, development of decontamination and waste stockpile facilities.

These activities were implemented in August 2001 and executed in accordance with the RAC's approved project control plans and the project design specifications. Significant aspects of these activities included:

- Capture of baseline data for monitoring tidal flat movement and Causeway stability during follow-on construction phase activity.

- Identification of existing survey control datum's at the SAEP facility to document existing and final conditions of the work and to provide horizontal and vertical location control of the work in progress.

- Establishing staging and stockpile areas for management of contaminated soils and debris excavated from the Causeway, and

- Implementing sedimentation control measures to arrest soil migration into sensitive marine resource areas adjacent to the Causeway. These controls were inspected and maintained during construction as a best management practice compliance requirement of the design.

4.2.2 Phase I - Demolition

Demolition activities for the project were implemented in accordance with the RAC's approved Demolition Plan (Weston, 2001b), and included the following:

- A structural assessment was performed to evaluate the potential for an unanticipated building collapse or other related hazards.

- Collection of samples and analysis, as described in the RAC's approved Sampling and Analysis Plan (Weston, 2001c) from each anticipated waste type (e.g., concrete, metal) to aid in determination of appropriate off-site disposal facilities.

- Asbestos containing material (ACM) abatement within Building B-5 was required, as identified in the technical specifications. Other buildings and/or structures identified for demolition (i.e., Building B-59, weather station) were evaluated for suspected ACM as appropriate by the RAC's subcontractor identified in Section 3.0. ACM abatement activities were conducted in accordance with appropriate state and federal regulations. A complete report of ACM abatement is provided in the RAC's "Asbestos Abatement Supporting Documentation" report (Weston, 2001d).

- Utility disconnects and abandonment were performed as applicable for the structures identified for demolition. As-built or record drawings were reviewed with facility

representatives for determination of existing conditions. Utilities identified as previously disconnected or abandoned (i.e., electrical) were reconfirmed by the RAC prior to demolition efforts evaluation and/or active abandonment was provided for the following utilities.

- Electrical service
- Communication and or fire alarms
- Fire suppression and or domestic water
- Sanitary and storm sewers
- Steam and condensate lines
- Compressed air
- Fuel and or process controls

- Building demolition activities were executed by the RAC for the structures and facilities listed below and identified in previously presented Phase I general work description and the technical specifications, as follows:

  - Removal of the containment berm around the Building B-34 former AST farm and removal of associated protective posts and tank supports to existing ground surface.
  - Demolition and off-site disposal of Building B-5.
  - Demolition and off-site disposal of Building B-59.
  - Demolition and off-site disposal of the Causeway weather station.
  - Removal and off-site disposal of oversized surface debris measuring greater than two feet in any dimension, including the deteriorated concrete ramp at the end of the Causeway.

4.2.3 Phase I - Excavation of Contaminated Soils

Areas of soil contamination within the Causeway were identified in the Phase I Contract Documents. Excavation limits for these areas were developed based on investigative data collected for soils containing leachable concentrations of VOC, SVOC, vanadium, zinc, or PCBs in excess of CTDEP RSR Pollutant Mobility Criteria, ten times the RSR Groundwater protection criteria, or the federal AWQC.

The excavation, handling, transport and disposal of contaminated soils for the project were the responsibility of the RAC. A total of ten excavation areas (EAs) were identified in the 100% Design (Harding ESE, 2002). Designated as EA-1 through EA-10, and depicted on the Phase I design drawing C-104, and in Figure 6-1, were excavated in September and October, 2001 by the RAC. To delineate the aerial extent of the EAs in the field, center-point coordinates from the Contract Documents were provided to the RAC's PLS by Harding, and subsequently EA locations were staked by the PLS in the field. Excavations were then advanced by the RAC based on the requirements of the Contract Documents. Section 6.0 details EA sampling and analysis, over-excavation requirements, and evaluations performed during project execution.

Confirmation sampling was conducted following removal of soils from the excavations to confirm that clean-up action levels had been achieved for the contaminants of concern at the aerial and depth parameters identified in the design. Samples were collected by Harding ESE from four side-wall and one bottom location within each EA, and forwarded to the off-site laboratory for analysis. If results were in excess of clean-up levels, recommendations were provided to the CO by Harding

ESE for appropriate over-excavation until clean-up criteria was achieved. Impacted soils were staged in covered roll-off containers pending waste characterization prior to transport to the approved off-site disposal facility by the RAC. Specific analytical data generated for confirmatory sampling and waste characterization are discussed in Section 6.0.

4.2.4 Phase II Subgrade Development

Following material excavation, the Causeway was graded into two distinct areas to support construction of the upper and lower cover systems. Above elevation 4.1 feet MSL, subgrade was sloped at a maximum 3H:1V up to elevation 8.5 feet MSL. Above 8.5 feet MSL, the Causeway subgrade was graded at a minimum 2% and maximum 5% slope to elevation 9.5 feet MSL. No subgrade filling above elevation 9.5 MSL was allowed. Fill elevations were provided on the design drawings, since settlement would likely occur during cover placement. The Causeway was graded smooth to the extent practicable in conformance to the requirements of the Contract Documents. The presence of debris within the fill was recognized as providing uneven surfaces. A tolerance of +/- 2-inches from the elevations shown on the drawings was adhered to.

4.2.5 Phase II - Lower Cover System Installation

The lower Causeway cover system, as previously discussed in Section 2.3, required specific work activities and controls to be implemented for the protection of sensitive marine resources in the lower Housatonic River. Installation of the lower cover system generally consisted of the following, see Figure 2-3 for identified components:

- Reinforcement of the lower toe of the cover system at the riverine/sediment fill interface with geogrid composite to restrict scouring and tidal erosion at the outer reaches of the Causeway. Outboard tidal portions (approximately 760 linear feet) of the toe required rip-rap aggregate to be provided to augment the erosive protection of the reinforced toe.

- Geotextile underlayment to provide support for the cover system, and act as a barrier to prevent migration of and receptor exposure to underlying soil/sediment. Void areas beneath the geotextile which were created from removal of oversized debris or unsatisfactory soil removal were filled with gravel to provided additional cover system support.

- PMM deployment to resist erosion from storm tides and ice accumulation while allowing for: (1) minimizing of intertidal zone encroachment; (2) minimizing excavation and therefore off-site disposal costs; (3) maximizing weight distribution over soft sediments in consideration of geotechnical stability concerns; and (4) provide additional barrier protection against receptor exposure to underlying soils.

Initial efforts were made to delineate the proposed fill/sediment interface by the RAC's survey subcontractor. Harding was requested by the U.S. Army to verify the interface location around the perimeter of the causeway identified in Figure 2-2. This was accomplished by probing the fill/sediment interface located by the RAC's PLS in the field based on design coordinates.

The RAC then staked the side slopes for excavation limits not to exceed a 1-foot vertical cut, to match the thickness of the fabricated PMM. Excavation of subgrade was limited to aerial coverage which could be deployed in one tide cycle to avoid erosion or sedimentation of intertidal areas

along the Causeway. A preliminary layout diagram for deployment of the PMMs to approximate elevation 6.0 feet MSL was provided in the RAC's work plans.

The PMMs structural component panels were cut and partially fabricated off-site and then filled with specified aggregate material on-site. Aggregate was used to fill the mattresses while inside a manufacturer detailed filling frame. All PMMs were QC inspected and tagged prior to release by the RAC's project QC Manager. The PMMs were then palletized and transferred to the Causeway by fork truck for final deployment upon slope surfaces of the lower cover system.

Regulatory requirements required that the PMMs be deployed with a maximum gap of 2-inches between adjoining units. Engineering requirements required that the abutting PMMs be stitched at the end seams to create a continuous protective cover system.

After installation, the PMMs underwent an inspection and repair process developed by the RAC, and approved by the CO, to identify and correct non-conforming areas. A final QA inspection was performed by CENAE and Harding which generated final acceptance and inspection documentation for the project record and facilitated acceptance of the materials as deployed. Quality Control Inspection and Repair Guidelines, Deficiency Repair Summary Logs, and Deployed Polymeric Marine Mattress Acceptance Forms describing specific mattresses locations and construction baseline observations are presented in Appendix B. These forms are counter-signed by both RAC and CENAE representatives.

As part of CENAE's QA efforts to review installation of the PMMs, an inventory repair log of affected QC activities was performed. The intent of this log is to provide an initial baseline with which to access long-term performance of the PMMs. The sum total of all repairs cataloged for the inventory equals approximately 20% of the deployed PMMs. Selection of documented PMMs utilized a random unit number generator table. These PMM Repair Inventory Logs are presented in Appendix B.

4.2.6 Phase II - Transition Zone

The transition zone of the Causeway was an interface termination between the upper and lower cover systems. Its intent was to provide a mass restraint in the form of rip-rap for the upper row of PMM anchor tabs and act as a termination lock for the ACB and vegetative support layers.

A rock or drainage gravel fill area was provided beneath the rip-rap interface. This layer extended beneath both the PMMs and the ACB to provide a stable base and additional drainage capacity for surface water relief beneath the upper cover system. Details for these features are provided in the design drawings and Figure 2-3.

4.2.7 Phase II - Town of Stratford Causeway Surface Design

Via a modification to the Causeway construction contract facilitated by CENAE, the Town of Stratford provided surface design component features which were consistent with the protective cover intent and facilitated future use considerations for the Causeway. The Causeway Surface Design was prepared by Vanasse Hangen Brustlin, Inc. of Middletown, Connecticut. This report only presents, for completeness, information related to the Town of Stratford's design.

This design included utility infrastructure, fence components, lighting components, and foundations associated with potential future structures proposed upon the Causeway. Acceptability

of materials as well as installation, inspection, and testing for the surface design features was reviewed and approved by the Town of Stratford and their identified representatives. Documentation of these activities is presented in the RAC's Project Completion Report.

The U.S. Army requested that Harding review the Town's design for compliance and consistency with the established regulatory criteria, protective integrity and global geotechnical stability of the Causeway structure. Appendix C provides an assessment of the U.S. Army review concerning the Causeway Surface Design function, maintenance, and long term use responsibility.

4.2.8 Phase II - Upper Cover System Installation

The upper Causeway cover system as previously discussed in Section 2.3 required specific work activities and controls to be implemented. Installation of the upper cover system generally consisted of the following, see Figure 2-3 for identified components:

- Preparation of the existing Causeway surface including filling of areas to meet design contouring, static compaction and removal, and disposal of oversized debris.

- Placement, grading and compaction of a 6-inch layer of sand bedding layer to act as a cushion layer and provide a uniform surface for articulating concrete block (ACB) system.

- Geotextile underlayment to provide support for the cover system, and provide a barrier to prevent migration of sand bedding into ACB interstitial fill gravel and impede drainage characteristics.

- The ACB system was installed over the woven geotextile, and then the void space associated with the ACB was filled with specified interstitial fill gravel to lock the tapered blocks in place.

- A 6- to 8-inch layer of vegetative support soil with erosion control matting was applied as a final component over the ACB as described in Section 4.8.2.

The Causeway subgrade was prepared to lines and grades as depicted in the 100% Design (Harding ESE, 2002). Satisfactory soil materials which were excavated from the lower cover system installation were stockpiled on the Causeway surfaces above elevation 6.0 MSL. These soils were scarified and allowed to dry prior to incorporation into the grading plan. Criteria for utilizing these soils were determined by Harding ESE and included:

- Visual screening for deleterious objects, waste materials, and oversized debris;

- Visual and olfactory and/or field screening for gross contamination; and

- Assessment of soils for consolidation within specified requirements, predominantly as a firm stable non-plastic base for upper cover system components.

Clean granular sand bedding was imported to the site and graded to tolerances for a minimum of two percent and a maximum of five percent surface slope, which facilitated drainage of the composite cover. The sand material was spot checked at 50-foot intervals along the length of the

Causeway to determine compliance with design thickness requirements, and then covered with woven geotextile fabric, which was overlapped per manufacturer's recommendation.

Approximately 400 pallets of ACB were shipped from the manufacturer and utilized in the construction of the upper cover system. The ACB was hand-lain perpendicular to the length of the Causeway and installed around surface features by abrasive cutting individual blocks to fit in accordance with manufacturer's recommendations. ACB was placed on the previously identified geotextile and inspected for tolerances both horizontal and vertical, which were established by the design and the manufacturer. Damaged block were replaced prior to filling void space between the blocks with interstitial gravel fill. Interstitial gravel fill was broomed and washed into place, and two-inches of interstitial gravel was installed above the ACB as a sacrificial layer to prevent piping or clogging due to the overlying vegetative support layer.

4.2.9 Phase I and II - Management and Disposal of Waste Materials

Temporary storage of waste soil materials was provided in roll-off containers pending characterization. Other waste materials (i.e., demolition and oversized debris) were segregated by waste type and location of origin and stored appropriately to await characterization.

Storage or stockpile areas not within the limits of the Causeway were reviewed with SAEP facilities managers and covered appropriately to prevent migration of potential contaminants due to precipitation and wind events.

The RAC collected representative samples of each waste stream type that were then utilized for generation of waste profiles and identification of appropriate disposal facilities as identified in Section 3.0. Samples were analyzed for hazardous waste characteristics as well as for leachable and total concentrations of COCs identified at the site. No hazardous wastes were identified, based on testing, during the construction.

Manifest/shipping documentation was provided for all disposal activities by the RAC. The SAEP BRAC Environmental Coordinator (BEC) signed the manifests as the generator signatory. Manifest documents sorted by waste type are provided in Appendix III of the RAC's Final Construction Completion Report. Analytical data generated in support of confirmatory and characterization activities are discussed in Section 6.0.

4.2.10 Phase II - Vegetative Cover and Seeding

The vegetative support layer (see Figure 2-3) as specified consists of vegetative support soil, seed, and an erosion control mat. The vegetative support soil consists of a 6- to 8-inch-thick layer of sandy loam. The vegetation established on the upper cover system included species capable of growth under the periodic saltwater inundation which occurs at the Causeway. The seed species selected for use is a mix of Creeping Red Fescue (Festuca rubra), Annual Rye-grass (Lolium multiflorum), Timothy (Phleum pratense), White Clover (Trifolium repens), and Little Bluestem (Schizachyrium scoparius). These species were identified as native during an agronomist site visit for design basis elevation, and is expected to provide habitat for wildlife, and moderate pedestrian use.

An erosion control mat was used to retain the vegetative support soil during precipitation and potential high tide events which might overtop the Causeway during periods of vegetative support cover construction. Borrow source testing, as well as testing of materials delivered to the site, was

performed as part of QA/QC testing to assure consistency of materials utilized and placement methods. The seed was provided with a certification of purity and guaranteed germination rate.

5.0 PROJECT ADMINISTRATION

Implementation of the NCRA for the Causeway was performed under contract agreement No. DAAD05-97-D-7004, Delivery Order No. 0187 between CENAE and Weston. The contract notice of award (NOA) was established as 24, July 2001 and substantial completion was achieved on October 3, 2002, based on site inspections by CENAE. These inspections found the project to be substantially complete with the exception of final demobilization, establishment of protective vegetative cover systems and final reporting requirements. A project punchlist and supporting memoranda are presented in Appendix D.

5.1 PROJECT SCHEDULES

The RAC's project schedules for Phase I and Phase II activities, as completed, are presented in the aforementioned Construction Completion Report. As required by the Contract Documents, critical path methodology was employed in developing the project schedules to identify pertinent issues such as specific task activities, duration, available float, and critical milestones. As previously discussed NOA was established as 24, July 2001.

The duration of the project extended beyond the originally anticipated 15 month schedule by approximately three months. This extension was due to delays resulting from but not limited to the following:

- Implementation of the Town of Stratford Surface Design;
- Regulatory revised spacing requirements for PMM placement and additional labor schedule; and
- PMM quality control resolution for inspection procedures affecting material and fabrication acceptability.

The RAC and CENAE attended regular status meetings to discuss status of the work in progress, identify project milestones, and resolve issues which could impact project progress as necessary.

6.0 DOCUMENTATION

This section summarizes the various reports and data generated during execution of the work. The intent of this documentation is to: 1) document project performance by the RAC and, 2) provide supporting data for completion of the NCRA. Documentation was provided in several forms, as dictated by the task being performed. Descriptions of the individual items are provided in the following paragraphs.

6.1 REPORTS

Daily Contractor Site Status and Work Reports (RAC): These reports provided daily written review of work locations, personnel protective equipment selection, and sampling requirements. Reports were compiled as a summary and to support other documentation collected. In general, the reports contain the type of information outlined below:

- Job site safety meeting and inspection reports;
- Excavation soil tracking, stockpiling, quantification and waste stream characterization sample collection;
- Transported soil, residual waste sampling, analysis and disposal data; and
- Daily work locations, quantities, shipments, and issues/concerns relative to completion of the work.

6.2 RECORD DOCUMENTS

Project record documents generally include all plans, data, drawings, reports, files, and correspondence generated during execution of RA projects. For a project of this size and scope, it would be impractical to present all information generated during the RA in a summary report. As previously discussed the entire project record is on file with the CENAE.

A sub-set of the record documents, presented in this report, include the following:

- A selection of photographs presented in Appendix E, and
- Record drawings provided by the RAC's PLS are presented in Appendix F for Phase I and Phase II. The record drawings show the site final conditions including final grading contours, excavation limits, as well as location of the specific details for the required protective cover system components.

6.3 HEAVE MONITORING REPORTS

Heave platforms and poles were monitored by the RAC's PLS as part of construction activities to detect movement of the Causeway during construction activities. The primary purpose of heave

monitoring was to provide a means of monitoring the effects of fill and cover system placement on the underlying organic sediments resulting in unacceptable movement from fill material placement and/or dynamic loading. Details of these activities are presented in depth in the basis of design, the technical specifications and drawings and the RAC's work plans. Heave monitoring devices were installed as part of the Phase I work, to establish baseline conditions with additional devices added prior to commencement of Phase II activities, which required more intensive monitoring.

Phase II heave monitoring consisted of individual settlement devices being surveyed three times a day where active work (excavation, filling and stockpiling) was being performed. Review of these data was provided continuously by the Contractor to assess trends and any "significant" changes in both horizontal and vertical location of the monitored points "Significant" was determined in the design as any monitored movement, horizontal or vertical, greater than 0.50-feet in any 24-hour period.

Electronic monitoring reports were provided to the Contracting Officer's representative and Harding on a continuous basis. Written reporting was provided on a weekly basis for the duration of Phase II construction and for two additional weeks following the completion of work. Reporting consisted of the following:

- General work area and heave monitoring device location schematic;
- Heave platform and pole monitoring data summary (cumulative);
- Heave platform and pole elevation plots over time; and
- Heave platform and pole Northing and Easting plots over time.

These reports were provided by the RAC as formal submittals and evaluated by Harding engineering personnel.

Harding reviewed the heave data electronically based on reports provided by the RAC during project execution. Actions implemented as a result of specified heave monitoring activities were consistent with project file correspondence, recommendations, and written approval of the project team and regulatory oversight agencies. Including but not limited to the following:

- Tidal impacts to monitoring platform variability relative to readings,
- Replacement of a singular heave platform damaged during construction,
- Comment and formal review of all required heave monitoring reports, and
- Revised monitoring frequencies based on reduced level of construction activity.

Heave monitoring and daily tabulations evaluated during the construction period did not indicate movement of the permanent platforms, stationary poles or temporary poles greater than 0.5 feet in a 24-hour period (criteria specified in the 100% Design, Specification 02110, Section 3.4). A typical heave monitoring summary report is provided in Appendix G.

6.4 SAMPLING AND ANALYSIS

This Subsection discusses soil excavations conducted as part of Phase I of the Contract Documents.. Establishment in the field of locations for EAs and the approach utilized for the

collection of confirmatory soil samples was previously discussed in Section 4.0. The objective of the confirmation sampling was to evaluate the effectiveness of contaminant removal to concentrations less than the clean-up goals established in the Contract Documents. Field procedures for sample collection and handling were consistent with the Causeway and Dike NCRA Supplemental Work Plan (Harding, 2000).

Confirmatory samples were collected and analyzed for only those specific compounds that directed excavation in the immediate vicinity of a proposed confirmatory sample. For example, if a specific location was excavated due to the detected presence of zinc during pre-design investigation sampling, the confirmatory sample collected was only evaluated for the presence of zinc at concentrations exceeding the RSR numerical criteria.

Additional sampling and analysis activities were performed by the RAC to characterize waste soil generated as part of the remedial excavation activities. These samples were collected based on approved TSDF regulatory permit guidelines for waste disposal acceptance. Analytical method summaries utilized for soil characterization, and data summary tables that provided characterization data for specific waste streams as required by the approved TSDFs, were provided by the RAC in the Project Completion Report, and approved by CENAE. Laboratory data packages utilized for creation of these tables were provided by the RAC's subcontracted laboratories listed in Section 3.0, and may be viewed as part of the final project record documents on file with CENAE.

6.4.1 Excavation Area Evaluation

EA-1 through EA-6 were excavated in September of 2001 by the RAC. Confirmation sampling was conducted by Harding, according to the sampling scheme presented in Table 6-1.

On October 3, 2001, Harding sampled the center of EA-8, EA-9, and EA-10 at the depths specified in Table 6-1. Subsurface soil samples were submitted for SPLP PCB analysis to Harding's designated off-site laboratory. These data and previously collected data from EA-7 were utilized to evaluate the need for excavation of soils at these four locations (see Harding letter dated September 27, 2001 to Mr. Ken Feathers of CTDEP, entitled "Statistical Assessment of PCB Soil Concentrations", presented as Appendix H), and the summary of confirmation sample results provided in Subsection 6.4.2.

EA-7 was identified in Appendix F of the Contract Documents as requiring excavation based on PCB soil concentrations identified in exploration TP-99-06 at eight to ten-feet below ground surface. EA-7 was evaluated during the "Statistical Assessment of PCB Soil Concentrations", presented as Appendix H, and found to meet the CTDEP RSR DEC for PCBs in soil. SPLP analysis was not performed for this location as the analyte detection within TP-99-06 occurred at approximately four feet below the groundwater table, and PMC are only applicable for unsaturated zone soils. As a result, excavation of soils from EA-7 was not required.

Based on confirmation sampling (Round 1) results indicating select analyte concentrations exceeding RSR criteria, over-excavation was recommended to the CO by Harding for EA-3, EA-4, and EA-6 as described below. The RAC completed additional excavation at these areas on October 17, 2001. Confirmation sampling (Round 2) was conducted, according to the sampling scheme presented in Table 6-1, by Harding.

Appendix I presents EA confirmatory sampling data summary tables for specific analytes. Laboratory data packages utilized for creation of these tables were provided by Harding's subcontracted laboratory, Severn Trent Services, and may be viewed as part of the final project record documents on file with CENAE. Additionally, a document titled "Data Validation Summary Report – Causeway SPLP Investigation" (Harding, 2002) is provided in Appendix J**.** This validation review was completed utilizing USEPA guidelines, and determined that all results were usable with a subset of data qualified as estimated "J" values based on validation guidance.

6.4.2 Summary of Confirmation Sample Results

The following summary discusses subsurface soil remediation actions recommended to the CO by Harding based on confirmation analysis results from soil samples collected from the designated EAs. As discussed previously, confirmatory samples were analyzed only for those specific compounds identified during pre-design investigation sampling. Comparison of the results was based on CTDEP recommended criteria identified during the Engineering Evaluation/Cost Assessment (FW/HLA, 2000b) review. If compliance with the identified criteria could be demonstrated, the RSRs would allow construction of a permeable soil cover on the Causeway, rather then an engineered barrier to prevent infiltration, at a substantial capital cost savings.

Comparison criteria for subsurface soil sample data used in the assessment were: (1) Total concentrations of detected compounds to DEC; (2) SPLP results to 10X the GWPC, and; (3) SPLP results to AWQC. Compliance with these criteria would limit the risk for further remedial action of soil as a pollutant source should existing groundwater quality, to be addressed as a separate operate operable unit, exceed its evaluation criteria.

As previously discussed excavation confirmatory sample summaries are cited in the following discussions are presented in Appendix I, Tables 6-2 and 6-4.

Excavation Area 1: Results of zinc SPLP analyses returned for the five samples collected from this excavation (see Table 6-4) indicated concentrations ranging from 29.2 ug/L to 42.9 ug/L. All reported concentrations are less than the AWQC of 120 ug/L.

Therefore, based on Harding recommendation to the CO, no additional excavation was performed at this location.

Excavation Area 2: Results of vanadium SPLP analyses returned for the five samples collected from this excavation (see Table 6-4) indicate concentrations ranging from 3.3 ug/L to 11.1 ug/L. All reported concentrations are less than the AWQC of 280 ug/L.

Therefore, based on the data, Harding recommended to the CO that no additional excavation was required at this location.

Excavation Area 3: Results of vanadium SPLP analyses returned for the five samples collected from this excavation (see Table 6-4) indicate concentrations ranging from 110 ug/L to 459 ug/L. Only one of these samples (EA-03-N0105), with a vanadium concentration of 459 ug/L, exceeded the AWQC of 280 ug/L.

Results of PCB SPLP analyses returned for the five samples collected from this excavation (see Table 6-2) indicate concentrations ranging from 0.26 ug/L to 0.40 ug/L. All concentrations are less than the CTDEP RSR PMC for a GB-classified aquifer of 5 ug/L.

On October 3, 2001, Harding observed water levels at high tide within the excavation at 1.5 feet below ground surface. Relative to PMC criteria guidance, any additional excavation at this location was only necessary to a depth of 1.5 feet below ground surface.

Based on these data, EA-3 required over-excavation as indicated in the schematics presented in Figure 6-1. However, SPLP analytical data returned for EA-4 (see below) also indicated an RSR exceedance of vanadium requiring over-excavation that directly overlapped with the required excavation at EA-3. Due to this condition Harding recommended to the CO that no further excavation or confirmatory sampling be performed at EA-3.

Excavation Area 4: Results of vanadium SPLP analyses for the five samples collected from this excavation (see Table 6-4) indicated concentrations ranging from 95.6 ug/L to 375 ug/L. Only one of these samples (EA-04-S0105), with a vanadium concentration of 375 ug/L, exceeds the AWQC of 280 ug/L.

Results of volatile organic compound (VOC) SPLP analyses for the five samples collected from this excavation (see Table 6-5) indicate only one of these samples (EA-04-E0105), with a trichloroethene concentration of 170 ug/L, exceeds 10X the CTDEP GWPC (50 ug/L).

Based on these data EA-4 required additional excavation on the south wall and on the east wall as indicated in the schematic presented in Figure 6-1. On October 3, 2001 Harding observed the water levels within the excavation at 1.5 feet below ground surface. In accordance with CTDEP RSRs, any additional excavation at this location was only necessary to the water table.

As indicated above EA-3 also required additional excavation that directly overlapped with the recommended EA-4 over excavation. Due to the water level conditions described above, Harding recommended no additional confirmatory sampling for vanadium be performed at EA-3 or EA-4.

Over-excavation analytical results returned for VOC SPLP analyses of sample EA-04-E0110 indicate concentrations of VOCs were less then the method detection limits.

Therefore, based on the data, Harding recommended to the CO no additional over-excavation was performed at this location.

Excavation Area 5: Results of SVOC SPLP analyses returned for the five samples collected from this excavation (see Table 6-6) indicate concentrations of SVOCs less than 10X the CTDEP GWPC, and AWQC.

Results of PCB SPLP analyses returned for the five samples collected from this excavation (see Table 6-2) indicate no detected PCBs.

Therefore, based on the data, Harding recommended to the CO no additional excavation was performed at this location.

Excavation Area 6: Results of SVOC SPLP analyses returned for the five samples collected from this excavation (see Table 6-6) indicate concentrations of benzo(a)anthracene (BAA) and benzo(a)pyrene (BAP) exceeding 10X the CTDEP GWPC, and AWQC, respectively. SVOC SPLP concentrations exceeded criteria in samples EA-06-N0105, EA-06-E0105, and EA-06-F0200.

Based on these data, Harding recommended that over-excavation and sampling be preformed as indicated in the schematic presented on Figure 6-1.

Results of SVOC SPLP analyses returned for the two samples collected from this over- excavation indicate concentrations of BAA and BAP do not exceed 10X the CTDEP GWPC, or AWQC.

Therefore, based on Harding recommendation to the CO, no additional excavation was performed at this location.

Excavation Area 7: No excavation was recommended or performed at this location (see discussion Section 6.4.1).

Excavation Area 8: Results of PCB SPLP analyses for the samples collected from this proposed EA (see Table 6-2) indicate no detected PCBs.

Therefore, based on Harding recommendation to the CO, no excavation was performed at this location.

Excavation Area 9: Results of PCB SPLP analyses for the samples collected from this proposed EA (see Table 6-2) indicate no detected PCBs.

Therefore, based on Harding recommendation to the CO, no excavation was performed at this location.

Excavation Area 10: Results of PCB SPLP analyses for the sample collected from this proposed EA (see Table 6-2) indicate a concentration of 0.28 ug/L, which is less than the CTDEP RSR Pollutant Mobility Criteria for a GB-classified aquifer of 5.0 ug/L.

Therefore, based on Harding recommendation to the CO, no excavation was performed at this location.

6.5 OPERATION AND MAINTENANCE PLANS

Development of operation and maintenance plans for the causeway cover construction components have not been developed as of this writing. CENAE is currently evaluating options for providing such a document to guide long-term monitoring, assessment and general maintenance of the Causeway. The criteria identified in the design basis for O&M activities are summarized below.

- Maintenance Plan:

  Develop a Maintenance Plan, detailing the procedures for inspection and maintenance of the upper and lower cover systems. The Maintenance Plan shall be submitted within 30

days of the anticipated completion of construction activities, and shall include, but not be limited to, the following information:

- Inspection procedures;
- Inspection frequency and preliminary schedule;
- Reporting procedure, including format, distribution, and frequency;
- Coordination plan with the Town of Stratford regarding maintenance of vegetative support soil, subsurface utilities, and surface features;
- Warranty execution plan;
- Anticipated maintenance procedures, including repairs; and
- Applicable manufacturer's recommended maintenance procedures.

7.0 ENGINEER'S CERTIFICATION

The various sections of this summary report, together with the appendices and referenced contractor documentation, provide supporting data for completion of the NCRA. This summary document presents information known to Harding concerning the SAEP Causeway NCRA. Harding has prepared this information with the care ordinarily used by members of the profession practicing under similar conditions. The information presented in this document is not intended for any use other than the stated objectives of the project.

The work performed by the RAC was observed by Harding, while on-site. Based on these observations and the documentation included herein, the following statement can be made relative to the NCRA completed by the RAC:

Harding, as the designated engineering support consultant during the NCRA, acknowledges that the completed work conformed generally to the contract documents, as modified through change-orders approved by the U.S. Army Aberdeen Proving Ground CO.

8.0 REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1996. "Final Environmental Baseline Survey Report, Stratford Army Engine Plant, Stratford, Connecticut". Prepared for U.S. Army Environmental Center, 1996.

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R. F. Weston, Inc. (Weston), 2003. Project Completion Report Non-Time Critical Removal Action, Stratford Army Engine Plant. Prepared for the U.S. Army Corps of Engineers – New England District. April 2003.

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9.0 LIST OF ACRONYMS

ACB	articulating concrete block
ACM	asbestos containing material
AST	aboveground storage tank
AWQC	Ambient Water Quality Criteria
BAA	Benzo (a) Anthracene
BAP	Benzo (a) pyrene
BEC	BRAC Environmental Coordinator
BRAC	Base Closure and Realignment Cleanup
CENAE	U.S. Army Corps of Engineers New England District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	Contracting Officer
COC	contaminants of concern
CQCP	Contractor Quality Control Plan
CTDEP	Connecticut Department of Environmental Protection
DEC	Direct Exposure Criteria
EAs	excavation areas
EE/CA	Engineering Evaluation/Cost Analysis
ELVR	Environmental Land Use Restriction
HLA	Harding Lawson Associates
MSL	Mean Sea Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCRA	Non-time Critical Removal Action
NOA	Notice of award
PCBs	polychlorinated biphenyls
PLS	professional land surveyor
PMC	Pollutant Mobility Criteria
PMM	polymeric marine mattress
PPM	part per million
QA/QC	quality assurance/quality control
RAC	Remedial Action Contractor
RAWP	Remedial Action Work Plan

RSR	Remediation Standard Regulation
SAEP	Stratford Army Engine Plant
SPLP	Synthetic Precipitate Leaching Procedure
TSDF	Transportation Storage and Disposal Facility
VOC	Volatile organic compound
SVOC	Semi-volatile organic compound
USEPA	U.S. Environmental Protection Agency
ug/L	micrograms per liter

TABLES

TABLE 3-1
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE I

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	APPROVED DATE
GA-01	8/2/2001	1	01320-1.3	PRELIMINARY PROJECT SCHEDULE							X	9/19/2001
GA-02	8/2/2001	1	01320-1.3	INITIAL PROJECT SCHEDULE							X	9/19/2001
GA-02A	9/6/2001	1	01320-1.3	UPDATED PROJCET SCHEDULE		X						9/19/2001
GA-03	9/13/2001	1	01351-1.3	SITE SPECIFIC HEALTH AND SAFETY PLAN - REVISED PER CENAE COMMENT							X	9/19/2001
GA-04	8/8/2001	1	02111-1.3	WORK PLAN			X					9/19/2001
GA-05	8/8/2001	1	13281-1.3	ASBESTOS ABATEMENT PLAN		X						9/19/2001
GA-06	8/8/2001	1	0220-1.3	DEMOLITION PLAN		X						9/19/2001
GA-07	8/10/2001	1	132781-1.3 & 1.4	ASBESTOS ABATEMENT SUPPORTING DOCUMENTATION						X		9/19/2001
FIO-01	8/17/2001	1	01351-1.15	ACTIVITY PROJECTION AND RADIATIION HAZARD ASSESSMENT						X		9/19/2001
GA-08	8/14/2001	1	01411-3.6	SAMPLING AND ANALYSIS PLAN			X					9/19/2001
GA-08A	8/14/2001	2	01411-1.3	CONTRACTOR'S LABORATORY			X					9/19/2001
GA-09	8/14/2001	1	01410-1.3	ENVIRONMENTAL PROTECTION PLAN		X						9/19/2001
PENDING	4/2/2003	1	1780	PHASE I COMPLETION REPORT								

A APPROVED AS SUBMITTED

B APPROVED EXCEPT AS NOTED ON DRAWINGS

C APPROVED EXCEPT AS NOTED ON DRAWINGS. REFER TO ATTACHED SHEET-RESUBMISSION REQUIRED

D WILL BE RETURNED BY SEPARATE CORRESPONDENCE.

E DISAPPROVED

F RECIEPT ACKNOWLEDGED

G OTHER

GA = GOVERNMENT ACCEPTANCE

FIO = FOR INFORMATION ONLY

CREATED BY: WBJ
CHECKED BY: DRP

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
GA-01	9/26/2001	1	02380-1.3	SAMPLES OF MARINE MATTRESS COMPONENTS	X							9/28/2001
GA-01	10/12/2001	1	01111-1.3	PHASE II WORK PLAN		X						10/18/2001
GA02	9/26/2001	2	02380-1.3	PRODUCT DATA SHEETS		X						9/28/2001
FIO-02	9/26/2001	3	02380-1.3	MANUFACTURER'S INSTRUCTIONS						X		9/28/2001
GA-03	10/10/2001	1	02440-1.3	TRI-LOCK BLOCK PRODUCT DATA		X						10/15/2001
GA-04	10/10/2001	2	02440-1.3	SAMPLE TRI-LOCK BLOCK (available for review @ Harding ESE's field office)	X							10/15/2001
GA-05	10/10/2001	3	02378-1.3	WOVEN GEOTEXTILE PRODUCT DATA SHEETS		X						10/15/2001
GA-06	10/10/2001	4	02378-1.3	SAMPLE OF WOVEN GEOTEXTILE (GTF-400E)		X						10/15/2001
GA-07	10/10/2001	1	01320; 1.3	PRELIMINARY PROJECT SCHEDULE - Phase II			X					10/18/2001
GA-08	10/5/2001	1	01451-1.3	SAMPLING AND ANALYSIS PLAN								10/18/2001
GA-09	10/12/2001	1	01451-1.3	CQC PLAN	X							10/18/2001
GA-10	10/12/2001	2	01451-1.3	CQC PLAN ERRATA SHEET	X							10/18/2001
GA-11	10/19/2001	1	02378-1.3	WOVEN GEOTEXTILE (GTF-400EO) PRODUCT DATA SHEETS	X							11/16/2001
GA-12	10/19/2001	2	02378-1.3	SAMPLE WOVEN GEOTEXTILE (GTF-400EO) MATERIAL SAMPLE	X							11/16/2001
GA-13	10/19/2001	3	02378-1.3	WOVEN GEOTEXTILE (US1540) PRODUCT DATA SHEETS	X							11/16/2001
GA-14	10/19/2001	4	02378-1.3	SAMPLE WOVEN GEOTEXTILE (US1540) MATERIAL SAMPLE	X							11/16/2001
GA-15	10/19/2001	5	02378-1.3	GEOTEXTILE CERTIFICATE (US1540) (MANUFACTURERS CERTIFICATE OF COMPLIANCE)	X							11/16/2001
GA-15	10/19/2001	1	01351-1.3	SITE SPECIFIC HEALTH AND SAFETY PLAN (PHASE II)							X	10/24/2001

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
GA-16[1]	10/26/2001	1	01451-3.7,4.2	GEOTECHNICAL LABORATORY APPROVAL-GEOTESTING EXPRESS								11/28/2001
FIO-03[1]	10/26/2001	2	01451-3.7,4.2	ROCK FILL GEOTECH RESULTS FOR ROCK TOE AGGREGATE								11/28/2001
FIO-04[1]	10/26/2001	3	01451-3.7,4.2	VARIATION ON ANALYTICAL METHOD FOR RIP-RAP GRADATION								11/28/2001
GA-17	10/31/2001	1	01451-1.3	ENVIRONMENTAL COMPLIANCE & WASTE MANAGEMENT PLAN		X						11/16/2001
GA-18	10/31/2001	1	02380-2.2.1	MARINE MATTRESS PRODUCT DATA - UPDATED						X		11/16/2001
GA-19	11/1/2001	1	01451-3.7.2.1	GEOTECHNICAL LABORATORY APPROVAL - MATERIALS TESTING, INC.	X							11/16/2001
GA-20	11/1/2001	1	2300; 1.3	CERTIFICATION OF ROCK FILL AGGREGATE	X							11/16/2001
GA-21	11/12/2001	1	02110-1.3	HEAVE MONITORING REPORT #1	X							11/21/2001
GA-22	11/8/2001	1	02380-1.3	UXTRITON GEOGRID 100 & 200 PRODUCT CERTIFICATION						X		11/16/2001
GA-23	11/8/2001	2	02380-1.3	CERTIFICATION						X		11/16/2001
GA-24	11/14/2001	1	02110-1.3	HEAVE MONITORING REPORT #2	X							11/21/2001
FIO-05	11/14/2001	1	01451,3.7,4.2	ROCK FILL GEOTECHNICAL RESULTS FOR ROCK TOE AGGREGATE						X		11/19/2001
FIO-06	11/14/2001	2	01451,3.7,4.2	GRAVEL AGGREGATE GEOTECHNICAL RESULTS FOR MATTRESS BEDDING						X		11/19/2001
FIO-07	11/16/2001	1	01330; 1.3	SUBMITTAL REGISTER		X						2/12/2002
GA-25	11/21/2001	1	02380-2.2	GEOSYNTHETIC QC RESULTS (TYPE 1 GEOGRID MATERIAL; SAMPLE ID-UXTRITON100							X	11/28/2001

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
GA-26	11/21/2001	2	02380-2.2	GEOSYNTHETIC QC RESULTS (TYPE 2 GEOGRID MATERIAL UNDER AMBIENT TEMPERATURES (>50 DEG. F); SAMPLE ID-UXTRITON200 AND SAEP-01-UXT200-2-N							X	11/28/2001
GA-27	11/21/2001	3	02380-2.2	GEOSYNTHETIC QC RESULTS ("CRACKED" TYPE 2 GEOGRID MATERIAL UNDER AMBIENT TEMPERATURES (>50 DEG. F); SAMPLE ID SAEP-01-UXT200-2-C							X	11/28/2001
GA-28	11/21/2001	4	02380-2.2	GEOSYNTHETIC QC RESULTS ("CRACKED" AND "NON-CRACKED" TYPE 2 GEOGRID MATERIAL UNDER CHILLED TEMPERATURES +/- 12 DEG. F); SAMPLE ID SAEP-01-UXT200-2-C NAD SAEP-01-UXT200-2-N RESPECTIVELY.							X	11/28/2001
GA-29	11/21/2001	5	02380-2.2	GEOSYNTHETIC QC RESULTS (COMPOSITE GEOGRID MATERIAL)							X	11/28/2001
FAX	11/26/2001	1	N/A	NAE REQUESTED ADDITIONAL DOCUMENTATION AND TEST DATA FOR TRITON MARINE MATTRESS								N/A
GA-30	11/21/2001	1	02378-2.1	GEOSYNTHETIC QC RESULTS (US-1540 WOVEN GEOTEXTILE MATERIAL)							X	11/28/2001
GA-31		1	02110-1.3	HEAVE MONITORING REPORT #3								
GA-32	12/6/2001	1	02110-1.3	HEAVE MONITORING REPORT #4						X		1/29/2002
FIO-08	12/11/2001	1	02380-2.2	UXTRITION GROGRID 100 & 200 ADDITIONAL QC DATA (TRI, GTE, GRI, AND SGI LABORATORIES						X		12/13/2001
FIO-09	12/11/2001	1	02380-1.3	UXTRITION GEOGRID 100 &200 PRODUCT QC DATA						X		12/13/2001

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
FIO-10	12/11/2001	1	01451-1.3	CAUSEWAY FILL SIEVE ANALYSIS						X		12/13/2001
FIO-11	12/11/2001	2	01451-1.3	CAUSEWAY FILL PROCTOR ANALYSIS (STANDARD)						X		12/13/2001
GA-33	12/14/2001	1	01451-3.7.2.1	GEOSYNTHETICS LABORATORY QUALIFICATIONS - TRI	X							1/29/2002
FIO-12	12/14/2001	2	01451-1.3	ROCK FILL GEOTECHNICAL RESULTS						X		1/29/2002
FIO-13	12/14/2001	3	01451-3.7.4.1	CAUSEWAY FILL COMPACTION TESTING						X		1/29/2002
		4	01451-3.7.4.1	CAUSEWAY FILL COMPACTION TESTING						X		1/29/2002
GA-34	12/18/2001	1	02110-1.3	HEAVE MONITORING REPORT #5						x		1/15/2002
GA-35	12/19/2001	1	01320-1.3	UPDATED PROGRESS SCHEDULE						X		1/29/2002
GA-36	12/21/2001	1	02380-1.3	GEOGRID COMPOSITE TEST RESULTS - GC654050	X							1/29/2002
GA-37	12/21/2001	1	02378-1.3	GEOTEXTILE TEST RESULTS US-1540	X							1/29/2002
GA-38	12/26/2001	1	02110-1.3	HEAVE MONITORING REPORT #6						X		1/29/2002
FIO-14	12/26/2001	1	02380-1.3	MARINE MATTRESS CERTIFICATION DATA						X		1/29/2002
GA-39	12/27/2001	1	02380-2.2	GEOSYNTHETIC QC RESULTS (UXT100 AND UXT200)	X							1/29/2002
GA-40	1/2/2002	1	02110-1.3	HEAVE MONITORING REPORT #7						X		1/15/2002
GA-41	1/2/2002	1	01451-1.3	RESOLUTION OF QUALITY CONTROL ISSUES LETTER		X						1/15/2002
GA-42	1/7/2002	1	02110-1.3	HEAVE MONITORING REPORT #8						X		1/15/2002
GA-43	1/8/2002	1	01451-3.7.4.1	GEOTEXTILE RESULTS - GTF-400EO	X							1/15/2002
FIO-15	1/8/2002	1	02378-1.3	CAUSEWAY FILL COMPACTION RESULTS - 1/4/02						X		1/15/2002
GA-44	1/15/2002	1	02110-1.3	HEAVE MONITORING REPORT #9						X		1/23/2002
GA-45	1/16/2002	1	02378-1.3	GRID COMPOSITE CERT. OF COMPLIANCE	X							1/23/2002

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
		2	02378-1.3	GRID COMPOSITE ROLL VALUES	X							1/23/2002
FIO-16	1/16/2002	1	01451-3.7.4.1	BEDDING SAND SIEVE RESULTS	X							1/23/2002
GA-46	1/22/2002	1	02110-1.3	HEAVE MONITORING REPORT #10						X		2/12/2002
GA-47	1/29/2002	1	02110-1.3	HEAVE MONITORING REPORT #11						X		2/12/2002
GA-48	2/4/2002	1	02380-1.3	UXT200 GEOGRID RESULTS	X							2/12/2002
FIO-17	2/4/2002	1	01451-3.7.4.5	GEOTECHNICAL RESULTS FOR RIP RAP AGGREGATE						X		2/12/2002
FIO-18	2/4/2002	1	01451-3.7.4.2	ROCK FILL GEOTECHNICAL RESULTS FOR ROCK FILL AGGREGATE						X		2/12/2002
FIO-19	2/4/2002	1	01451-3.7.4.1	CAUSEWAY FILL COMPACTION RESULTS 12/18/01, 1/2/02, 1/9/02						X		2/12/2002
FIO-20	2/6/2002	1	01451-3.7.4.5	GEOTECHNICAL RESULTS FOR RIP RAP AGGREGATE						X		2/12/2002
GA-49	2/26/2002	1	2120	WASTE CHARACTERIZATION CAUSEWAY FILL						X		3/7/2002
GA-50	2/6/2002	1	02110-1.3	HEAVE MONITORING REPORT #12						X		3/7/2002
GA-51	2/26/2002	1	2120	WASTE CHARACTERIZATION/SAEP-01-CF-WCHAR-3		X						3/7/2002
GA-52	2/26/2002	1	2120	WASTE CHARACTERIZATION/SAEP-01-CF-WCHAR-4		X						3/7/2002
GA-53	2/26/2002	1	02440,1.6.2	TRI-LOCK BLOCK COMPRESSIVE STRENGTH TESTING RESULTS					X			3/7/2002
GA-54	2/6/2002	1	02110-1.3	HEAVE MONITORING REPORT #13						X		3/7/2002
GA-55	5/23/2002	1	02110-1.3	HEAVE MONITORING REPORT #14, #15						X		6/11/2002
GA-56	6/10/2002	1	01451, 3.7.2.1	GEOTECH LAB APPROVAL MTI, NEW JERSEY		X						6/12/2002
FIO-21[(1)]	6/12/2002	1	01451, 3.7.4.3	GEOTECHNICAL RESULTS FOR BEDDING SAND AGGREGATE								7/8/2002

TABLE 3-2
REMEDIAL ACTION CONTRACTOR SUBMITTAL RECORD - PHASE II

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

PROJECT NO: 53955-03			CONTRACTOR: R. F. Weston, Inc.		REVIEW STATUS							
SUBMITTAL RECORD DATA					CENAE							DATE APPROVED
SUBMIT No.	SUBMIT DATE	ITEM	SPEC.	SUBJECT	A	B	C	D	E	F	G	
FIO-22	6/12/2002	1	02300, 3.10	ANALYTICAL RESULTS FOR BEDDING SAND AGGREGATE						X		6/14/2002
FIO-23	7/1/2002	1	01451, 3.7.4.3	GEOTECHNICAL RESULTS FOR BEDDING SAND AGGREGATE						X		7/8/2002
GA-57	7/1/2002	1	02440, 1.6	GEOLINK BLOCK TESTING RESULTS							X	7/8/2002
GA-58	7/22/2002	1	02110, 1.3	HEAVE MONITORING REPORT #16						X		7/30/2002
GA-59	7/22/2002	1	02440, 1.6	GEOLINK BLOCK TESTING RESULTS	X							7/30/2002
GA-60	9/16/2002	1		JUTE MESH SPECIFICATIONS	X							9/18/2002
FIO-24	9/17/2002	1		SEED SPECIFICATIONS							X	9/18/2002
GA-61	9/17/2002	1	02110, 1.3	HEAVE MONITORING REPORT #17						X		9/18/2002
GA-62	9/18/2002	1	02300, 2.3.2	CHINKING MATERIAL (INTERSTITIAL FILL) LABORATORY REPORT	X							9/27/2002
GA-63	9/18/2002	1	02300, 2.5	TOP SOIL ANALYTICAL AND SIEVE ANALYSIS RESULTS	X							9/20/2002
PENDING	4/2/2003	1	01780	PHASE II COMPLETION REPORT								

A APPROVED AS SUBMITTED

B APPROVED EXCEPT\ AS NOTE ON DRAWINGS

C APPROVED EXCEPT AS NOTED ON DRAWINGS. REFER TO ATTACHED SHEET RESUBMISSION REQUIRED

D WILL BE RETURNED BY SEPARATE CORRESPONDENCE.

E DISAPPROVED

F RECEIPT ACKNOWLEDGED

G OTHER

GA = GOVERNMENT APPROVAL

FX = RECEIPT ACKNOWLEDGED, DOES NOT COMPLY

FIO = FOR INFORMATION ONLY

(1) APPROVED BY CENAE C.O. WITH NO ACCEPTANCE ACTION CODE NOTED.

TABLE 4-1
SOIL/FILL MATERIAL QC TESTING
SUMMARY

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRRATFORD, CT

TEST	GRAIN SIZE ASTM D422	MOISTURE DENSITY CURVE ASTM D698	MOISTURE DENSITY ASTM D1556 OR D2922	MATERIAL QUANTITY[1] CUBIC YARDS	QC TESTS PERFORMED	PASS/FSAIL
SATISFACTORY SOIL FILL	1 TEST PER SOURCE PER MATERIAL	1 TEST PER SOURCE PER MATERIAL	1 TEST PER 200 CY	3739	1 / 2 / 111	PASS
ROCK FILL	1 TEST PER SOURCE	N/A	N/A	5,167	5	PASS
BEDDING SAND	1 TEST PER SOURCE	1 TEST PER SOURCE PER MATERIAL	1 TEST PER 200 CY	1025	2 / 2 / 13	PASS
GRAVEL	1 TEST PER SOURCE	N/A	N/A	955	1	PASS
RIP-RAP	1 TEST PER SOURCE	N/A	N/A	636	2	PASS
VEGETATIVE SUPPORT SOIL	1 TEST PER 1,000 CY	N/A	N/A	1493	1	PASS

NOTES:

1. SOURCE TESTING OF VEGETATIVE SUPPRT SOIL: 1 TEST PER 1,000 cy AS FOLLOWS:
   A. GRAIN SIZE TO INCLUDE #200 SEIVE
   B. pH
   C. ORGANIC CONTENT

(1). MATERIAL QUANTITIES REPORTED BY RAC IN PROJECT COMPLETION REPORT (WESTON, APRIL 2003)

2. FOR DESCRIPTION OF SOIL MATERIALS AND TEST PROCEDURES REFER TO CONTRACT DOCUMENTS SPECIFICATION SECTION 2300.

3. TESTING FREQUENCY SHALL BE AS LISTED , OR AT ANY CHANGE IN MATERIAL OR SOURCE.

4. SATISFACTORY SOIL FILL INCLUDES ACCEPTABLE EXCAVATE FROM THE CAUSEWAY SIDESLOPES AND COMMON BORROW FROM OFF-SITE SOURCES.

5. FOR L.OCATION OF SOIL MATERIALS REFER TO FIGURE 2-1 "CAUSEWAY COVER SYSTEM PROFILE".

N/A = NOT APPLICABLE ASTM = AMERICAN SOCIIETY FOR MATERIAL TESTING

CY = CUBIC YARD QA = QUALITY ASSURANCE

TABLE 4-2
GEOSYNTHETIC MATERIAL QC TESTING
SUMMARY

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

				REQUIRED QUALITY CONTROL TESTING							
GEOSYNTHETIC MATERIAL	**USE LOCATION**	**TRUE 1% TENSILE MODULUS IN USE (MD)**	**JUNCTION STRENGHT (MD)**	**APERTURE SIZE**	**APPARENT OPENING SIZE**	**GRAB TENSILE STRENGTH**	**PUNCTURE RESISTANCE**	**TRAPEZOIDAL TEAR**	**MATERIAL QUANTITY INSTALLED**	**QA TESTS PERFORMED**	**PASS/FAIL**
	TEST METHOD	GRI-GG2 (MODIFIED)	GRI-GG2	N/A	ASTM D4751	ASTM D4632	ASTM D4833	ASTM D4533	N/A	N/A	
STRUCTURAL GEOGRID	USED TO FABRICATE PMMs (TWO TYPES)	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	N/A	N/A	N/A	N/A	252,460	6 / 6 / 6	PASS
BIAXIAL COMPOSITE GEOGRID COMPONENT	USED BENEATH TOE OF LOWER COVER SYSTEM	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	N/A	N/A	N/A	N/A	20,000	1 / 1 / 1	PASS
BIAXIAL COMPOSITE GEOTEXTILE COMPONENT	USED BENEATH TOE OF LOWER COVER SYSTEM	N/A	N/A	N/A	1 TEST PER 100,000 SF	N/A	N/A	N/A	20,000	2	PASS
WOVEN GEOTEXTILE	BENEATH COMPOSITE CAP LAYERS TO	N/A	N/A	N/A	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	N/A	154,100	3 / 3 / 3	PASS
NON-WOVEN GEOTEXTILE(1)	N/A	N/A	N/A	N/A	1 TEST PER 100,000 SF	N/A	1 TEST PER 100,000 SF	1 TEST PER 100,000 SF	N/A	N/A	N/A

NOTES:

1. FOR MANUFACTURER QUALITY CONTROL REQUIREMENTS REFER TO CONTRACT DOCUMENTS SPECIFICATION SECTION 02378 GEOTEXTILES.
2. TESTING FREQUENCY WAS PERFORMED AS LISTED.
3. FOR LOCATION OF GEOSYNTHETIC MATERIALS REFER TO FIGURE 2-1 "CAUSEWAY COVER SYSTEM PROFILE".

(1) PER MANUFACTURER'S RECOMMENDATIONS, WOVEN GEOTEXTILE WAS UTILIZED THROUGHOUT THE PROJECT

GRI = GEOSYNTHETICS RESEARCH INSTITUTE
MD = MACHINE DIRECTION
SF = SQUARE FEET
PMM = POLYMERIC MARINE MATTRESS
N/A = NOT APPLICABLE
ASTM = AMERICAN SOCIIETY FOR TESTING OF MATERIALS
QA = QUALITY ASSURANCE

TABLE 6-1
EXCAVATION AREA CONFIRMATORY SAMPLING SCHEME

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Excavation ID	Associated Exploration	Date of Sample Collection	Sample ID	Sample Location	Sample Depth (ft,bgs)	Analytical Methods
EA-1	CB-99-01	25-Sep-01	EA-01-N0105	North Wall of Excavation	1	1312/8010B - Zinc only
		25-Sep-01	EA-01-E0105	East Wall of Excavation	1	1312/8010B - Zinc only
		25-Sep-01	EA-01-S0105	South Wall of Excavation	1	1312/8010B - Zinc only
		25-Sep-01	EA-01-W0105	West Wall of Excavation	1	1312/8010B - Zinc only
		25-Sep-01	EA-01-F0200	Floor of Excavation	2	1312/8010B - Zinc only
EA-2	**CB-99-03**	**25-Sep-01**	**EA-02-N0105**	**North Wall of Excavation**	**1**	**1312/8010B - Vanadium only**
		25-Sep-01	**EA-02-E0105**	**East Wall of Excavation**	**1**	**1312/8010B - Vanadium only**
		25-Sep-01	**EA-02-S0105**	**South Wall of Excavation**	**1**	**1312/8010B - Vanadium only**
		25-Sep-01	**EA-02-W0105**	**West Wall of Excavation**	**1**	**1312/8010B - Vanadium only**
		25-Sep-01	**EA-02-F0200**	**Floor of Excavation**	**2**	**1312/8010B - Vanadium only**
EA-3	TP-DEP-11	25-Sep-01	EA-03-N0105	North Wall of Excavation	1	1312/8010B-Vanadium only, 1312/8082-PCBs
		25-Sep-01	EA-03-E0105	East Wall of Excavation	1	1312/8010B-Vanadium only, 1312/8082-PCBs
		25-Sep-01	EA-03-S0105	South Wall of Excavation	1	1312/8010B-Vanadium only, 1312/8082-PCBs
		25-Sep-01	EA-03-W0105	West Wall of Excavation	1	1312/8010B-Vanadium only, 1312/8082-PCBs
		25-Sep-01	EA-03-F0200	Floor of Excavation	2	1312/8010B-Vanadium only, 1312/8082-PCBs
EA-4	**TP-DEP-12**	**25-Sep-01**	**EA-04-N0105**	**North Wall of Excavation**	**1**	**1312/8010B-Vanadium only, 1312/8260B-VOCs**
		25-Sep-01	**EA-04-E0105**	**East Wall of Excavation**	**1**	**1312/8010B-Vanadium only, 1312/8260B-VOCs**
		25-Sep-01	**EA-04-S0105**	**South Wall of Excavation**	**1**	**1312/8010B-Vanadium only, 1312/8260B-VOCs**
		25-Sep-01	**EA-04-W0105**	**West Wall of Excavation**	**1**	**1312/8010B-Vanadium only, 1312/8260B-VOCs**
		25-Sep-01	**EA-04-F0200**	**Floor of Excavation**	**2**	**1312/8010B-Vanadium only, 1312/8260B-VOCs**
		17-Oct-01	**EA-04-E0110**	**East Wall of Excavation**	**1**	**1312/8260B-VOCs**
EA-5	TP-99-10	25-Sep-01	EA-05-N0105	North Wall of Excavation	1	1312/8270SIM-SVOCs, 1312/8082-PCBs
		25-Sep-01	EA-05-E0105	East Wall of Excavation	1	1312/8270SIM-SVOCs, 1312/8082-PCBs
		25-Sep-01	EA-05-S0105	South Wall of Excavation	1	1312/8270SIM-SVOCs, 1312/8082-PCBs
		25-Sep-01	EA-05-W0105	West Wall of Excavation	1	1312/8270SIM-SVOCs, 1312/8082-PCBs
		25-Sep-01	EA-05-F0200	Floor of Excavation	2	1312/8270SIM-SVOCs, 1312/8082-PCBs
EA-6	**CB-99-15**	**25-Sep-01**	**EA-06-N0105**	**North Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
		25-Sep-01	**EA-06-E0105**	**East Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
		25-Sep-01	**EA-06-S0105**	**South Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
		25-Sep-01	**EA-06-W0105**	**West Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
		25-Sep-01	**EA-06-F0200**	**Floor of Excavation**	**2**	**1312/8270SIM-SVOCs**
		17-Oct-01	**EA-06-N0110**	**North Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
		17-Oct-01	**EA-06-E0110**	**East Wall of Excavation**	**1**	**1312/8270SIM-SVOCs**
EA-7[(1)]	TP-99-06	N/A	N/A	N/A	0	N/A
EA-8	**TP-99-22**	**3-Oct-01**	**EA-08-F0300_SPLP**	**Pre-Excavation Sample**	**3**	**1312/8082-PCBs**
EA-8	TP-99-22	3-Oct-01	EA-08-N0105	North Wall of Excavation	1	1312/8082-PCBs
		3-Oct-01	EA-08-E0105	East Wall of Excavation	1	1312/8082-PCBs
		3-Oct-01	EA-08-S0105	South Wall of Excavation	1	1312/8082-PCBs
		3-Oct-01	EA-08-W0105	West Wall of Excavation	1	1312/8082-PCBs
		3-Oct-01	EA-08-F0300	Floor of Excavation	3	1312/8082-PCBs
EA-9	TP-99-23	3-Oct-01	EA-09-F0300_SPLP	Pre-Excavation Sample	3	1312/8082-PCBs
EA-9	TP-99-23	3-Oct-01	EA-09-N0105	Pre-Excavation Sample	1	1312/8082-PCBs
		3-Oct-01	EA-09-E0105	Pre-Excavation Sample	1	1312/8082-PCBs
		3-Oct-01	EA-09-S0105	Pre-Excavation Sample	1	1312/8082-PCBs
		3-Oct-01	EA-09-W0105	Pre-Excavation Sample	1	1312/8082-PCBs
		3-Oct-01	EA-09-F0300	Pre-Excavation Sample	3	1312/8082-PCBs
EA-10	**CB-99-02**	**3-Oct-01**	**EA-10-F0200_SPLP**	**Pre-Excavation Sample**	**2**	**1312/8082-PCBs**

Notes:

(1) See report Section 6.4.1 "Excavation Area Evaluation" for discussion of EA-7 conditions and assessment

ID = IDENTIFICATION
FT. = FEET
BGS = BELOW GROUND SURFACE
EA = EXCAVATION AREA
TP = TEST PIT
CB = SOIL BORING
SPLP = SYNTHETIC PRECIPITATION LEACHING PROCEDURE
PCB = POLYCHLORINATED BI-PHENYLS
SVOC =SEMI-VOLATILE ORGANIC COMPOUNDS
VOC = VOLATILE ORGANIC COMPOUNDS
N/A = NON-APPLICABLE

CREATED BY: WBJ
QA REVIEWED BY: DRP

TABLE 6-2
EXCAVATION AREA CONFIRMATION SAMPLING
PCB SPLP ANALYTICAL DATA SUMMARY

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EXCAVATION AREA 8									
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-08-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EXCAVATION AREA 9									
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-09-F0300_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EXCAVATION AREA 10									
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-10-F0200_SPLP	10/3/2001	8082A	ug/L	**0.28**	J	Aroclor-1260	A	1	10/11/2001
EXCAVATION AREA 3									
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-03-N0105_SPLP	9/25/2001	8082A	ug/L	**0.26**	J	Aroclor-1260	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-03-E0105_SPLP	9/25/2001	8082A	ug/L	**0.4**	J	Aroclor-1260	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001

TABLE 6-2
EXCAVATION AREA CONFIRMATION SAMPLING
PCB SPLP ANALYTICAL DATA SUMMARY

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-03-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-03-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-03-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EXCAVATION AREA 5									
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-05-N0105_SPLP	9/25/2001	8082A	ug/L	**5**	UJ	Aroclor-1260	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-05-E0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001

TABLE 6-2
EXCAVATION AREA CONFIRMATION SAMPLING
PCB SPLP ANALYTICAL DATA SUMMARY

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-05-S0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-05-W0105_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1016	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	10	U	Aroclor-1221	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1232	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1242	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1248	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1254	A	1	10/11/2001
EA-05-F0200_SPLP	9/25/2001	8082A	ug/L	5	U	Aroclor-1260	A	1	10/11/2001

NOTE:

1. EXCAVATION AREAS WERE SAMPLED FOR SPECIFIC PARAMETERS ONLY IF RSR CRITERIA WERE EXCEEDED BASED ON RI EXPLORATIONS.

SPLP= SYNTHETIC PRECIPATATION LEACHING PROCEDURE
A = AQUOUS
S = SOIL
U = NON-DETECT AT METHOD DETECTION LIMIT
J = ESTIMATED
VOC = VOLATILE ORGANIC COMPOUND
ug/L = MICROGRAM PER LITER
ug/kg = MICROGRAM PER KILOGRAM
EA = EXCAVATION AREA
PCB = POLYCHLORINBATED BIPHENYL
SVOA = SEMIVOLATILE ORGANIC COMPOUND

TABLE 6-3
CONTAMINATED EXCAVATION AREA
PCB SOIL ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EXCAVATION AREA 3									
EA-03-N0105	9/25/2001	8082	ug/Kg	37	U	Aroclor-1016	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	75	U	Aroclor-1221	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	37	U	Aroclor-1232	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	37	U	Aroclor-1242	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	37	U	Aroclor-1248	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	37	U	Aroclor-1254	S	20	9/28/2001
EA-03-N0105	9/25/2001	8082	ug/Kg	**100**		Aroclor-1260	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1016	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	80	U	Aroclor-1221	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1232	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1242	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1248	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1254	S	20	9/28/2001
EA-03-E0105	9/25/2001	8082	ug/Kg	**140**		Aroclor-1260	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1016	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	80	U	Aroclor-1221	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1232	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1242	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1248	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1254	S	20	9/28/2001
EA-03-S0105	9/25/2001	8082	ug/Kg	60	J	Aroclor-1260	S	20	9/28/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1016	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	80	U	Aroclor-1221	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1232	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1242	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1248	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1254	S	10	10/1/2001
EA-03-W0105	9/25/2001	8082	ug/Kg	**110**		Aroclor-1260	S	10	10/1/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1016	S	20	9/28/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	80	U	Aroclor-1221	S	20	9/28/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1232	S	20	9/28/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1242	S	20	9/28/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1248	S	20	9/28/2001

CREATED BY : WBJ
QA REVIEW BY: DRP

TABLE 6-3
CONTAMINATED EXCAVATION AREA
PCB SOIL ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-03-F0200	9/25/2001	8082	ug/Kg	38.5	U	Aroclor-1254	S	20	9/28/2001
EA-03-F0200	9/25/2001	8082	ug/Kg	**125**		Aroclor-1260	S	20	9/28/2001
EXCAVATION AREA 5									
EA-05-N0105	9/25/2001	8082	ug/Kg	39.5	U	Aroclor-1016	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	80	U	Aroclor-1221	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	39.5	U	Aroclor-1232	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	39.5	U	Aroclor-1242	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	39.5	U	Aroclor-1248	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	39.5	U	Aroclor-1254	S	2	9/28/2001
EA-05-N0105	9/25/2001	8082	ug/Kg	**130**		Aroclor-1260	S	2	9/28/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1016	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	79	U	Aroclor-1221	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1232	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1242	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1248	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	39	U	Aroclor-1254	S	10	10/1/2001
EA-05-E0105	9/25/2001	8082	ug/Kg	**100**		Aroclor-1260	S	10	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	38	U	Aroclor-1016	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	76	U	Aroclor-1221	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	38	U	Aroclor-1232	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	38	U	Aroclor-1242	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	38	U	Aroclor-1248	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	38	U	Aroclor-1254	S	50	10/1/2001
EA-05-S0105	9/25/2001	8082	ug/Kg	**106**		Aroclor-1260	S	50	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	46.5	U	Aroclor-1016	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	95	U	Aroclor-1221	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	46.5	U	Aroclor-1232	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	46.5	U	Aroclor-1242	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	46.5	U	Aroclor-1248	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	46.5	U	Aroclor-1254	S	2	10/1/2001
EA-05-W0105	9/25/2001	8082	ug/Kg	**110**		Aroclor-1260	S	2	10/1/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	36	U	Aroclor-1016	S	50	9/28/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	74	U	Aroclor-1221	S	50	9/28/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	36	U	Aroclor-1232	S	50	9/28/2001

CREATED BY : WBJ
QA REVIEW BY: DRP

TABLE 6-3
CONTAMINATED EXCAVATION AREA
PCB SOIL ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-05-F0200	9/25/2001	8082	ug/Kg	36	U	Aroclor-1242	S	50	9/28/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	36	U	Aroclor-1248	S	50	9/28/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	36	U	Aroclor-1254	S	50	9/28/2001
EA-05-F0200	9/25/2001	8082	ug/Kg	**136**		Aroclor-1260	S	50	9/28/2001

NOTE:

1. EXCAVATION AREAS WERE SAMPLED FOR SPECIFIC PARAMETERS ONLY IF RSR CRITERIA WERE EXCEEDED BASED ON RI EXPLORATIONS.

SPLP= SYNTHETIC PRECIPATATION LEACHING PROCEDURE
A = AQUOUS
S = SOIL
U = NON-DETECT AT METHOD DETECTION LIMIT
J = ESTIMATED
VOC = VOLATILE ORGANIC COMPOUND
ug/L = MICROGRAM PER LITER
ug/kg = MICROGRAM PER KILOGRAM
EA = EXCAVATION AREA
PCB = POLYCHLORINBATED BIPHENYL
SVOA = SEMIVOLATILE ORGANIC COMPOUND

TABLE 6-4
CONTAMINATED EXCAVATION AREA
INORGANICS SPLP ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EXCAVATION AREA 1									
EA-01-E0105	9/25/2001	1312/6010B	ug/L	35.1	U	Zinc	A	1	10/2/2001
EA-01-N0105	9/25/2001	1312/6010B	ug/L	42.9	U	Zinc	A	1	10/2/2001
EA-01-P0200	9/25/2001	1312/6010B	ug/L	29.2	U	Zinc	A	1	10/2/2001
EA-01-S0105	9/25/2001	1312/6010B	ug/L	29.2	U	Zinc	A	1	10/2/2001
EA-01-W0105	9/25/2001	1312/6010B	ug/L	39.1	U	Zinc	A	1	10/2/2001
EXCAVATION AREA 2									
EA-02-E0105	9/25/2001	1312/6010B	ug/L	**11.1**	J	Vanadium	A	1	10/2/2001
EA-02-F0200	9/25/2001	1312/6010B	ug/L	**5.3**	J	Vanadium	A	1	10/3/2001
EA-02-N0105	9/25/2001	1312/6010B	ug/L	**3.3**	J	Vanadium	A	1	10/2/2001
EA-02-S0105	9/25/2001	1312/6010B	ug/L	**3.8**	J	Vanadium	A	1	10/3/2001
EA-02-W0105	9/25/2001	1312/6010B	ug/L	**5.3**	J	Vanadium	A	1	10/3/2001
EXCAVATION AREA 3									
EA-03-E0105	9/25/2001	1312/6010B	ug/L	**263**		Vanadium	A	1	10/3/2001
EA-03-F0200	9/25/2001	1312/6010B	ug/L	**211**		Vanadium	A	1	10/3/2001
EA-03-N0105	9/25/2001	1312/6010B	ug/L	**459**		Vanadium	A	1	10/3/2001
EA-03-S0105	9/25/2001	1312/6010B	ug/L	**120**		Vanadium	A	1	10/3/2001
EA-03-W0105	9/25/2001	1312/6010B	ug/L	**110**		Vanadium	A	1	10/3/2001
EXCAVATION AREA 4									
EA-04-E0105	9/25/2001	1312/6010B	ug/L	**155**		Vanadium	A	1	10/3/2001
EA-04-F0200	9/25/2001	1312/6010B	ug/L	**135**		Vanadium	A	1	10/3/2001
EA-04-N0105	9/25/2001	1312/6010B	ug/L	**258**		Vanadium	A	1	10/3/2001
EA-04-S0105	9/25/2001	1312/6010B	ug/L	**375**		Vanadium	A	1	10/3/2001
EA-04-W0105	9/25/2001	1312/6010B	ug/L	**95.6**		Vanadium	A	1	10/3/2001

NOTE:

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VOC = VOLATILE ORGANIC COMPOUND
ug/L = MICROGRAM PER LITER
ug/kg = MICROGRAM PER KILOGRAM
EA = EXCAVATION AREA
PCB = POLYCHLORINBATED BIPHENYL
SVOA = SEMIVOLATILE ORGANIC COMPOUND

TABLE 6-5
CONTAMINATED EXCAVATION AREA
VOC SOIL ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EXCAVATION AREA 4									
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	Benzene	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	Chlorobenzene	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	Chloroform	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	10	U	2-Butanone	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	**6**		Tetrachloroethene	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	**170**		Trichloroethene	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	10	U	Vinyl Chloride	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	9/28/2001
EA-04-E0105	9/25/2001	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	Benzene	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	Chlorobenzene	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	Chloroform	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	2	U	2-Butanone	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	**2**	J	Tetrachloroethene	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	**6**		Trichloroethene	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	10	U	Vinyl Chloride	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	9/28/2001
EA-04-F0200	9/25/2001	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	Benzene	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	Chlorobenzene	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	Chloroform	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	10	U	2-Butanone	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	**12**		Tetrachloroethene	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	**7**		Trichloroethene	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	10	U	Vinyl Chloride	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	9/28/2001
EA-04-N0105	9/25/2001	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	Benzene	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	Chlorobenzene	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	Chloroform	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	1	U	2-Butanone	S	1	9/28/2001

TABLE 6-5
CONTAMINATED EXCAVATION AREA
VOC SOIL ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-04-S0105	9/25/2001	8260B	ug/L	**3**	J	Tetrachloroethene	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	**23**		Trichloroethene	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	10	U	Vinyl Chloride	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	9/28/2001
EA-04-S0105	9/25/2001	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	Benzene	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	Chlorobenzene	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	Chloroform	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	10	U	2-Butanone	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	**7**		Tetrachloroethene	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	**6**		Trichloroethene	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	10	U	Vinyl Chloride	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	9/28/2001
EA-04-W0105	9/25/2001	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	9/28/2001
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	1,1-Dichloroethene	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	1,2-Dichloroethane	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	10	U	2-Butanone	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Benzene	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Carbon Tetrachloride	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Chlorobenzene	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Chloroform	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Tetrachloroethene	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	5	U	Trichloroethene	S	1	10/23/01
EA-04-E0110	10/17/2002	8260B	ug/L	10	U	Vinyl Chloride	S	1	10/23/01

NOTE:

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VOC = VOLATILE ORGANIC COMPOUND
ug/L = MICROGRAM PER LITER
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EA = EXCAVATION AREA
PCB = POLYCHLORINBATED BIPHENYL
SVOA = SEMIVOLATILE ORGANIC COMPOUND

TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EXCAVATION AREA 5									
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Acenaphthene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)anthracene	A	1	10/4/2001
EA-05-N0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-05-N0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-05-N0105	9/25/2001	8270C	ug/L	10	U	Pyrene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Acenaphthene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)anthracene	A	1	10/4/2001
EA-05-E0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-05-E0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001

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TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-05-E0105	9/25/2001	8270C	ug/L	10	U	Pyrene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Acenaphthene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)anthracene	A	1	10/4/2001
EA-05-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-05-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-05-S0105	9/25/2001	8270C	ug/L	10	U	Pyrene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Acenaphthene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)anthracene	A	1	10/4/2001
EA-05-W0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-05-W0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001

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TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-05-W0105	9/25/2001	8270C	ug/L	10	U	Pyrene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	**0.2**	J	Acenaphthene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	**0.06**	J	Benzo(a)anthracene	A	1	10/4/2001
EA-05-F0200	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-05-F0200	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	UJ	Chrysene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-05-F0200	9/25/2001	8270C	ug/L	10	UJ	Pyrene	A	1	10/2/2001
EXCAVATION AREA 6									
EA-06-N0105	9/25/2001	8270C	ug/L	**0.3**	J	2-Methylnaphthalene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**2**	J	Acenaphthene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.6**	J	Anthracene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.65**		Benzo(a)anthracene	A	1	10/4/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.64**		Benzo(a)pyrene	A	1	10/4/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.62**		Benzo(b)fluoranthene	A	1	10/4/2001

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TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

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STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-06-N0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.54**		Benzo(k)fluoranthene	A	1	10/4/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**1**	J	Carbazole	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.7**	J	Chrysene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**1**	J	Fluoranthene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.6**	J	Fluorene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.3**	J	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.7**	J	Naphthalene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**0.4**	J	Phenanthrene	A	1	10/2/2001
EA-06-N0105	9/25/2001	8270C	ug/L	**2**	J	Pyrene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.4**	J	2-Methylnaphthalene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**5**	J	Acenaphthene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**2**	J	Anthracene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.95**		Benzo(a)anthracene	A	1	10/4/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.78**		Benzo(a)pyrene	A	1	10/4/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.74**		Benzo(b)fluoranthene	A	1	10/4/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.5**	J	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.76**		Benzo(k)fluoranthene	A	1	10/4/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**3**	J	Carbazole	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.9**	J	Chrysene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**3**	J	Fluoranthene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**2**	J	Fluorene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.4**	J	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.5**	J	Naphthalene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**0.4**	J	Phenanthrene	A	1	10/2/2001
EA-06-E0105	9/25/2001	8270C	ug/L	**3**	J	Pyrene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	**0.1**	J	2-Methylnaphthalene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	**0.3**	J	Acenaphthene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001

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TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-06-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)anthracene	A	1	10/4/2001
EA-06-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(a)pyrene	A	1	10/4/2001
EA-06-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(b)fluoranthene	A	1	10/4/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	0.1	U	Benzo(k)fluoranthene	A	1	10/4/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Carbazole	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Fluoranthene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	**0.3**	J	Naphthalene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-06-S0105	9/25/2001	8270C	ug/L	10	U	Pyrene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.2**	J	2-Methylnaphthalene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.8**	J	Acenaphthene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.2**	J	Acenaphthylene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.4**	J	Anthracene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.16**		Benzo(a)anthracene	A	1	10/4/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.16**		Benzo(a)pyrene	A	1	10/4/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.16**		Benzo(b)fluoranthene	A	1	10/4/2001
EA-06-W0105	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.12**		Benzo(k)fluoranthene	A	1	10/4/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**1**	J	Carbazole	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.4**	J	Fluoranthene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.6**	J	Fluorene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.6**	J	Naphthalene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.4**	J	Phenanthrene	A	1	10/2/2001
EA-06-W0105	9/25/2001	8270C	ug/L	**0.5**	J	Pyrene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	2-Methylnaphthalene	A	1	10/2/2001

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TABLE 6-6
CONTAMINATED EXCAVATION AREA
SVOA ANALYTICAL DATA

CAUSEWAY
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
STRATFORD ARMY ENGINE PLANT
STRATFORD, CT

SAMPLE ID	DATE COLLECTED	METHOD	UNITS	RESULT	QUALIFIER	PARAMETER	MATRIX	DIL	DATE ANALYZED
EA-06-F0200	9/25/2001	8270C	ug/L	**0.5**	J	Acenaphthene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Acenaphthylene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Anthracene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.31**		Benzo(a)anthracene	A	1	10/4/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.3**		Benzo(a)pyrene	A	1	10/4/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.29**		Benzo(b)fluoranthene	A	1	10/4/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	UJ	Benzo(g,h,i)perylene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.23**		Benzo(k)fluoranthene	A	1	10/4/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.6**	J	Carbazole	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Chrysene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Dibenzo(a,h)anthracene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.6**	J	Fluoranthene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Fluorene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Indeno(1,2,3-cd)pyrene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Naphthalene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	10	U	Phenanthrene	A	1	10/2/2001
EA-06-F0200	9/25/2001	8270C	ug/L	**0.7**	J	Pyrene	A	1	10/2/2001

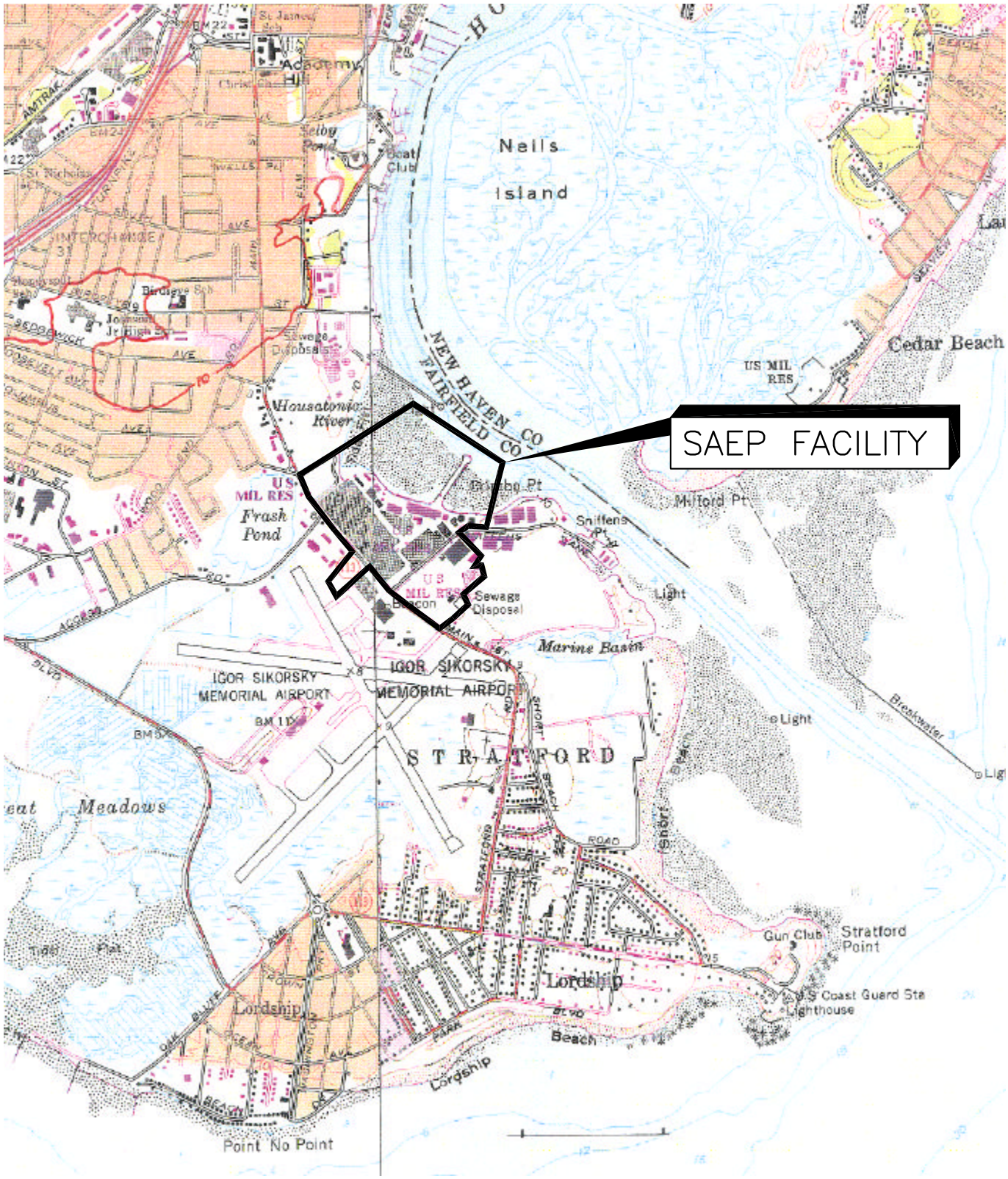
NOTE:

1. EXCAVATION AREAS WERE SAMPLED FOR SPECIFIC PARAMETERS ONLY IF RSR CRITERIA WERE EXCEEDED BASED ON RI EXPLORATIONS.

SPLP= SYNTHETIC PRECIPATATION LEACHING PROCEDURE
A = AQUOUS
S = SOIL
U = NON-DETECT AT METHOD DETECTION LIMIT
J = ESTIMATED
VOC = VOLATILE ORGANIC COMPOUND
ug/L = MICROGRAM PER LITER
ug/kg = MICROGRAM PER KILOGRAM
EA = EXCAVATION AREA
PCB = POLYCHLORINBATED BIPHENYL
SVOA = SEMIVOLATILE ORGANIC COMPOUND

FIGURES

P:\Projects\CBDCOM\SAEP\RI-FS-PP\RI Report\2002 RI Report\Figures\52985F001a.dwg Tue, 30 Dec 2003 - 2:19pm bgfurey



MAP SOURCE:

FROM BRIDGEPORT & MILFORD, CT. USGS QUADRANGLE MAP. 1970 & 1960, PHOTOREVISED 1984.
REVISED FROM: URS Greiner Woodward Clyde - WAYNE, NEW JERSEY. DATED MARCH 2, 2000.

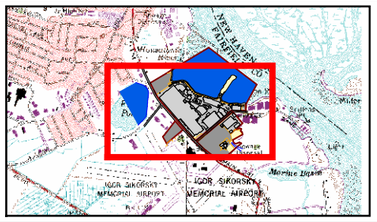
N

0 2000 4000

SCALE (FEET)

FIGURE 1-1
FACILITY LOCATION
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
CAUSEWAY CONSTRUCTION PHASES I & II
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Harding ESE



Site Map

0 150 300 Feet

Prepared by BRP | Checked by WBJ

Legend

- Buildings, Riprap
- Former Buildings
- Drainage Channels, Ponds
- Fences
- Roads
- Boundary
- Buildings
- Open Paved/Concrete Areas
- Open Grassed Areas
- Roads/Parking Lots
- Water

FIGURE 2-1
FACILITY DETAIL MAP

NON-TIME CRITICAL REMOVAL ACTION CERTIFICATION REPORT
CAUSEWAY CONSTRUCTION PHASES I & II
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT
Harding ESE

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Created By: BDF | Checked By: MEJ

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MERIDIAN IS REPORTED TO BE NORTH AMERICAN DATUM OF 1983 AS PROVIDED BY CLIENT

HOUSATONIC RIVER

TIDAL FLATS

APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS

APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS

TIDAL FLATS

APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS

APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS

#59 CONCRETE BUILDING

#16 2 STORY CONC. BLOCK BUILDING

#40 1 STORY CONC. BLOCK BUILDING

REMAINS OF CONC. RAMP

EDGE OF WATER AT LOW TIDE

CONC. PAD WITH WEATHER STATION

MWCD-00-01

WATER PIPE

CONCRETE RETAINING WALL

ELECTRIC SERVICE BOX

UGU MARK

ELECTRIC SERVICE BOX

10" HIGH C.L.F. ON CONCRETE RETAINING WALL

DMH

WATER PIPE

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

0 40 80

Scale in feet

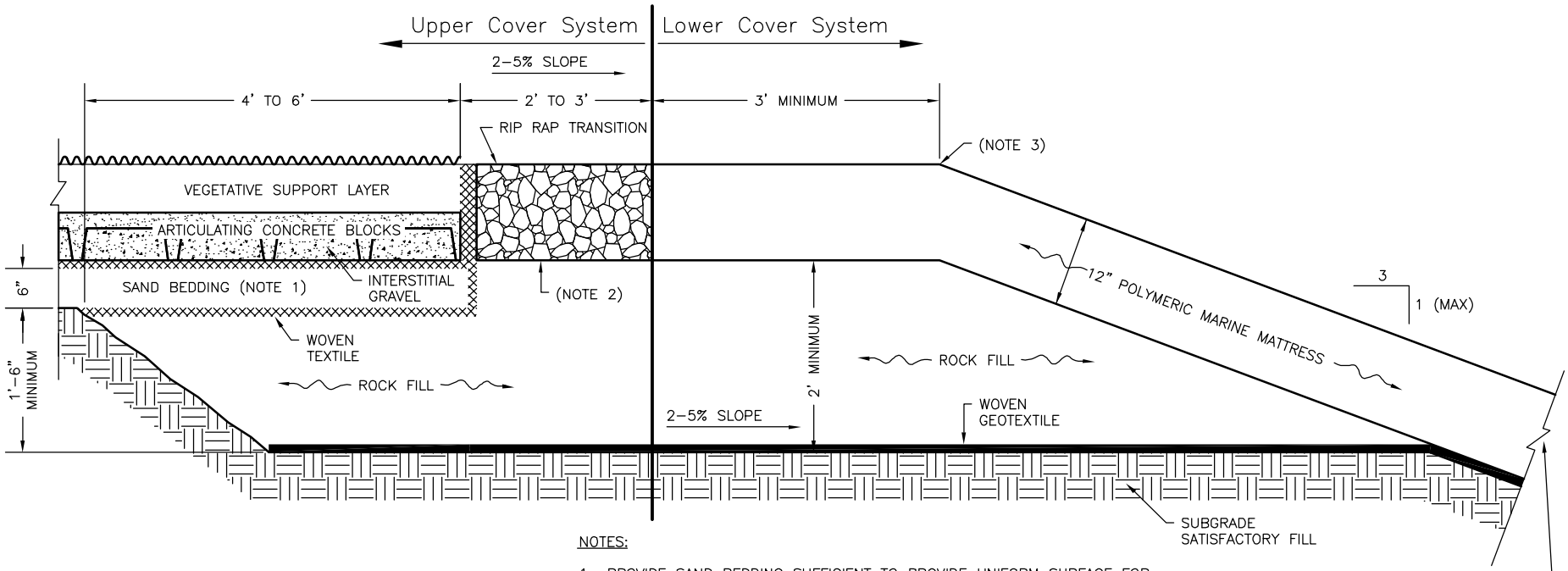
LEGEND

DIA.	DIAMETER		WATER GATE
CB	CATCH BASIN		BOLLARD
C.L.F.	CHAIN LINK FENCE		ELECTRIC BOX
	RETAINING WALL	E	ELECTRIC CONDUIT (ON GRADE)
	1' CONTOUR		HYDRANT
+7.9	SPOT GRADE (– INDICATES NEGATIVE)		DRAIN MANHOLE
	MONITORING WELL	D.I.	DUCTILE IRON
UGU	UNDERGROUND UTILITY MARK	INV.	INVERT
	APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS		EXISTING RIPRAP
	EDGE OF WATER AT LOW TIDE		LIMIT OF WORK
OHW	OVERHEAD WIRE		

FIGURE 2–2
PRE–CONSTRUCTION GENERAL SITE PLAN
NON–TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
CAUSEWAY CONSTRUCTION PHASES I & II
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNTECTICUT

Harding ESE

CREATED BY: BGF
CHECKED BY: WBJ

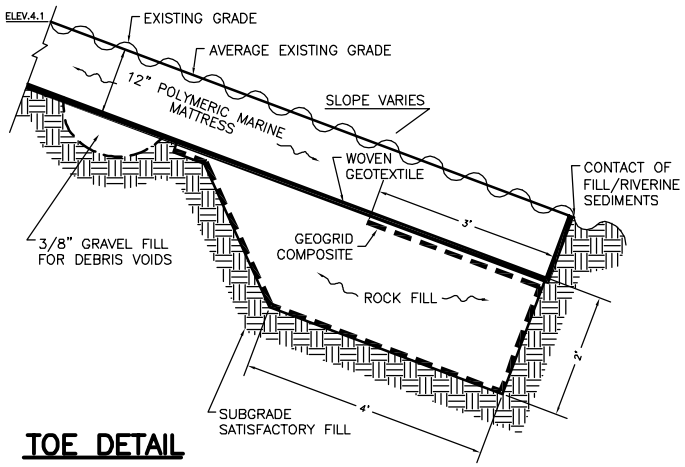


TRANSITION DETAIL

NOT TO SCALE

NOTES:

1. PROVIDE SAND BEDDING SUFFICIENT TO PROVIDE UNIFORM SURFACE FOR PLACEMENT OF INTERLOCKING CONCRETE BLOCKS.
2. EXTEND LOWER POLYMERIC MARINE MATTRESS SHELL MATERIAL BETWEEN ROCK FILL AND RIP RAP AND BENEATH INTERLOCKING CONCRETE BLOCKS A TOTAL OF 5 FEET MINIMUM TO SECURE MATTRESS.
3. DO NOT INSTALL BUTTED ENDS WITHIN 5 FEET OF THE BREAK IN SLOPE.
4. POLYMERIC MARINE MATTRESS SHALL NOT ENCROACH BEYOND THE AVERAGE EXISTING GRADE BETWEEN THE CONTACT OF FILL/RIVERINE SEDIMENTS AND ELEVATION 4.1–FEET MSL.
5. SOURCE: HARDING ESE SHEET REFERENCE NO. C–303. ENTITLED "MISCELLANEOUS DETAILS" DATED 8/30/01.



TOE DETAIL

NOT TO SCALE

FIGURE 2–3
CAUSEWAY COVER SYSTEM PROFILE
NON–TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
CAUSEWAY CONSTRUCTION PHASES I & II
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNTECTICUT

Harding ESE

Created By: BDF
Checked By: MBJ

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EXCAVATION AREA EA-9
EXCAVATION AREA EA-10
EXCAVATION AREA EA-2
EXCAVATION AREA EA-7
EXCAVATION AREA EA-5
EXCAVATION AREA EA-8
EXCAVATION AREA EA-6
EXCAVATION AREA EA-1
EXCAVATION AREA EA-3
EXCAVATION AREA EA-4

TEMPORARY HEAVE POLES TYP. (30) PLACES
HEAVE PLATFORM TYP. (5) PLACES
STATIONARY HEAVE POLES TYP. (5) PLACES

APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS

FORMER LOCATIONS

TP-31 TP-32 TP-33 TP-34 TP-35 TP-36 TP-37 TP-38 TP-39 TP-40
TP-11 TP-12 TP-13 TP-14 TP-15 TP-16 TP-17 TP-18 TP-19 TP-20
TP-22 TP-23 TP-24 TP-25 TP-26 TP-27 TP-28 TP-29
H-1 P-1 H-2 P-2 H-3 P-3 H-4 P-4 H-5 P-5 H-6 PD-6 H-7 PD-7 H-8 PD-8 H-9 PD-9 H-10 PD-10
EA-1 EA-2 EA-3 EA-4 EA-5 EA-6 EA-7 EA-8 EA-9 EA-10

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

#59 CONCRETE BUILDING
#40 1 STORY CONC. BLOCK BUILDING
#16 2 STORY CONC. BLOCK BUILDING

WATER PIPE
CONCRETE RETAINING WALL
ELECTRIC SERVICE BOX
UGU MARK
2' DIA. CONC. PEDESTAL (TYP.)
CONC. PAD
BIT. CONC. PAVEMENT
CONC. RAMP
GRASS
PATH
ELECTRIC CONDUIT
BROKEN BIT. CONC.
REMAINS OF CONC. RAMP
CONC. PAD WITH WEATHER STATION (TO BE REMOVED)
10' HIGH C.L.F. ON CONCRETE RETAINING WALL
DMH
WATER PIPE
6" DI INV.=8.4±
6" DI INV.=8.9±
(TO BE REMOVED)
MWCD-00-01
TIDAL FLATS
LOW TIDE
EDGE OF WATER AT
HOUSATONIC RIVER

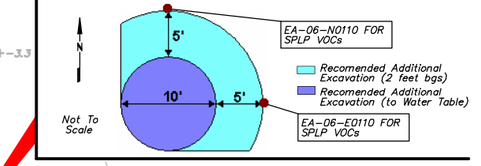
COORDINATES OF STATION 0+00
N 623595.62
E 897824.31

COORDINATES OF STATION 7+00
N 624169.03
E 898225.82

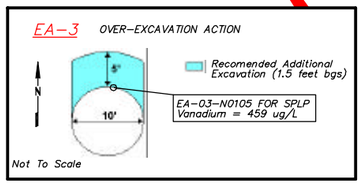
LIMIT OF WORK

MERIDIAN IS REPORTED TO BE NORTH AMERICAN DATUM OF 1983 AS PROVIDED BY CLIENT

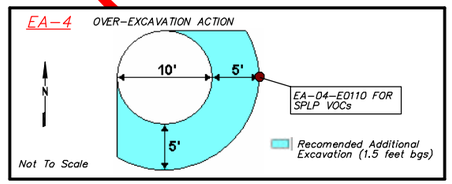
EA-6 OVER-EXCAVATION ACTION



EA-3 OVER-EXCAVATION ACTION



EA-4 OVER-EXCAVATION ACTION



LEGEND

DIA.	DIAMETER
CB □	CATCH BASIN
C.L.F.	CHAIN LINK FENCE
	RETAINING WALL
4	1' CONTOUR
+7.9	SPOT GRADE (– INDICATES NEGATIVE)
	MONITORING WELL
UGU	UNDERGROUND UTILITY MARK
	APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS
	EDGE OF WATER AT LOW TIDE
OHW	OVERHEAD WIRE
	WATER GATE
	BOLLARD
	ELECTRIC BOX
E	ELECTRIC CONDUIT (ON GRADE)
	HYDRANT
	DRAIN MANHOLE
D.I.	DUCTILE IRON
INV.	INVERT
	EXISTING RIPRAP
	LIMIT OF WORK
	APPROXIMATE LIMIT OF EXCAVATION AREA
	HEAVE PLATFORM
	STATIONARY HEAVE POLE
TP-39	TEMPORARY HEAVE POLE

0 40 80
Scale in feet

NOTES:

1. FOR EXPLANATION OF EXCAVATION AREA EVALUATION , OVER-EXCAVATION REQUIREMENTS AND CONFIRMATION SAMPLE RESULTS REFER TO SECTION 6.0 OF CERTIFICATION REPORT. SEE DESIGN DRAWING C-101 FOR SURVEY REFERENCES.
2. EXCAVATION OF CONTAMINATED MATERIALS FROM AREAS EA-1 THRU EA-10 WAS AT LOCATIONS SHOWN.
3. COORDINATE LOCATIONS FOR HEAVE MONITORING POINTS PROVIDED BY R.F. WESTON.

FIGURE 6-1
REMEDIAL EXCAVATION AREAS
NON-TIME CRITICAL REMOVAL ACTION
CERTIFICATION REPORT
CAUSEWAY CONSTRUCTION PHASES I & II
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNTECTICUT

Harding ESE

APPENDIX A

CTDEP REGULATORY ACCEPTANCE LETTER FOR PERMANENT COVER SYSTEM

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER MANAGEMENT
Permitting, Enforcement and Remediation Division

May 18, 2001

Mr. John Burleson
BRAC Environmental Coordinator
Stratford Army Engine Plant
550 Main Street
Stratford, CT 06497

RE: Stratford Army Engine Plant

APPROVAL OF PERMANENT COVER SYSTEM

The Permitting Enforcement and Remediation Division of the Bureau of Water Management ("Department") has reviewed the letter titled "Request for Approval of Permanent Cover System" dated April 18, 2001. The letter was prepared by Harding ESE on behalf of the United States Army. The letter was submitted in conjunction with a "Basis of Design, Causeway Non-time Critical Removal Action Design, Stratford Army Engine Plant, Stratford, Connecticut", dated January, 2001, which was prepared by Harding ESE on behalf of the US Army Tank-automotive & Armaments Command.

The letter and referenced design document describe a permanent erosion control structure to be installed upon a coastal causeway at the Stratford Army Engine Plant, Stratford, CT.

The above referenced structure is hereby approved as an alternative permanent structure meeting the requirements of Section 22a-133k-1 (a)(28) of Connecticut's Remediation Standard Regulations, when coupled with the placement of an Environmental Land Use Restriction preventing structure disturbance.

Nothing in this approval shall affect the Commissioner's authority to institute any proceeding, or take any action to prevent or abate pollution, to recover costs and natural resource damages, and to impose penalties for violations of law. If at any time the Commissioner determines that the approved actions have not fully characterized the extent and degree of pollution or have not successfully abated or prevented pollution, the Commissioner may institute any proceeding, or take any action to require further investigation or further action to prevent or abate pollution. This approval relates only to pollution or contamination on the site's causeway that is under the erosion control structure.

In addition, nothing in this approval shall relieve any person of his or her obligations under applicable federal, state and local law. Construction in the coastal zone is subject to Connecticut's Coastal Management Act, and the technical requirements of this statute apply.

If you have any questions pertaining to this matter, please contact Kenneth Feathers at (860) 424-3770.

Sincerely,

Michael J. Harder
Director

MJH:KRF

cc: Nelson Walter, Harding ESE
Margaret Welch, DEP
Meghan Cassidy, EPA

APPENDIX B

POLYMERIC MARINE MATTRESS QUALITY ASSURANCE DOCUMENTS

B-1 QUALITY CONTROL INSPECTION CRITERIA AND REPAIR GUIDELINES – SAEP TRITON MARINE MATTRESSES

B-2 DEFICIENCY REPAIR AND DEPLOYED PMM ACCEPTANCE FORMS

B-3 PMM REPAIR INVENTORY LOGS

APPENDIX B-1

QUALITY CONTROL INSPECTION CRITERIA AND REPAIR GUIDELINES – SAEP TRITON MARINE MATTRESSES

QUALITY CONTROL INSPECTION CRITERIA AND REPAIR GUIDELINES

Triton Marine Mattresses – SAEP Causeway Project

INSPECTION CRITERIA	REPAIR GUIDELINES			
	Top or Bottom Piece Either Side Edge [3]	Top or Bottom Piece Overall Area	End Baffle	Side Piece
Inspection Method	Visual	Visual	Visual	Visual
Consecutive Severed [1] Ribs in a single row in the cross-roll direction (XMD)	***Pre-Placement*** [4] 1 ⇒ No Repair 2 ⇒ Braid Patch [6] 3 ⇒ Braid Patch & Grid Patch ≥ 4 ⇒ Replace/Remove ***Post-Placement*** [5] 1 ⇒ No Repair 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch	***Pre-Placement*** [4] 1 ⇒ No Repair 2 ⇒ Braid Patch 3 to 7 ⇒ Braid Patch & Grid Patch ≥ 8 ⇒ Replace/Remove ***Post-Placement*** [5] 1 ⇒ No Repair 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch	***Pre-Placement*** [4] 1 ⇒ No Repair 2 ⇒ Braid Patch 3 to 14 ⇒ Grid Patch ≥ 15 ⇒ Replace/Remove ***Post-Placement*** [5] Not applicable - inaccessible due to end-to-end seam of adjacent mattresses	***Pre-Placement*** 1 ⇒ No Repair 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch ***Post-Placement*** 1 ⇒ No Repair ≥ 2 ⇒ Braid Patch
Total Severed Ribs in a single row in the cross-roll direction (XMD)	***Pre-Placement*** > 6 ⇒ Replace/Remove ***Post-Placement*** See Overall Area ⇒	***Pre-Placement*** > 14 ⇒ Replace/Remove ***Post-Placement*** > 14 ⇒ Grid Patch Row	***Pre-Placement*** ≥ 18 ⇒ Replace/Remove ***Post-Placement*** Not applicable - inaccessible	***Pre-Placement*** > 4 ⇒ Grid Patch ***Post-Placement*** 1 ⇒ No Repair ≥ 2 ⇒ Braid Patch
Damaged [2] Ribs	No limit. No repair required.	No limit. No repair required.	No limit. No repair required.	No limit. No repair required.
Splits in XMD bars [7] consecutive in the roll or cross-roll direction	≤ 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch	≤ 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch	≤ 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch	≤ 2 ⇒ Braid Patch ≥ 3 ⇒ Grid Patch
Gaps Between Ribs or Adjacent to Seam [9]	***Pre-Placement:*** ≤ 2.32 inches ⇒ Acceptable ≥ 2.32 inches ⇒ Braid Patch ***Post-Placement:*** ≤ 2.32 inches ⇒ Acceptable 2.32 to 6 inches ⇒ Braid Patch ≥ 6 inches ⇒ Grid Patch			
Stone Fill Quantity	Acceptable filling of mattress compartments (baffles) is to be inspected prior to removal from the filling aparatus. Shifting of the stone fill during handling is expected and variation in mattress thickness is acceptable.			
Braid Material Condition	*Damaged* braid material (not more than 50% of the filaments broken) is acceptable with no repair. *Severed* braid material (more than 50% of the filaments broken) shall be replaced.			
Spacing Between Adjacent Units [8]	≤ 2 inches ⇒ Acceptable 2 to 12 inches ⇒ Fill with stone and Grid Patch ≥ 12 inches ⇒ Reposition unit			

Notes:

1. "Severed Rib" is defined as a rib with 100% of the cross-sectional thickness lost at any point to cracks, splits, abbrasions, etc.
2. "Damaged Rib" is defined as a rib with < 100% of the cross-sectional thickness lost at any point to cracks, splits, abbrasions, etc.
3. "Side Edge" is defined as the outermost 10 ribs along the 10-foot dimension of the mattress.
4. "Pre-Placement" inspection are performed on exposed and accessible portions of completed mattresses after being removed from the filling apparatus and staged in the South Lot.
5. "Post-Placement" inspection are performed on the exposed and accessible portions of the completed mattresses after installation on the Causeway sideslope. Transfer of the completed mattresses from the South Lot staging area to the Causeway is to be considered part of placement.
6. "Braid Rib", "Braid Patch", and "Grid Patch" are to be installed according to the procedures provided in the Tensar "Suggested Repair Guidelines" and addendums.
7. The Repair Guideline listed are the same for both the Pre-Placement and Post-Placement inspection.
8. The spacing guidelines listed apply in all directions (end-to-end, side-to-end, side-to-side, and corners).
9. The maximum allowable gap distance recommended in the retention analysis performed by Weston on 12/11/01 was determined to be 2.32 inches.

Repair Guidelines & Resolution of Quality Control Issues-1/2/01

TENSAR EARTH TECHNOLOGIES

TO: ROY F. WESTON, INC.

FROM: JEFF FISKE

SUBJECT: ADDENDUM TO SUGGESTED REPAIR GUIDELINES
MARINE MATTRESS REPAIR PROCEDURES

DATE: 12/19/01

CC: JIM GIUMARRA, AMERICAN EXCELSIOR COMPANY
STEVE MAHER, TENSAR EARTH TECHNOLOGIES

Mattress Repair Procedures:

1. Braid Patch: Situations in which a braid patch repair is required are defined in the attached "Quality Control Inspection Criteria & Repair Guidelines" table. For the purpose of this repair the term "adjacent" applies in the cross-machine (cross roll) direction. The "braid patch" should be made using the same HDPE braid material used in prefabrication and final seaming.

   The "braid patch" is begun by securely knotting the braid material to the transverse (XMD) bar at least two full apertures before one side of the opening to be repaired. The patch shall then be installed such that the braid snugly engages the XMD bars on either end of the opening, advancing across the opening one aperture at a time. The resulting "zig-zag" configuration shall continue for two (2) full apertures beyond the opening. The "braid patch" is completed by securely knotting the braid to the XMD bar (see figure). If required, a "grid patch" shall be installed following the installation of the "braid patch"

2. In the event that the damage occurs at the edge of the geogrid (i.e., one of the severed ribs was incorporated in a mattress seam), the patch shall begin two (2) full apertures before the non-seam end of the opening. The patch shall then be installed such that the braid snugly engages the XMD bars on either side of the opening, advancing across the opening one aperture at a time. Since the patch cannot extend beyond the edge of the geogrid, the "braid patch" is completed by securing knotting the braid to the XMD bar at one end of the outermost rib. (see figure)

   If a "grid patch" is required in addition to the "braid patch", the grid patch shall extend a minimum of six (6) inches beyond the opening in all directions. If located immediately adjacent to a braided seam, the "grid patch" is not required to extend beyond the edge of the unit, but shall rather be incorporated into the unit through a braided seam repair.
3. Grid patch: Refer to instructions in the "Suggested Repair Guidelines for Triton® Marine Mattress Units" document.
4. Braided seam procedure:
   For the purposes of this repair, the term adjacent applies in the machine (roll) direction. If the braid is severed, loosen the stitch in both directions until a competent rib is reached. Securely knot the braid to the XMD bar at the end of the competent rib. If the seam is loose as a result of damage to geogrid ribs incorporated within it, creating an opening of unacceptable size, sever the braid and follow the previous procedure.

If no more than two (2) adjacent ribs are severed, replace the seam following seaming procedures provided in the submittal document, engaging the nearest competent rib. The repaired seam shall extend a minimum of six (6) inches beyond the damaged section in both directions.

If three (3), or more, adjacent ribs are severed, a "grid patch" shall be installed prior to performing the seam repair. The "grid patch" shall extend a minimum of six (6) inches beyond the damaged section along the seam in both directions and toward the center of the mattress unit. The "grid patch" is not required to extend beyond the edge of the unit, but shall rather be incorporated into the unit through the seam repair. The repaired seam shall extend a minimum of six (6) inches beyond the damaged section in both directions.

APPENDIX B-2

DEFICIENCY REPAIR AND DEPLOYED PMM ACCEPTANCE FORMS

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 1**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 7500 SF

Description of area: From approximate construction baseline 6+00 to 7+25 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 25 rows of PMMs six courses deep.

X _____

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

_____

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 1

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/7/02	WBJ	X	1	2	1,2,3	4/4/02	Y	WBJ	END/Side TAB JUNCT.
		X	4	2	4		Y		END/Side TAB
		CSR	18	4	5		Y		
		CSR	18	5	6		Y		
		SBU	19	1	7		Y		
		SBU	20	2	8		Y		
		X	20	3	9		Y		END/SIDE TAB
		SBU	22	3	10		Y		
		SBU	23	2	11		Y		
		X	23	2	12		Y		END/SIDE TAB
		SBU	24	1	13		Y		
		SG	25	1	14		Y		Baffle SEAM
							WBJ		

Notes:

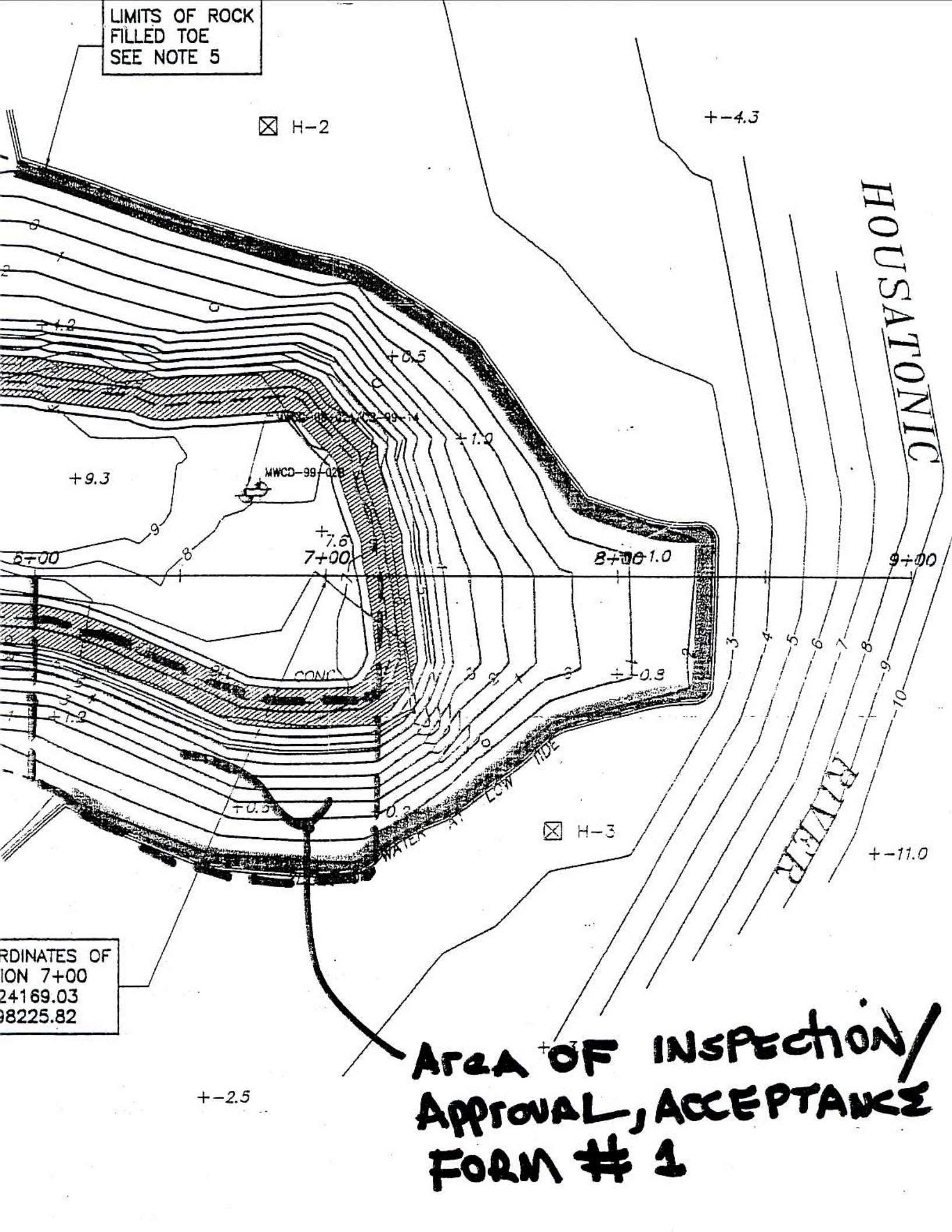
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.


LIMITS OF ROCK FILLED TOE SEE NOTE 5
H-2
+-4.3
HOUSATONIC
RIVER
+9.3
MWCD-99-02B
6+00
7+00
8+00
9+00
CONC
+0.9
+1.2
+0.5
+1.0
+0.3
+0.2
WATER AT LOW TIDE
H-3
+-11.0
+-2.5
RDINATES OF
ION 7+00
24169.03
98225.82
Area of Inspection/
Approval, Acceptance
Form # 1

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 2**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 6300 SF

Description of area: From approximate construction baseline 5+00 to 6+00 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, six courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 2

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/8/02	WJ	CSR	1	1	1	4/4/02	Y	WJ	
		SBU	1	5	2		Y		
		SG	5	3	3		Y		
		SBU	5	5	4		Y		
		SBU	6	3	5		Y		
		SBU & X	8	3	6		Y		TRIM END FLAP
		SBU	10	5	7		Y		
		SBU	10	4	8		Y		
		CSR	10	1	9		Y		
		CSR	11	1	10		Y		
		SBU	11	3	11		Y		
		X	20	5	12		Y		TRIM END FLAP
		X	14	2	13		Y		TIE END FLAP Both sides
		X	15	2	14		Y		END FLAP
		X	17	2	15		Y		TIE END FLAP Both sides
						WJ			

Notes:

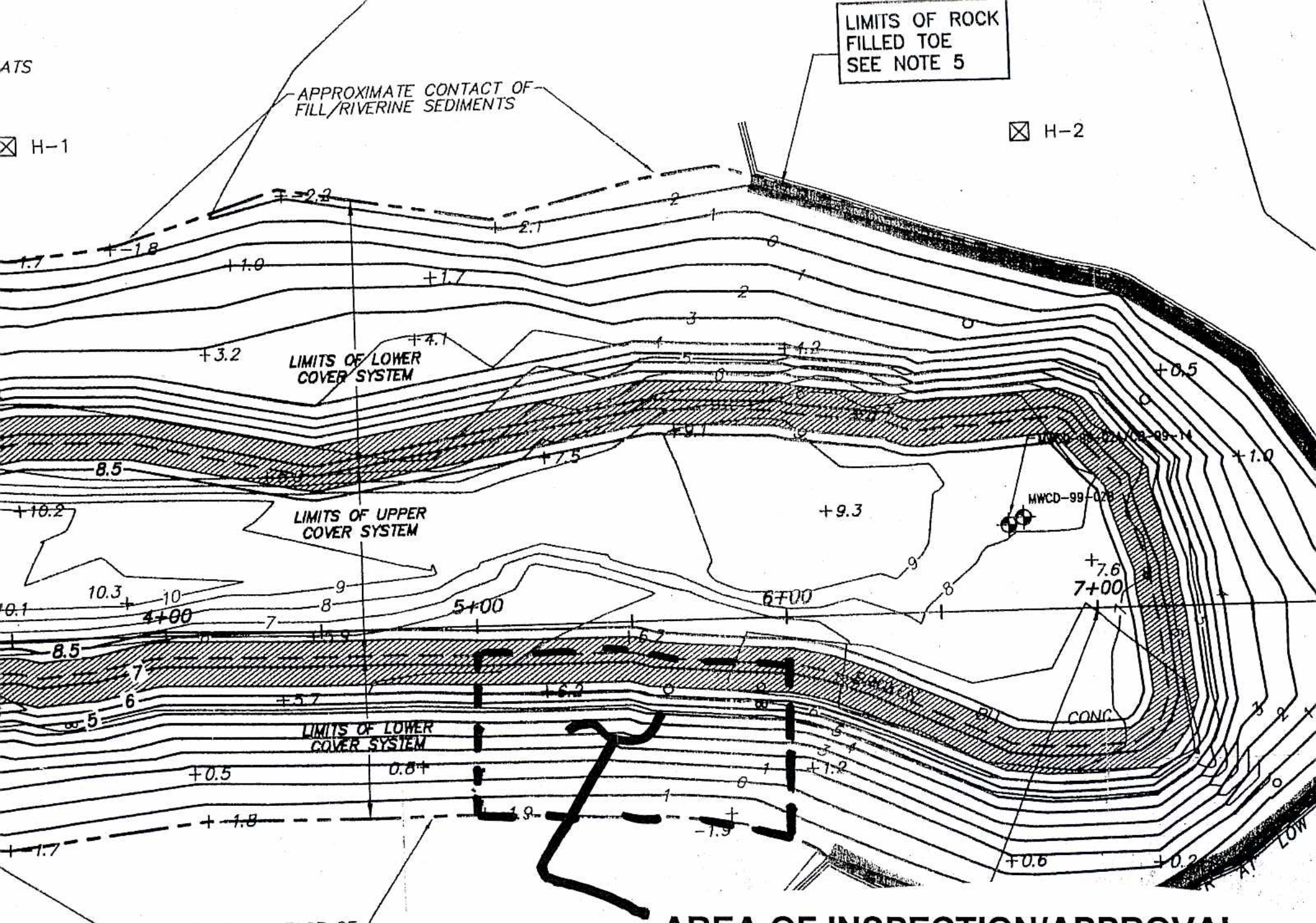
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs	SG - seam gap	x - other
TSR - total severed ribs	DBM - damaged braid material	
SIB - splits in bars	SBU - spacing between units	

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #2

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 3**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 6300 SF

Description of area: From approximate construction baseline 4+00 to 5+00 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, six courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 3

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/8/02	WB	SBU	1	4	1	4/4/02	Y	WB	BOTH SIDES
	"	SBU	1	5	2		Y		
	CMS	CSR	6	4	3		Y		
		SBU	12	5	4		Y		
		SBU	12	4	5		Y		
		SBU	13	3	6		Y		
		SBU	16	3	7		Y		BOTH SIDES
		CSR	17	1	8		Y		2 LOCATIONS
		SBU	20	5	9		Y		
		"	20	4	10		Y		
		"	20	2	11		Y		BOTH SIDES
		CSR	21	4	12		Y		
		SBU	21	4	13		Y		
		CSR	21	6	14		Y		
							WB		

Notes:

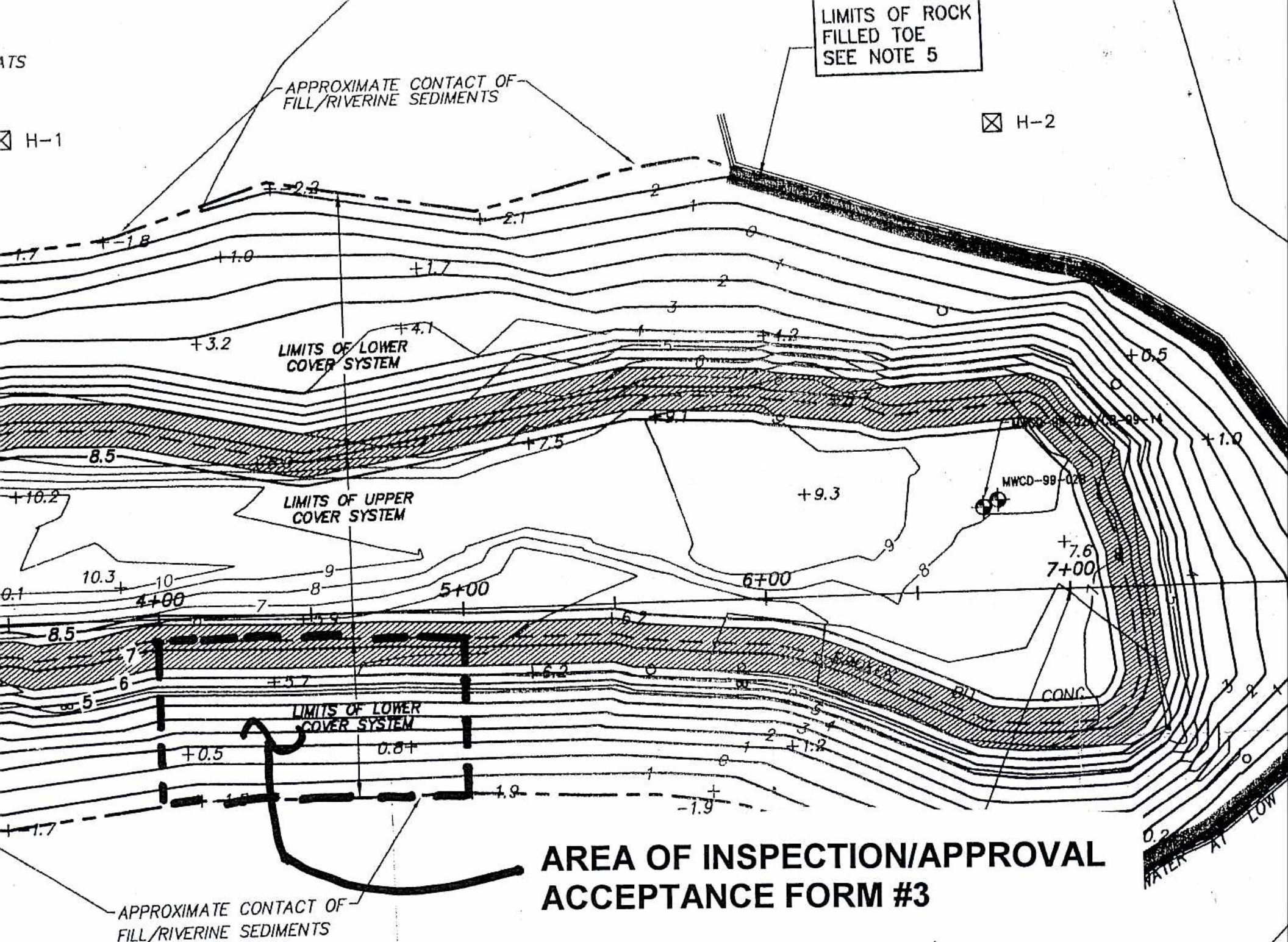
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #3

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 4**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 6300 SF

Description of area: From approximate construction baseline 3+00 to 4+00 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, six courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 4

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/14/02	WB	CSR	4	2	1	4/4/02	Y	WB	
		SG	10	2	2		Y		
		CSR	12	1	3		Y		
		CSR	14	1	4		Y		
		CSR	15	2	5		Y		
		SBU	15	4	6		Y		
		SBU	18	4	7		Y		Both Sides
		SBU	18	5	8		Y		
		SBU	20	5	9		Y		
		SBU	20	4	10		Y		
					WB				

Notes:

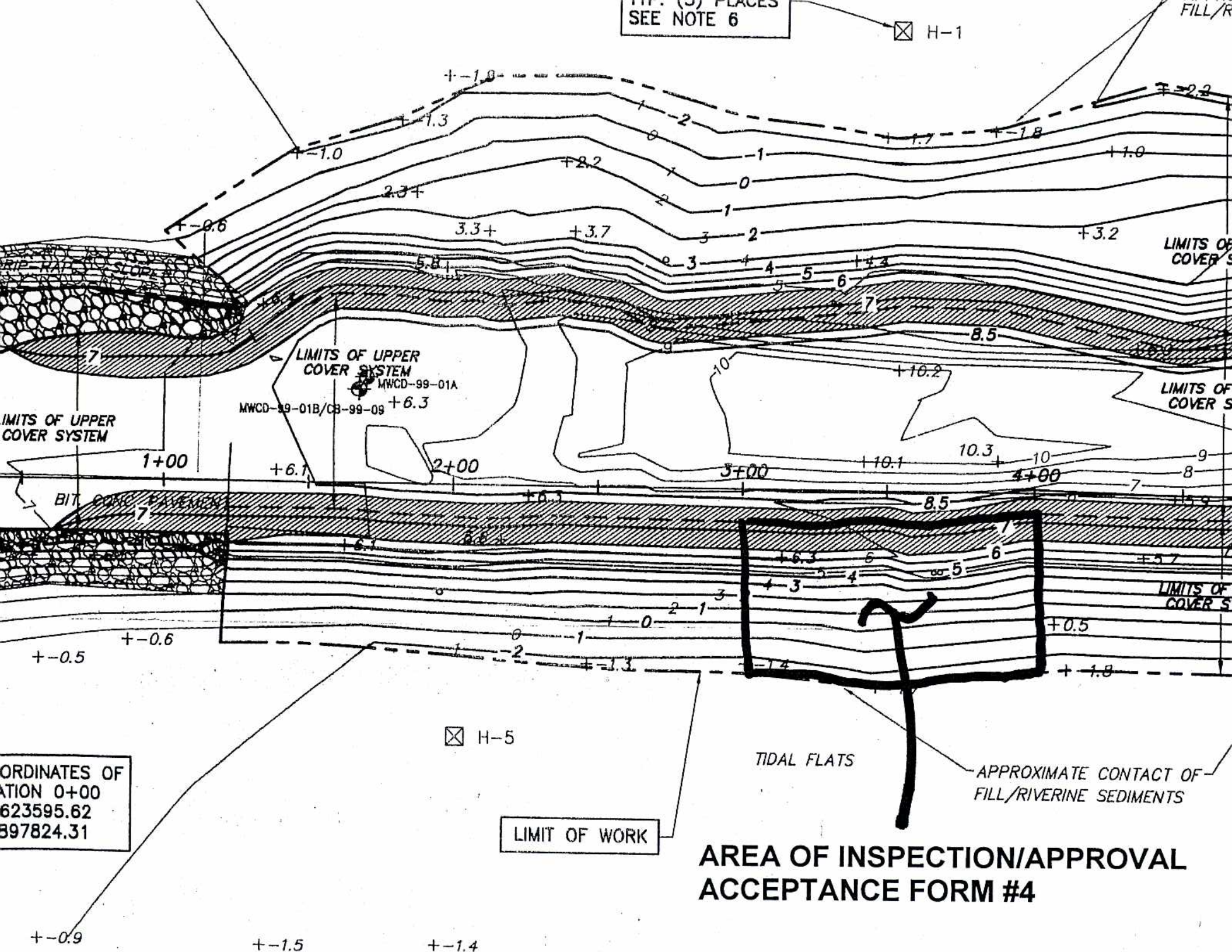
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #4

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 5**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 5250 SF

Description of area: From approximate construction baseline 2+00 to 3+00 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, five courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 5

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/14/02	WB	X	3	3	1	4/4/02	Y	WB	END FLAP
		SBU	1	3	2		Y		
		SBU	3	4	3		Y		
		CSR	8	1	4		Y		
		X	8	2	5		Y		END FLAP
		X	9	2	6		Y		END FLAP
		X	10	2	7		Y		END FLAP
		SG	13	3	8		Y		
		X	15	3	9		Y		END FLAP
		CSR	16	4	10		Y		
		CSR	19	4	11		Y		
		CSR	20	4	12		Y		
		SBU	21	4	13		Y		
		SBU	21	5	14		Y		
					WB				

Notes:

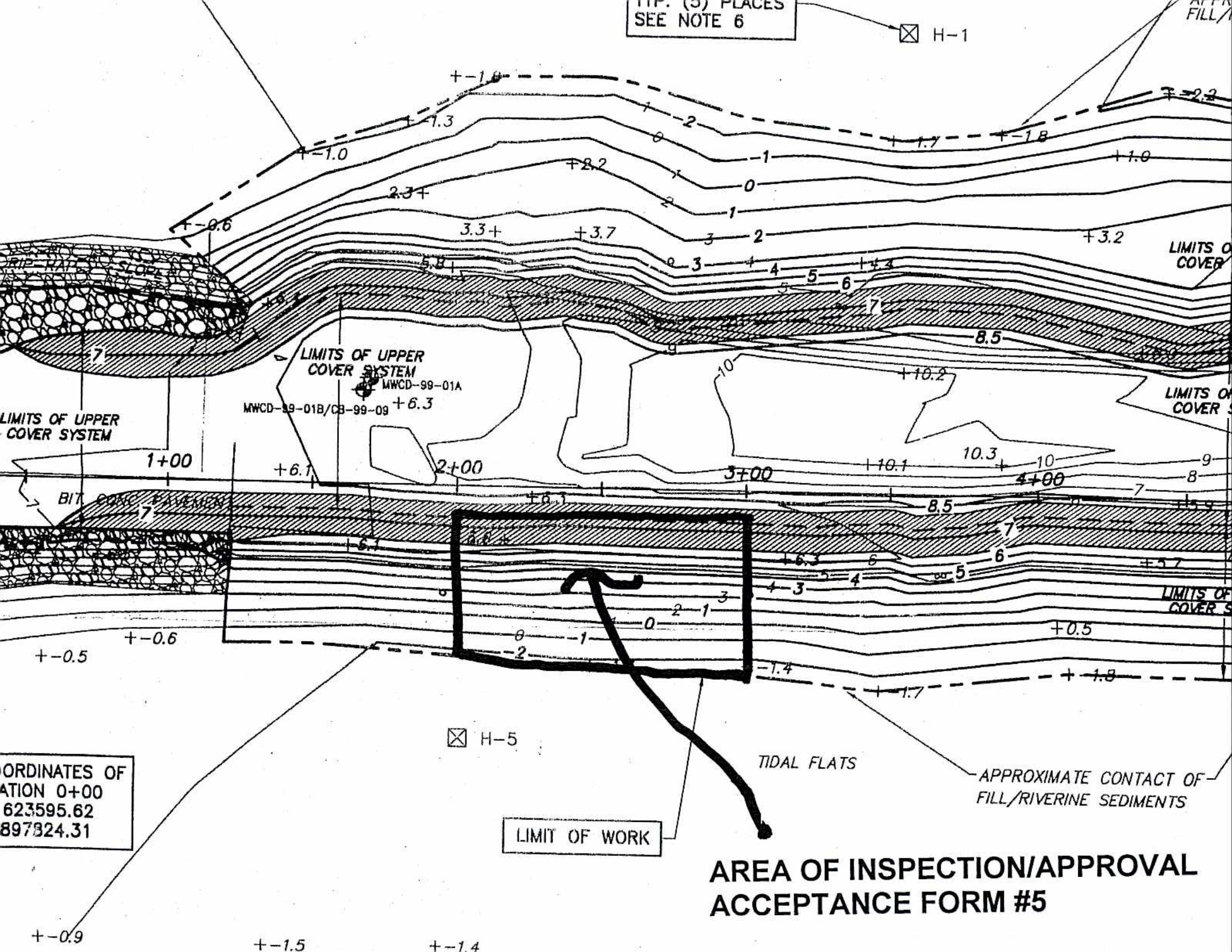
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #5

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 6**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 5250 SF

Description of area: From approximate construction baseline 1+20 to 2+00 on the easterly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 19 rows of PMMs, five courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 67

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/14/02	WB	SBU	1	2	1	4/4/02	Y	WB	
		X	3	2	2		Y		END FLAP
		SBU	4	4	3		Y		
		SBU	6	2	4		Y		
		SBU	9	4	5		Y		
		SBU	10	3	6		Y		
		X	10	3	7		Y		END FLAP
		X	11	3	8		Y		END FLAP
		X	14	3	9		Y		END FLAP
		SBU	14	2	10		Y		
		SBU	15	2	11		Y		
		SBU	17	1	12		Y		
						WB			

Notes:

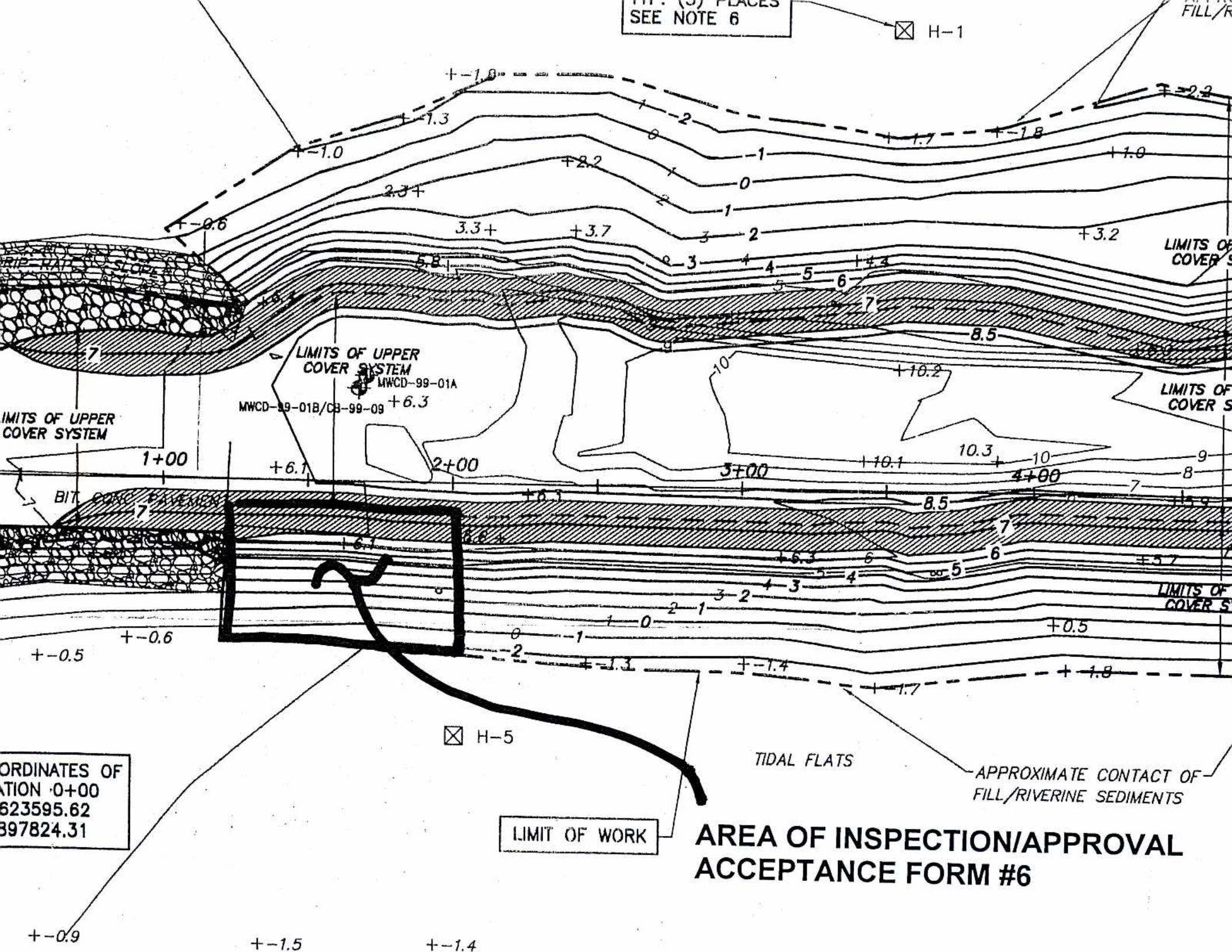
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs SG - seam gap x - other
TSR - total severed ribs DBM - damaged braid material
SIB - splits in bars SBU - spacing between units

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #6

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/5/02 **ACCEPTANCE FORM NUMBER :** 7

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 14800 SF

Description of area: From approximate construction baseline 7+20 to 8+35 on the Northerly end (nose) of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes approximately 41 rows of PMMs, five to 11 courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 2

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/27/02	WSO	SBU	4	5	1	4/5/02	Y	WSO	
		SBU	7	5	2		Y		
		CSR	9	6	3		Y		
		SBU	10	2	4		Y		
		SBU	10	3	5		Y		
		SBU	10	9	6		Y		
		CSR	11	5	7		Y		
		CSR	11	5	8		Y		
		CSR	11	6	9		Y		
		CSR	11	10	10		Y		
		SBU	12	4	11		Y		
		CSR	12	9	12		Y		
		SBU	13	3	13		Y		
		CSR	13	5	14		Y		
		SBU	15	7	15		Y		
		SBU	17	3	16		Y		
		SBU	17	4	17		Y		

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 2 OF 2

CONTRACTOR: R. F. WESTON USACE CONTRACT No. ~~DAAD05-97-D-7004-DO~~ 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/27/02	WB	SBU	17	10	18	4/5/02	Y	WB	
		SBU	18	3	19		Y		
		CSR	18	4	20		Y		
		CSR	18	10	21		Y		
		SBU	20	4	22		Y		
		SBU	20	5	23		Y		
		SBU	22	4	24		Y		
		SBU	22	9	25		Y		
		SBU	23	4	26		Y		
		SBU	23	8	27		Y		
		SBU	25	4	28		Y		
		CSR	27	5	29		Y		
		SG	27	5	30		Y		
		CSR	28	5	31		Y		
		CSR	28	6	32		Y		
		CSR	31	7	33		Y		
		SBU	40	3	34		Y		

Notes:

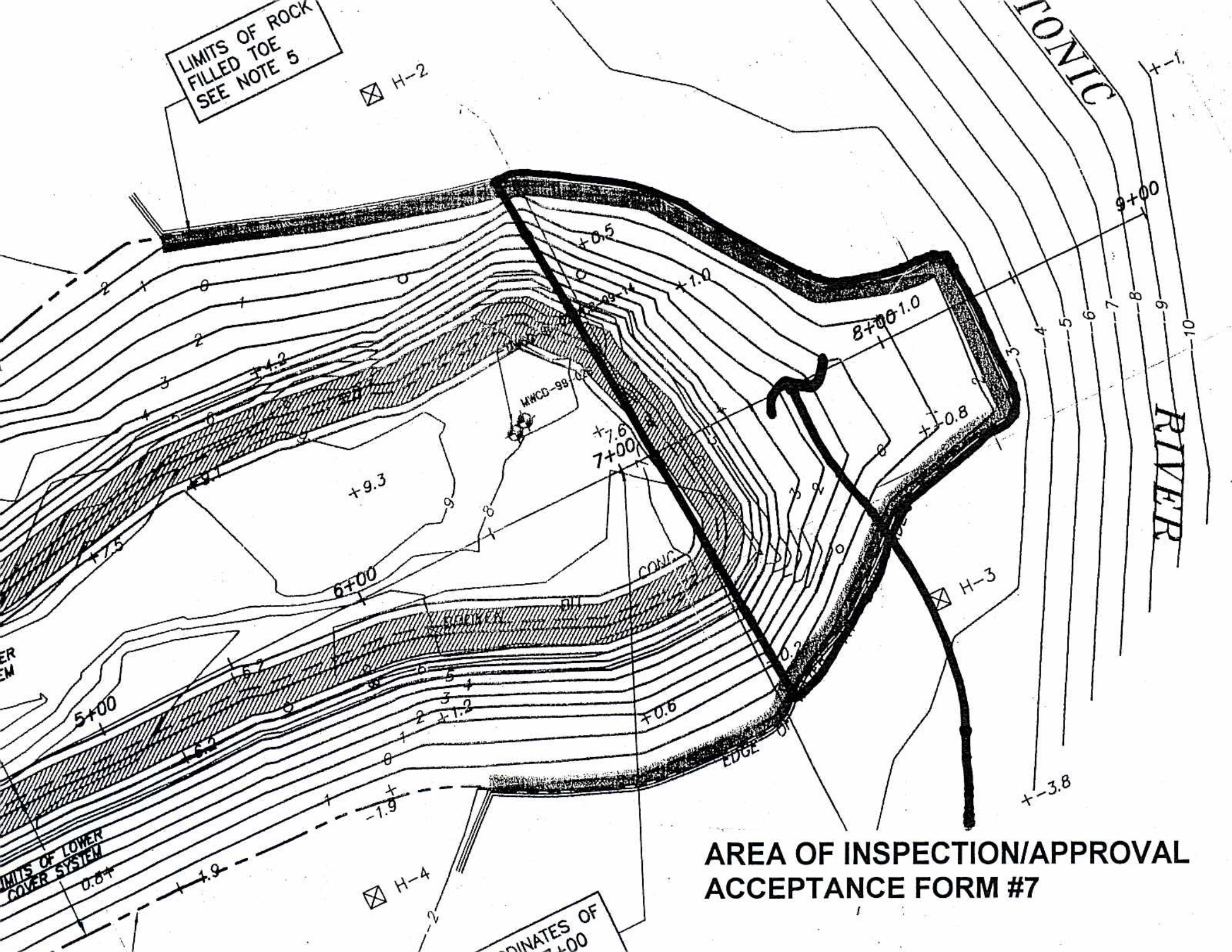
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs SG - seam gap x - other
TSR - total severed ribs DBM - damaged braid material
SIB - splits in bars SBU - spacing between units

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.


LIMITS OF ROCK FILLED TOE SEE NOTE 5
H-2
H-3
H-4
RIVER
9+00
8+00
7+00
6+00
5+00
MWCD-98-1
ROCKFILL
CONC.
EDGE OF
LIMITS OF LOWER COVER SYSTEM
AREA OF INSPECTION/APPROVAL
ACCEPTANCE FORM #7

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/5/02 **ACCEPTANCE FORM NUMBER : 8**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 8000 SF

Description of area: From approximate construction baseline Station 6+20 to 7+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 20 rows of PMMs, 8 courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 8

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/27/02	WSJ	SBU	1	3	1	4/5/02	Y	WSJ	
		SBU	1	4	2		Y		
		SBU	1	5	3		Y		
		SBU	1	6	4		Y		
		SBU	2	3	5		Y		
		SBU	2	4	6		Y		
		SBU	2	5	7		Y		
		CSR	3	2	8		Y		
		SBU	3	6	9		Y		
		SBU	4	3	10		Y		
		SBU	4	4	11		Y		
		SBU	4	6	12		Y		
		SBU	5	5	13		Y		
		SBU	7	5	14		Y		
		SBU	15	4	15		Y		
						WSJ			

Notes:

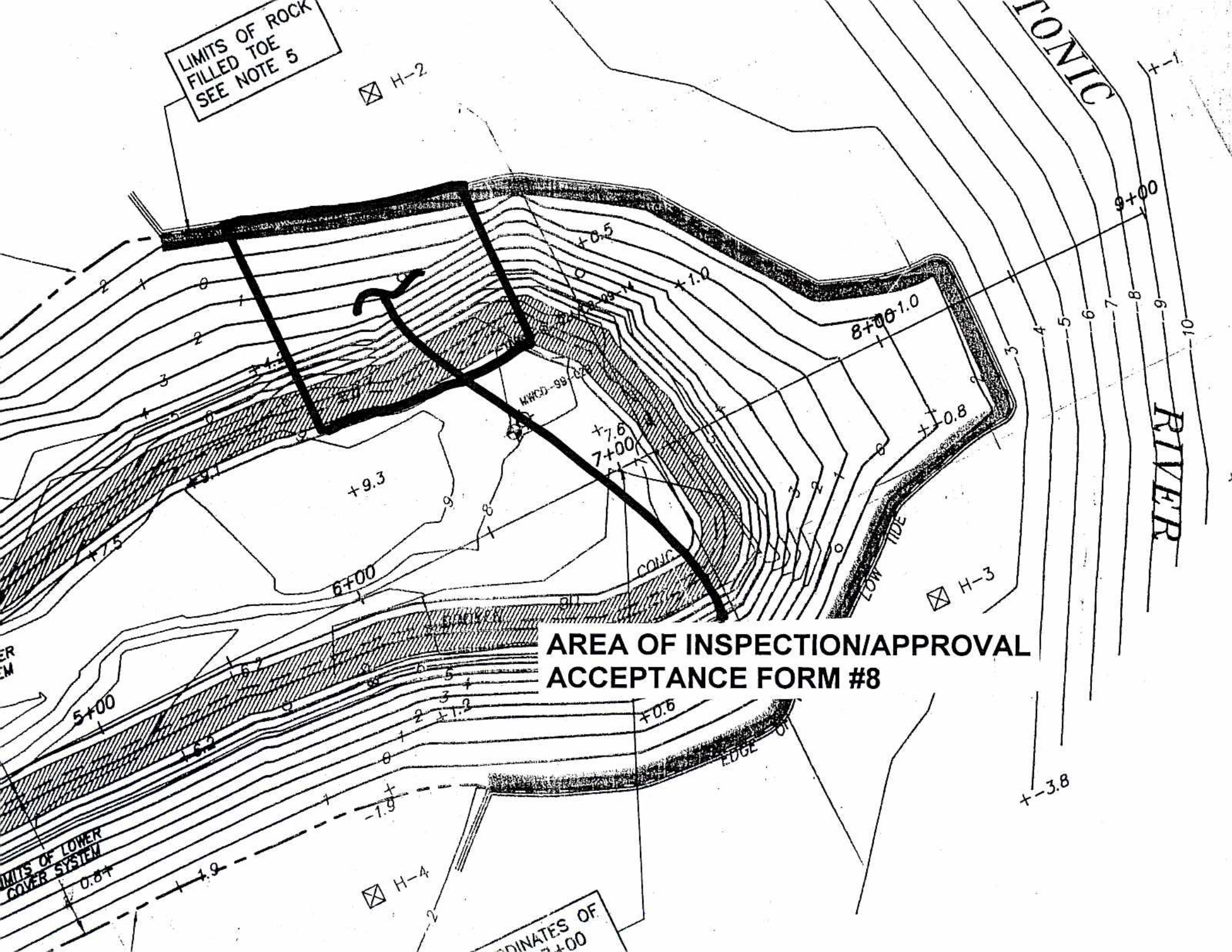
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.


LIMITS OF ROCK FILLED TOE SEE NOTE 5
H-2
H-3
H-4
9+00
8+00
7+00
6+00
5+00
RIVER
LOW TIDE
EDGE OF
LIMITS OF LOWER COVER SYSTEM
AREA OF INSPECTION/APPROVAL
ACCEPTANCE FORM #8

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/5/02 **ACCEPTANCE FORM NUMBER : 9**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 7875 SF

Description of area: From approximate construction baseline Station 5+20 to 6+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, 7 to 8 courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 9

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
3/27/02	WB	SBU	2	4	1	4/5/02	Y	WB	
		SBU	2	5	2		Y		
		SBU	2	6	3		Y		
		SBU	3	4	4		Y		
		SBU	3	5	5		Y		
		CSR	4	6	6		Y		
		SBU	6	6	7		Y		
		CSR	11	5	8		Y		
		SBU	14	2	9		Y		
		CSR	16	2	10		Y		
		SBU	17	4	11		Y		
		SBU	18	3	12		Y		
		SBU	18	4	13		Y		
		SBU	19	5	14		Y		
						WB			

Notes:

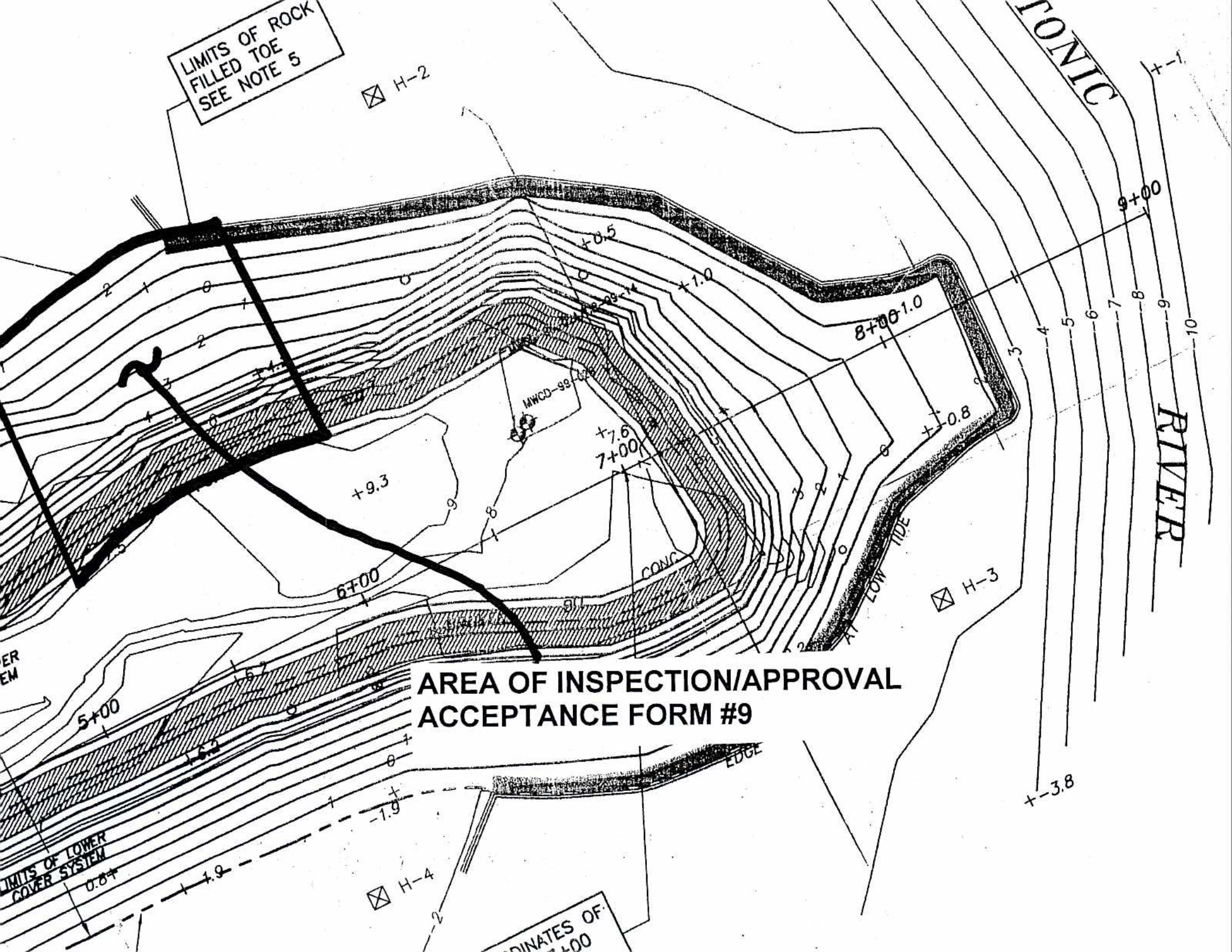
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.


LIMITS OF ROCK FILLED TOE SEE NOTE 5
H-2
H-3
H-4
MWCD-99-12
+0.5
+1.0
+1.0
+0.8
+7.6
+9.3
8+00
7+00
6+00
5+00
9+00
CONC
EDGE
AT LOW TIDE
RIVER
+-3.8
-1.9
0.8+
LIMITS OF LOWER COVER SYSTEM
AREA OF INSPECTION/APPROVAL
ACCEPTANCE FORM #9

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/5/02 **ACCEPTANCE FORM NUMBER : 10**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 7875 SF

Description of area: From approximate construction baseline 4+20 to 5+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, seven to eight courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 3

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 10

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WJ	SBU	1	1	1	4/5/02	Y	WJ	
		X	1	3	2	"	Y	"	END TAB
		SBU	1	4	3		Y		
		CSR	2	7	4		Y		
		SBU	2	6	5		Y		
		CSR	2	2	6		Y		
		CSR	4	5	7		Y		
		CSR	5	1	8		Y		
		SBU	7	5	9		Y		
		SBU	7	3	10		Y		
		SBU	8	3	11		Y		
		SBU	8	4	12		Y		
		SBU	9	5	13		Y		
		SBU	9	4	14		Y		
		CSR	10	3	15		Y		
		CSR	11	2	16	"	Y	"	3 LOCATIONS
		SBU	12	4	17	"	Y	"	

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 2 OF ~~3~~

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 10

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WB	SBU	12	5	18	4/5/02	Y	LSB	
			12	~~12~~ 8	19		Y		
			12	9	20		Y		
			13	9	21		Y		
			13	8	22		Y		
			14	8	23		Y		
			15	9	24		Y		
			15	8	25		Y		
			16	4	26		Y		
			16	5	27		Y		
			16	6	28		Y		
			17	7	29		Y		
			17	3	30		Y		
			17	1	31		Y		
			18	4	32		Y		
			18	5	33		Y		
			18	8	34		Y		

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 3 OF 3

CONTRACTOR: R. F. WESTON **USACE CONTRACT NO. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 10

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WBJ	SBU	19	8	35	4/5/02	Y	WBJ	
		SBU	20	2	36	"	Y	"	
		SBU	20	5	37		Y		
		SBU	20	8	38		Y		
		CSR	21	6	39		Y		
		SBU	21	4	40		Y		
		SBU	21	3	41		Y		
					WBJ				

Notes:

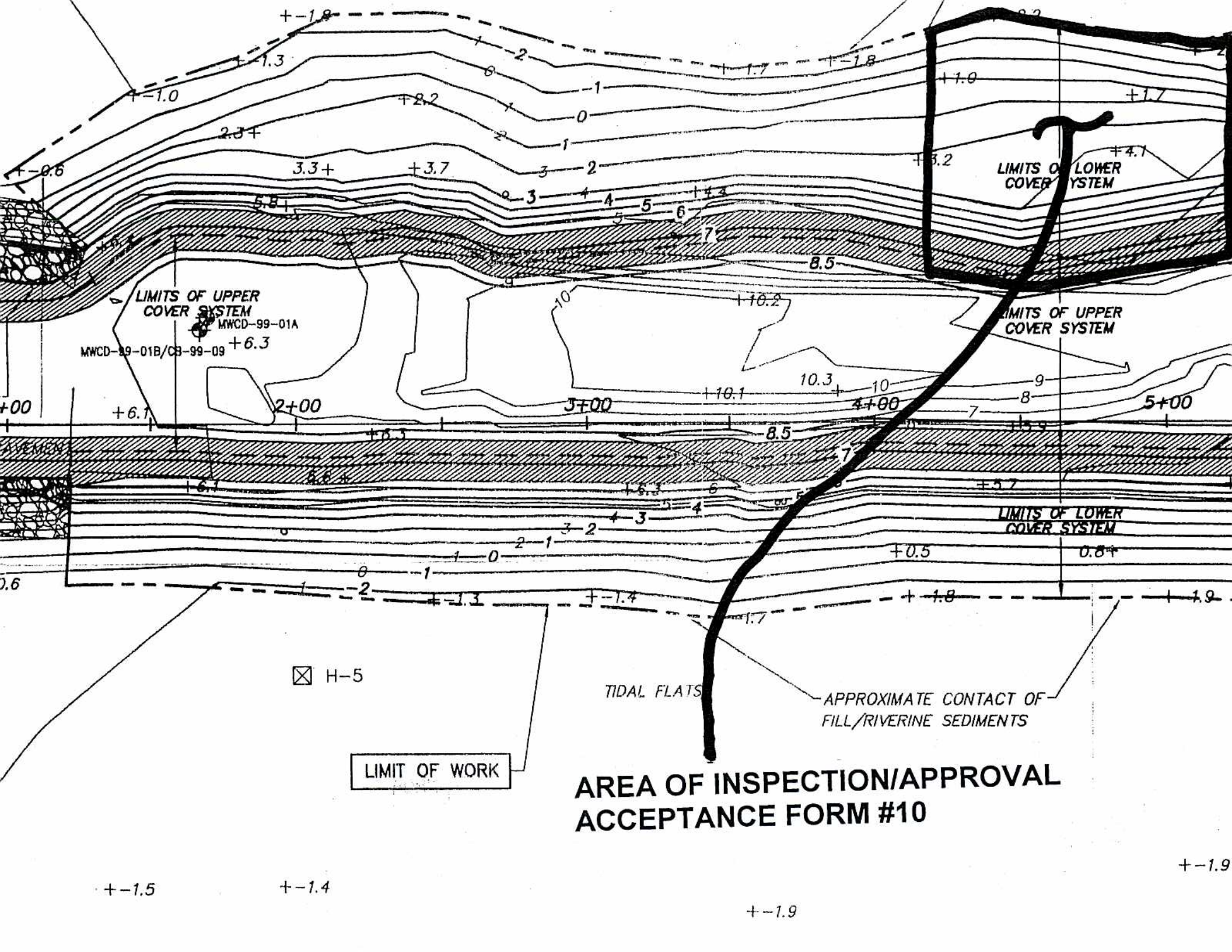
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs SG - seam gap x - other
TSR - total severed ribs DBM - damaged braid material
SIB - splits in bars SBU - spacing between units

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #10

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/9/02 **ACCEPTANCE FORM NUMBER : 11**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 7875 SF

Description of area: From approximate construction baseline 3+20 to 4+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, seven to eight courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 2

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 11

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/4/02	C Shah	SBU	1	3	1	4/9/02	Y	WB	
		SBU	1	4	2		Y		
		SBU	1	6	3		Y		
		SBU	2	5	4		Y		
		SBU	2	4	5		Y		
		SBU	3	1	6		Y		
		SBU	3	2	7		Y		
		SBU	3	4	8		Y		
		SBU	3	5	9		Y		
		SBU	4	7	10		Y		
		SBU	5	4	11		Y		
		SBU	5	6	12		Y		
		SBU	6	7	13		Y		
		SBU	7	7	14		Y		
		CSR	7	3	15		Y		
		SBU	10	7	16		Y		
		SBU	10	6	17		Y		

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 2 OF 2

CONTRACTOR: R. F. WESTON USACE CONTRACT NO. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 11

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/4/02	C. Shah	SBU	12	6	18	4/9/02	Y	WSJ	
		SBU	13	6	19		Y		
		SBU	15	1	20		Y		
		CSR	19	7	21		Y		
		SBU	21	3	22		Y		
		SBU	21	5	23		Y		
		X	21	6	24		Y		END TAB
		X	22	6	25		Y		END TAB
						WSJ			

Notes:

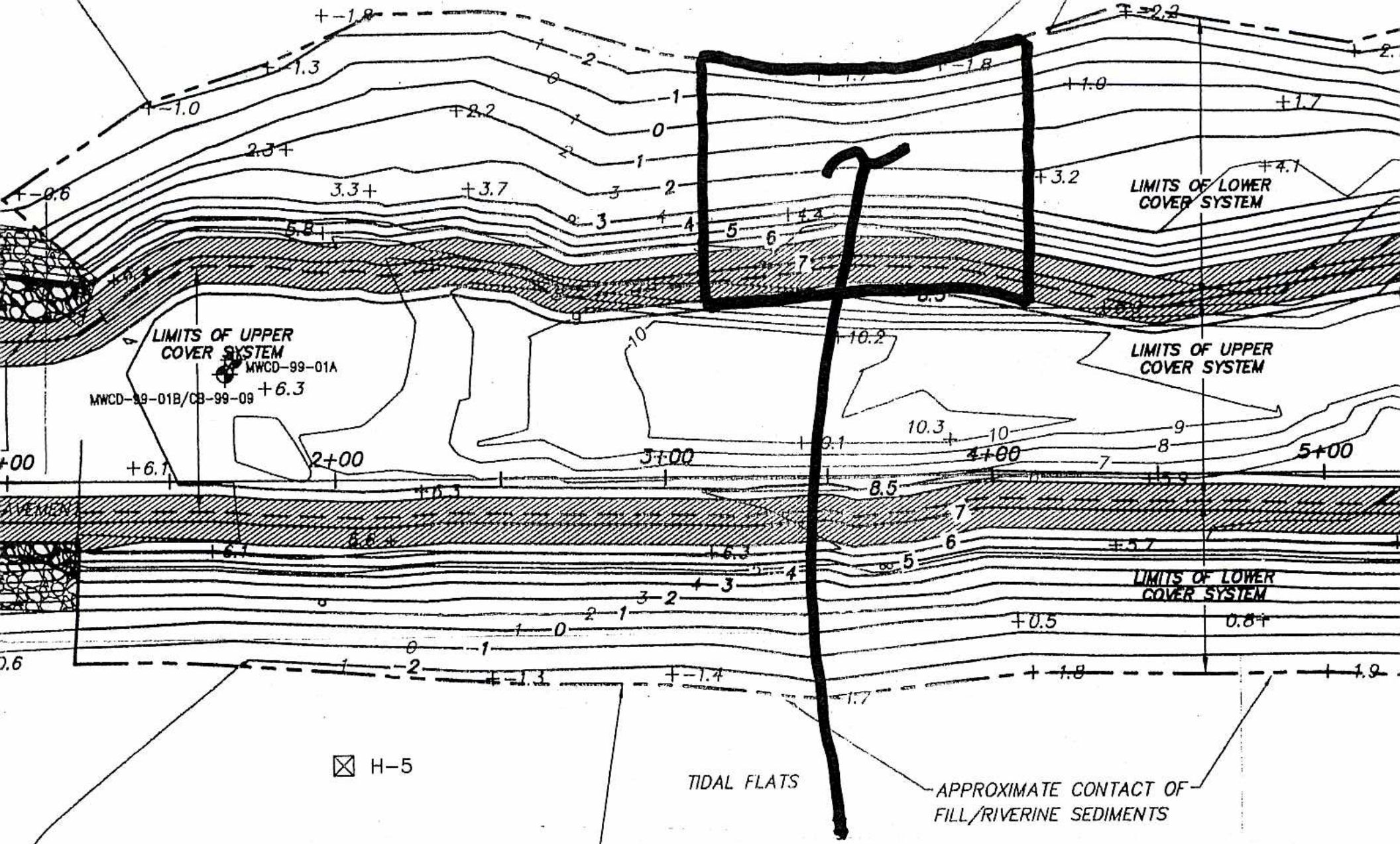
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #11

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/9/02 **ACCEPTANCE FORM NUMBER : 12**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 7875 SF

Description of area: From approximate construction baseline 2+20 to 3+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 21 rows of PMMs, seven to eight courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 2

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 12

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WB	SBU	8	5	1	4/9/02	Y	WB	
		SBU	12	4	2		Y		
		SBU	13	3	3		Y		
		SBU	13	5	4		Y		
		SBU	14	5	5		Y		
		SBU	14	5	6		Y		
		SBU	14	4	7		Y		
		SBU	15	3	8		Y		
		SBU	15	4	9		Y		
		SBU	15	6	10		Y		
		SBU	16	6	11		Y		
		SBU	16	4	12		Y		
		SG	16	4	13		Y		
		SBU	16	1	14		Y		
		SBU	17	2	15		Y		
		SBU	17	3	16		Y		
		SBU	17	4	17		Y		

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs SG - seam gap x - other
TSR - total severed ribs DBM - damaged braid material
SIB - splits in bars SBU - spacing between units

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 2 OF 2

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 12

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WB	SBU	17	5	18	4/9/02	Y	WB	
		SBU	17	6	19		Y		
		SBU	18	7	20		Y		
		SBU	18	5	21		Y		
		SBU	18	4	22		Y		
		SBU	18	3	23		Y		
		SBU	19	3	24		Y		
		SBU	19	5	25		Y		
		SBU	19	6	26		Y		
		SBU	19	7	27		Y		
		SBU	19	8	28		Y		
		SBU	20	3	29		Y		
		SBU	21	2	30		Y		
		SBU	21	3	31		Y		
		SBU	21	4	32		Y		
		SG	21	5	33		Y		
							WB		

Notes:

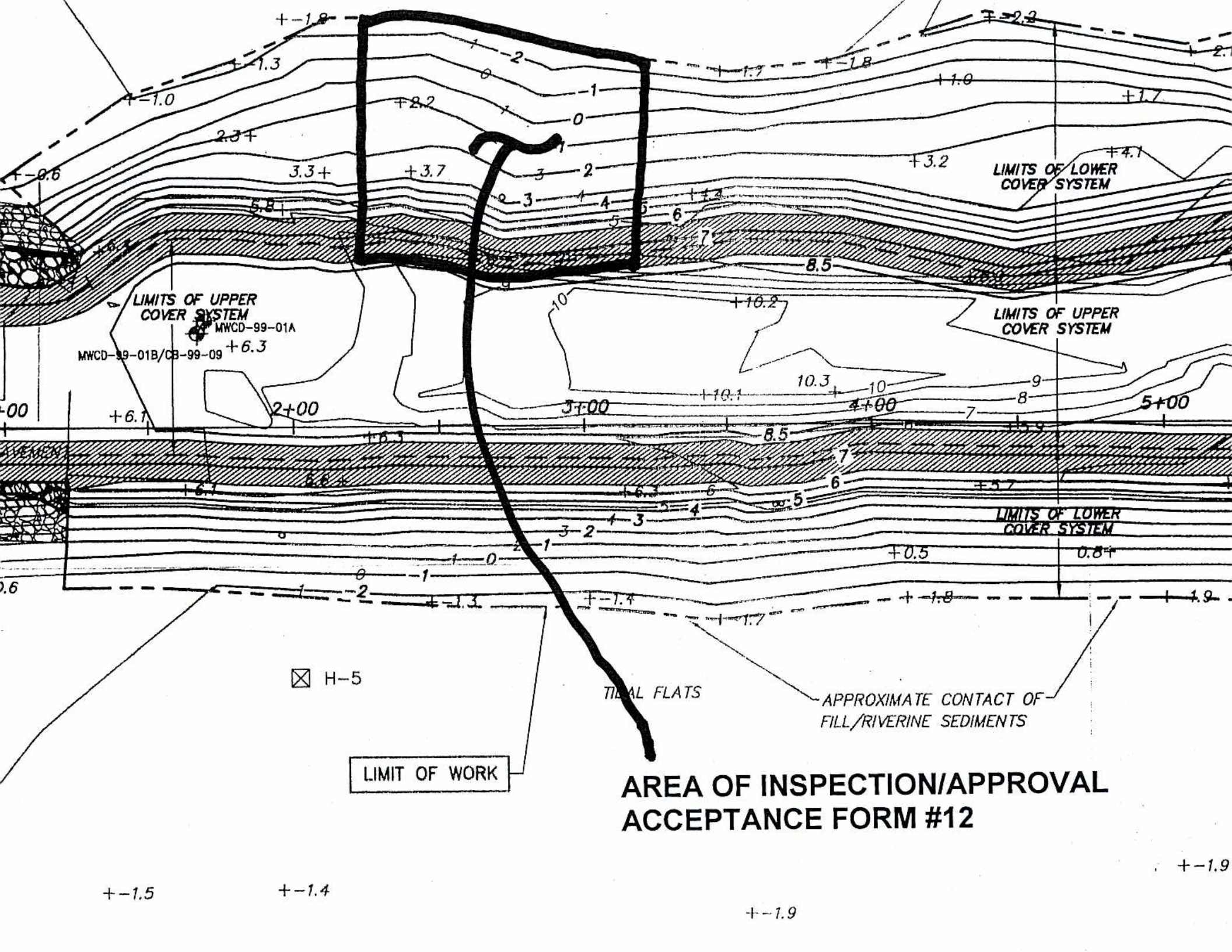
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.


LIMITS OF UPPER COVER SYSTEM
MWCD-99-01A
MWCD-99-01B/CB-99-09
LIMITS OF LOWER COVER SYSTEM
LIMITS OF UPPER COVER SYSTEM
LIMITS OF LOWER COVER SYSTEM
2+00
3+00
4+00
5+00
H-5
TIDAL FLATS
APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS
LIMIT OF WORK
AREA OF INSPECTION/APPROVAL
ACCEPTANCE FORM #12

DEPLOYED POLYMERIC MARINE MATTRESS ACCEPTANCE

PROJECT: SAEP CAUSEWAY CONSTRUCTION

LOCATION: STRATFORD, CT

USACE CONTRACT NUMBER: DAAD05-97-D-7004-DO 0187

DATE: 4/4/02 **ACCEPTANCE FORM NUMBER : 13**

I, the undersigned an authorized representative of R. F. Weston, Inc. certify that the polymeric marine mattress (PMM) components deployed on the Causeway project and described below meet the intent of the design documents and the manufacturers minimum handling and installation requirements. Quality control procedures, inspections and repairs are in compliance with the criteria and guidelines presented in Attachments III and IV of Weston's memorandum titled "Resolution of Quality Control Issues Related to Triton Marine Mattresses" dated 1/2/02.

Approximate size of area: 5400 SF

Description of area: From approximate construction baseline 1+30 to 2+20 on the Westerly side of the Causeway from the top of slope transition apron to the toe of slope sediment/fill interface (see attached sketch). The inspected area includes 18 rows of PMMs, five to seven courses deep.

Weston Representative

By signing below the USACE authorized representative acknowledges completion of the PMM components described above. I have inspected the described work and find that it generally meets the design intent and the requirements of Weston's approved quality control program. Signature does not relieve the contractor from responsibility for providing all specified elements of the work. See attached inspection/repair summary log as applicable.

USACE Representative

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS DEFICIENCY/REPAIR SUMMARY LOG

SHEET 1 OF 1

CONTRACTOR: R. F. WESTON USACE CONTRACT NO. DAAD05-97-D-7004-DO 0187

CORRESPONDING PPM ACCEPTANCE FORM NUMBER 13

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]		Repair No.	QC Repair Date	Acceptable Repair (Y/N)	QA Inspector	Comments
			Row	Number					
4/3/02	WBJ	CSR	8	4	1	4/4/02	Y	WBJ	
					WBJ				

Notes:

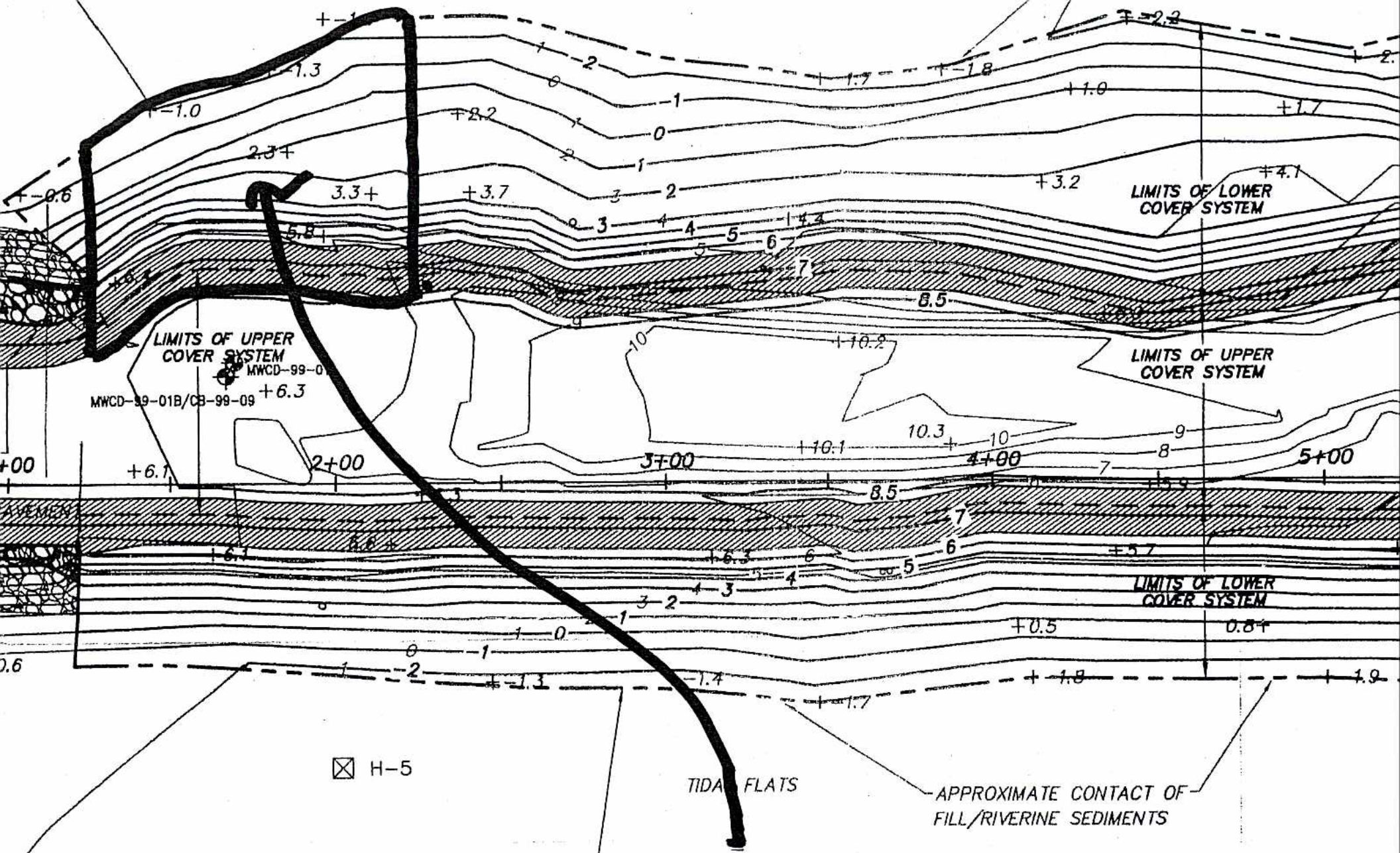
(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix

CSR - consecutive severed ribs
TSR - total severed ribs
SIB - splits in bars
SG - seam gap
DBM - damaged braid material
SBU - spacing between units
x - other

(2) Location of deficiency is provided as follows:

Baseline Station (BL Sta.) is inclusive baseline for inspected area (i.e., 3+00 to 4+00) with designation of east or west offset.
The baseline description corresponds to the description provided on the deployment acceptance sheet.
Row of PMMs counted from from lower to higher baseline location provide for the inspected area beginning with 1.
The number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface).

3. This summary log will be appended by reference and attached to the corresponding PMM acceptance form referenced above.



AREA OF INSPECTION/APPROVAL ACCEPTANCE FORM #13

APPENDIX B-3

PMM REPAIR INVENTORY LOGS

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER ____1_____

Date Inspected	QA Inspector	Deficiency Code (1)	Location of Deficiency (2)			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	N/A	1	N/A	N/A	N/A	-	No repairs observed in row.
4/9/02	WBJ	CSR	18	1	3	BRAID	1	
4/9/02	WBJ	CSR	18	1	6	BRAID	2	
4/9/02	WBJ	CSR	18	2	4	BRAID	3	
4/9/02	WBJ	CSR	18	5	6	BRAID	4	
4/9/02	WBJ	CSR	19	1	6	BRAID	5	
4/9/02	WBJ	SBU	19	1	6	GRID	6	
4/9/02	WBJ	CSR	19	2	2	GRID	7	
4/9/02	WBJ	CSR	19	2	5	BRAID	8	
4/9/02	WBJ	CSR	19	2	5	BRAID	9	
4/9/02	WBJ	CSR	19	2	6	GRID	10	
4/9/02	WBJ	SBU	19	2	6	GRID	11	
4/9/02	WBJ	CSR	21	1	2	GRID	12	
4/9/02	WBJ	CSR	21	1	3	BRAID	13	
4/9/02	WBJ	CSR	21	1	3	BRAID	14	
4/9/02	WBJ	CSR	21	1	6	BRAID	15	
4/9/02	WBJ	CSR	21	1	6	GRID	16	
4/9/02	WBJ	SBU	21	3	6	GRID	17	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 2

Date Inspected	QA Inspector	Deficiency[1] Code	Location of Deficiency[2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	CSR	1	1	4	BRAID	1	
4/9/02	WBJ	CSR	1	2	6	BRAID	2	
4/9/02	WBJ	SBU	1	2	6	GRID	3	
4/9/02	WBJ	SBU	1	3	6	GRID	4	
4/9/02	WBJ	CSR	1	4	3	GRID	5	
4/9/02	WBJ	SBU	1	4	6	GRID	6	
4/9/02	WBJ	CSR	5	1	6	BRAID	7	
4/9/02	WBJ	CSR	5	2a	2	BRAID	8	Identified unit was a custom tiled PMM.
4/9/02	WBJ	CSR	5	2	6	BRAID	9	
4/9/02	WBJ	SBU	5	2	6	GRID	10	
4/9/02	WBJ	CSR	5	3	4	BRAID	11	
4/9/02	WBJ	CSR	5	4	3	BRAID	12	
4/9/02	WBJ	SBU	5	4	6	GRID	13	
4/9/02	WBJ	CSR	7	1	2	GRID	14	
4/9/02	WBJ	CSR	7	1	3	BRAID	15	
4/9/02	WBJ	CSR	7	1	4	GRID	16	
4/9/02	WBJ	CSR	7	4	3	BRAID	17	
4/9/02	WBJ	CSR	7	4	6	BRAID	18	
4/9/02	WBJ	CSR	16	1	8	BRAID	19	
4/9/02	WBJ	CSR	16	2	6	BRAID	20	
4/9/02	WBJ	CSR	16	3	6	BRAID	21	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON **USACE CONTRACT No. DAAD05-97-D-7004-DO 0187**

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 3

Date Inspected	QA Inspector	Deficiency Code (1)	Location of Deficiency (2)			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	CSR	4	1	2	GRID	1	
4/9/02	WBJ	CSR	4	1	3	BRAID	2	
4/9/02	WBJ	CSR	4	3	5	GRID	3	
4/9/02	WBJ	CSR	4	3	6	GRID	4	
4/9/02	WBJ	CSR	8	1	2	BRAID	5	
4/9/02	WBJ	CSR	8	1	4	GRID	6	
4/9/02	WBJ	CSR	17	1	2	GRID	7	
4/9/02	WBJ	CSR	17	1	3	BRAID	8	
4/9/02	WBJ	CSR	17	1	5	BRAID	9	
4/9/02	WBJ	SBU	17	2	6	GRID	10	
4/9/02	WBJ	CSR	17	3	3	GRID	11	
4/9/02	WBJ	CSR	17	4	3	BRAID	12	
4/9/02	WBJ	CSR	21	1	3	BRAID	13	
4/9/02	WBJ	CSR	21	1	6	BRAID	14	
4/9/02	WBJ	SBU	21	1	6	GRID	15	
4/9/02	WBJ	CSR	21	2	1	BRAID	16	
4/9/02	WBJ	CSR	21	2	3	BRAID	17	
4/9/02	WBJ	CSR	21	2	3	BRAID	18	
4/9/02	WBJ	CSR	21	2	4	BRAID	19	
4/9/02	WBJ	CSR	21	2	5	BRAID	20	
4/9/02	WBJ	SBU	21	2	6	GRID	21	
4/9/02	WBJ	CSR	21	3	5	GRID	22	
4/9/02	WBJ	CSR	21	3	6	BRAID	23	
4/9/02	WBJ	CSR	21	3	6	GRID	24	
4/9/02	WBJ	CSR	21	4	3	GRID	25	
4/9/02	WBJ	CSR	21	4	3	GRID	26	
4/9/02	WBJ	CSR	21	4	3	GRID	27	
4/9/02	WBJ	CSR	21	4	5	BRAID	28	
4/9/02	WBJ	CSR	21	5	6	BRAID	29	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 4

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	CSR	3	1	6	BRAID	1	
4/9/02	WBJ	CSR	3	3	2	BRAID	2	
4/9/02	WBJ	CSR	4	2	1	GRID	3	
4/9/02	WBJ	CSR	4	2	3	BRAID	4	
4/9/02	WBJ	CSR	4	2	3	BRAID	5	
4/9/02	WBJ	CSR	4	3	5	GRID	6	
4/9/02	WBJ	CSR	4	3	6	GRID	7	
4/9/02	WBJ	CSR	8	1	5	BRAID	8	
4/9/02	WBJ	CSR	8	4	3	GRID	9	
4/9/02	WBJ	CSR	8	4	5	BRAID	10	
4/9/02	WBJ	SBU	11	2	4	GRID	11	
4/9/02	WBJ	CSR	11	2	4	BRAID	12	
4/9/02	WBJ	CSR	11	3	5	BRAID	13	
4/9/02	WBJ	CSR	11	4	2	BRAID	14	
4/9/02	WBJ	CSR	11	4	3	BRAID	15	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 5

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	SBU	1	3	6	GRID	1	
4/9/02	WBJ	SBU	1	4	6	GRID	2	
4/9/02	WBJ	CSR	1	5	5	GRID	3	
4/9/02	WBJ	CSR	6	4	2	BRAID	4	
4/9/02	WBJ	CSR	7	2	3	BRAID	5	
4/9/02	WBJ	CSR	7	2	5	GRID	6	
4/9/02	WBJ	CSR	7	3	4	BRAID	7	
4/9/02	WBJ	CSR	7	4	3	BRAID	8	
4/9/02	WBJ	CSR	16	3	5	BRAID	9	
4/9/02	WBJ	CSR	16	4	4	BRAID	10	
4/9/02	WBJ	SBU	16	4	4	BRAID	11	
4/9/02	WBJ	CSR	16	4	5	BRAID	12	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 6

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/9/02	WBJ	N/A	3	N/A	N/A	N/A	-	No repairs observed in row.
4/9/02	WBJ	CSR	8	1	1	GRID	1	
4/9/02	WBJ	SBU	8	4	6	GRID	2	
4/9/02	WBJ	CSR	8	5	2	BRAID	3	
4/9/02	WBJ	SBU	9	3	6	GRID	4	
4/9/02	WBJ	SBU	9	4	6	GRID	5	
4/9/02	WBJ	SBU	16	2	6	GRID	6	
4/9/02	WBJ	CSR	16	4	3	BRAID	7	
4/9/02	WBJ	CSR	16	4	5	GRID	8	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	SBU	13	3	6	GRID	1	
4/10/02	WBJ	SBU	13	3	6	GRID	2	
4/10/02	WBJ	CSR	13	5	2	GRID	3	
4/10/02	WBJ	CSR	13	5	5	BRAID	4	
4/10/02	WBJ	CSR	13	5	6	GRID	5	
4/10/02	WBJ	CSR	13	6	4	BRAID	6	
4/10/02	WBJ	CSR	13	7	4	BRAID	7	
4/10/02	WBJ	CSR	13	7	5	GRID	8	
4/10/02	WBJ	CSR	13	8	2	GRID	9	
4/10/02	WBJ	CSR	13	8	4	BRAID	10	
4/10/02	WBJ	CSR	13	8	6	GRID	11	
4/10/02	WBJ	CSR	13	9	2	GRID	12	
4/10/02	WBJ	CSR	13	9	4	BRAID	13	
4/10/02	WBJ	CSR	13	9	6	GRID	14	
4/10/02	WBJ	CSR	13	10	6	BRAID	15	
4/10/02	WBJ	CSR	14	2	6	BRAID	16	
4/10/02	WBJ	SBU	14	3	6	GRID	17	
4/10/02	WBJ	CSR	14	4	3	BRAID	18	
4/10/02	WBJ	CSR	14	5	5	BRAID	19	
4/10/02	WBJ	CSR	14	6	1	BRAID	20	
4/10/02	WBJ	CSR	14	6	2	BRAID	21	
4/10/02	WBJ	CSR	14	6	4	GRID	22	
4/10/02	WBJ	CSR	14	6	5	GRID	23	
4/10/02	WBJ	CSR	14	6	6	BRAID	24	
4/10/02	WBJ	CSR	14	7	1	BRAID	25	
4/10/02	WBJ	CSR	14	7	2	BRAID	26	
4/10/02	WBJ	CSR	14	7	5	BRAID	27	
4/10/02	WBJ	CSR	14	8	2	BRAID	28	
4/10/02	WBJ	CSR	14	8	4	BRAID	29	
4/10/02	WBJ	CSR	14	8	6	GRID	30	
4/10/02	WBJ	CSR	14	9	3	GRID	31	
4/10/02	WBJ	CSR	14	9	4	BRAID	32	
4/10/02	WBJ	CSR	14	10	4	GRID	33	
4/10/02	WBJ	CSR	15	1	5	GRID	34	
4/10/02	WBJ	CSR	15	1	6	GRID	35	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency Code (1)	Location of Deficiency (2)			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	15	2	1	GRID	36	
4/10/02	WBJ	CSR	15	2	5	BRAID	37	
4/10/02	WBJ	CSR	15	3	3	BRAID	38	
4/10/02	WBJ	CSR	15	3	6	BRAID	39	
4/10/02	WBJ	CSR	15	4	3	BRAID	40	
4/10/02	WBJ	CSR	15	4	4	BRAID	41	
4/10/02	WBJ	CSR	15	4	5	BRAID	42	
4/10/02	WBJ	CSR	15	4	6	BRAID	43	
4/10/02	WBJ	CSR	15	4	6	GRID	44	
4/10/02	WBJ	CSR	15	6	6	BRAID	45	
4/10/02	WBJ	CSR	15	7	3	BRAID	46	
4/10/02	WBJ	CSR	15	7	6	GRID	47	
4/10/02	WBJ	CSR	15	7	6	GRID	48	
4/10/02	WBJ	CSR	15	9	3	GRID	49	
4/10/02	WBJ	CSR	15	9	6	BRAID	50	
4/10/02	WBJ	CSR	15	10	4	GRID	51	
4/10/02	WBJ	CSR	15	10	2	GRID	52	
4/10/02	WBJ	CSR	16	4	2	BRAID	53	
4/10/02	WBJ	CSR	16	4	4	BRAID	54	
4/10/02	WBJ	CSR	16	4	5	BRAID	55	
4/10/02	WBJ	CSR	16	4	6	BRAID	56	
4/10/02	WBJ	SBU	16	4	6	GRID	57	
4/10/02	WBJ	CSR	16	5	2	BRAID	58	
4/10/02	WBJ	CSR	16	5	3	BRAID	59	
4/10/02	WBJ	CSR	16	5	3	BRAID	60	
4/10/02	WBJ	CSR	16	5	4	BRAID	61	
4/10/02	WBJ	CSR	16	5	4	BRAID	62	
4/10/02	WBJ	CSR	16	5	6	BRAID	63	
4/10/02	WBJ	CSR	16	6	4	BRAID	64	
4/10/02	WBJ	CSR	16	6	6	BRAID	65	
4/10/02	WBJ	CSR	16	7	4	GRID	66	
4/10/02	WBJ	CSR	16	7	6	GRID	67	
4/10/02	WBJ	CSR	16	7	6	BRAID	68	
4/10/02	WBJ	SBU	16	7	6	GRID	69	
4/10/02	WBJ	CSR	16	8	3	BRAID	70	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	16	9	4	GRID	71	
4/10/02	WBJ	CSR	16	9	5	BRAID	72	
4/10/02	WBJ	CSR	16	10	3	BRAID	73	
4/10/02	WBJ	CSR	16	10	4	BRAID	74	
4/10/02	WBJ	SBU	16	10	6	GRID	75	
4/10/02	WBJ	CSR	17	1	2	BRAID	76	
4/10/02	WBJ	CSR	17	1	3	BRAID	77	
4/10/02	WBJ	CSR	17	1	4	BRAID	78	
4/10/02	WBJ	CSR	17	1	5	BRAID	79	
4/10/02	WBJ	CSR	17	1	5	BRAID	80	
4/10/02	WBJ	CSR	17	1	6	BRAID	81	
4/10/02	WBJ	CSR	17	2	1	BRAID	82	
4/10/02	WBJ	CSR	17	2	3	GRID	83	
4/10/02	WBJ	CSR	17	2	5	GRID	84	
4/10/02	WBJ	CSR	17	2	6	BRAID	85	
4/10/02	WBJ	SBU	17	2	6	GRID	86	
4/10/02	WBJ	SBU	17	3	6	GRID	87	
4/10/02	WBJ	CSR	17	4	3	BRAID	88	
4/10/02	WBJ	CSR	17	5	3	BRAID	89	
4/10/02	WBJ	CSR	17	6	2	BRAID	90	
4/10/02	WBJ	CSR	17	6	3	BRAID	91	
4/10/02	WBJ	CSR	17	6	4	BRAID	92	
4/10/02	WBJ	CSR	17	6	6	GRID	93	
4/10/02	WBJ	CSR	17	6	6	BRAID	94	
4/10/02	WBJ	CSR	17	6	6	BRAID	95	
4/10/02	WBJ	CSR	17	7	3	BRAID	96	
4/10/02	WBJ	CSR	17	7	4	GRID	97	
4/10/02	WBJ	CSR	17	7	5	GRID	98	
4/10/02	WBJ	CSR	17	7	5	BRAID	99	
4/10/02	WBJ	SBU	17	10	6	GRID	100	
4/10/02	WBJ	CSR	18	1	2	GRID	101	
4/10/02	WBJ	CSR	18	1	2	BRAID	102	
4/10/02	WBJ	CSR	18	1	4	GRID	103	
4/10/02	WBJ	CSR	18	1	4	BRAID	104	
4/10/02	WBJ	CSR	18	1	5	GRID	105	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	18	1	6	GRID	106	
4/10/02	WBJ	CSR	18	2	1	GRID	107	
4/10/02	WBJ	CSR	18	2	1	BRAID	108	
4/10/02	WBJ	CSR	18	2	2	BRAID	109	
4/10/02	WBJ	CSR	18	2	4	GRID	110	
4/10/02	WBJ	CSR	18	2	5	GRID	111	
4/10/02	WBJ	CSR	18	2	6	BRAID	112	
4/10/02	WBJ	CSR	18	2	6	GRID	113	
4/10/02	WBJ	SBU	18	2	6	GRID	114	
4/10/02	WBJ	CSR	18	3	6	GRID	115	
4/10/02	WBJ	CSR	18	3	6	BRAID	116	
4/10/02	WBJ	SBU	18	3	6	GRID	117	
4/10/02	WBJ	CSR	18	4	2	BRAID	118	
4/10/02	WBJ	CSR	18	5	5	GRID	119	
4/10/02	WBJ	CSR	18	6	2	BRAID	120	
4/10/02	WBJ	CSR	18	6	3	BRAID	121	
4/10/02	WBJ	CSR	18	6	5	BRAID	122	
4/10/02	WBJ	CSR	18	7	4	BRAID	123	
4/10/02	WBJ	CSR	18	7	6	GRID	124	
4/10/02	WBJ	CSR	18	9	3	BRAID	125	
4/10/02	WBJ	CSR	18	9	3	BRAID	126	
4/10/02	WBJ	CSR	18	9	4	BRAID	127	
4/10/02	WBJ	SBU	18	9	6	GRID	128	
4/10/02	WBJ	CSR	18	10	3	BRAID	129	
4/10/02	WBJ	CSR	18	10	4	BRAID	130	
4/10/02	WBJ	SBU	18	10	6	GRID	131	
4/10/02	WBJ	CSR	19	1	1	BRAID	132	
4/10/02	WBJ	CSR	19	1	5	GRID	133	
4/10/02	WBJ	CSR	19	1	6	BRAID	134	
4/10/02	WBJ	SBU	19	2	6	GRID	135	
4/10/02	WBJ	CSR	19	3	5	BRAID	136	
4/10/02	WBJ	CSR	19	3	6	BRAID	137	
4/10/02	WBJ	CSR	19	5	4	BRAID	138	
4/10/02	WBJ	CSR	19	5	5	GRID	139	
4/10/02	WBJ	CSR	19	6	4	BRAID	140	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 7

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	19	7	2	BRAID	141	
4/10/02	WBJ	CSR	19	7	3	GRID	142	
4/10/02	WBJ	CSR	19	8	3	BRAID	143	
4/10/02	WBJ	CSR	19	8	4	BRAID	144	
4/10/02	WBJ	CSR	19	9	2	BRAID	145	
4/10/02	WBJ	CSR	19	9	4	BRAID	146	
4/10/02	WBJ	SBU	19	9	6	GRID	147	
4/10/02	WBJ	SBU	20	3	6	GRID	148	
4/10/02	WBJ	SBU	20	4	6	GRID	149	
4/10/02	WBJ	CSR	20	5	3	GRID	150	
4/10/02	WBJ	CSR	20	5	5	BRAID	151	
4/10/02	WBJ	CSR	20	6	3	BRAID	152	
4/10/02	WBJ	CSR	20	6	5	BRAID	153	
4/10/02	WBJ	CSR	20	6	6	BRAID	154	
4/10/02	WBJ	CSR	20	7	2	BRAID	155	
4/10/02	WBJ	CSR	20	10	4	BRAID	156	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 8

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	2	1	2	BRAID		
4/10/02	WBJ	CSR	2	2	3	BRAID		
4/10/02	WBJ	CSR	2	3	1	GRID		
4/10/02	WBJ	SBU	2	3	4	GRID		
4/10/02	WBJ	SBU	2	3	5	BRAID		
4/10/02	WBJ	CSR	2	3	5	GRID		
4/10/02	WBJ	SBU	2	3	6	GRID		
4/10/02	WBJ	CSR	2	3	6	GRID		
4/10/02	WBJ	SBU	2	3	6	GRID		
4/10/02	WBJ	CSR	2	4	1	BRAID		
4/10/02	WBJ	CSR	2	4	3	BRAID		
4/10/02	WBJ	SBU	2	4	6	GRID		
4/10/02	WBJ	SBU	2	5	1	GRID		
4/10/02	WBJ	SBU	2	5	2	GRID		
4/10/02	WBJ	SBU	2	5	6	GRID		
4/10/02	WBJ	CSR	2	6	3	BRAID		
4/10/02	WBJ	SBU	2	6	6	GRID		
4/10/02	WBJ	CSR	5	1	4	GRID		
4/10/02	WBJ	CSR	5	1	6	GRID		
4/10/02	WBJ	SBU	5	1	6	GRID		
4/10/02	WBJ	CSR	5	3	4	BRAID		
4/10/02	WBJ	SBU	5	5	1	GRID		
4/10/02	WBJ	CSR	5	6	2	BRAID		
4/10/02	WBJ	CSR	5	6	4	BRAID		
4/10/02	WBJ	CSR	5	6	6	BRAID		
4/10/02	WBJ	CSR	17	1	2	BRAID		
4/10/02	WBJ	CSR	17	1	2	GRID		
4/10/02	WBJ	CSR	17	1	4	BRAID		
4/10/02	WBJ	CSR	17	1	4	GRID		
4/10/02	WBJ	CSR	17	1	5	BRAID		
4/10/02	WBJ	CSR	17	1	6	GRID		
4/10/02	WBJ	CSR	17	2	3	BRAID		
4/10/02	WBJ	CSR	17	3	1	GRID		
4/10/02	WBJ	CSR	19	5	3	GRID		

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 9

Date Inspected	QA Inspector	Deficiency(1) Code	Location of Deficiency(2)			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	11	1	3	BRAID	1	
4/10/02	WBJ	CSR	11	1	3	GRID	2	
4/10/02	WBJ	SBU	11	1	6	GRID	3	
4/10/02	WBJ	SBU	11	1	6	GRID	4	
4/10/02	WBJ	CSR	11	2	1	BRAID	5	
4/10/02	WBJ	CSR	11	2	2	BRAID	6	
4/10/02	WBJ	CSR	11	2	2	BRAID	7	
4/10/02	WBJ	CSR	11	2	3	BRAID	8	
4/10/02	WBJ	CSR	11	3	6	BRAID	9	
4/10/02	WBJ	CSR	11	3	6	BRAID	10	
4/10/02	WBJ	CSR	11	4	3	BRAID	11	
4/10/02	WBJ	CSR	11	4	5	BRAID	12	
4/10/02	WBJ	CSR	11	4	6	BRAID	13	
4/10/02	WBJ	CSR	11	4	6	BRAID	14	
4/10/02	WBJ	CSR	11	4	6	GRID	15	
4/10/02	WBJ	CSR	11	5	4	BRAID	16	
4/10/02	WBJ	CSR	11	5	6	GRID	17	
4/10/02	WBJ	CSR	11	6	1	BRAID	18	
4/10/02	WBJ	CSR	11	6	5	BRAID	19	
4/10/02	WBJ	CSR	13	1	1	GRID	20	
4/10/02	WBJ	CSR	13	1	2	GRID	21	
4/10/02	WBJ	SBU	13	1	3	GRID	22	
4/10/02	WBJ	CSR	13	1	6	GRID	23	
4/10/02	WBJ	CSR	13	6	6	BRAID	24	
4/10/02	WBJ	CSR	14	1	1	BRAID	25	
4/10/02	WBJ	SBU	14	1	6	GRID	26	
4/10/02	WBJ	SBU	14	2	6	GRID	27	
4/10/02	WBJ	CSR	14	4	6	BRAID	28	
4/10/02	WBJ	CSR	14	5	6	GRID	29	
4/10/02	WBJ	SBU	15	1	6	GRID	30	
4/10/02	WBJ	CSR	15	3	5	BRAID	31	
4/10/02	WBJ	CSR	15	3	5	BRAID	32	
4/10/02	WBJ	CSR	15	3	6	GRID	33	
4/10/02	WBJ	CSR	15	5	4	BRAID	34	
4/10/02	WBJ	CSR	15	5	5	BRAID	35	
4/10/02	WBJ	CSR	15	5	6	GRID	36	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 10

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	7	2	3	GRID	1	
4/10/02	WBJ	CSR	7	2	6	GRID	2	
4/10/02	WBJ	SBU	7	2	6	GRID	3	
4/10/02	WBJ	SBU	7	3	6	GRID	4	
4/10/02	WBJ	SBU	7	5	6	GRID	5	
4/10/02	WBJ	CSR	7	7	1	BRAID	6	
4/10/02	WBJ	CSR	4	1	3	GRID	7	
4/10/02	WBJ	CSR	4	1	4	GRID	8	
4/10/02	WBJ	CSR	4	2	1	BRAID	9	
4/10/02	WBJ	CSR	4	2	2	GRID	10	
4/10/02	WBJ	CSR	4	2	4	BRAID	11	
4/10/02	WBJ	CSR	4	3	3	GRID	12	
4/10/02	WBJ	CSR	4	3	4	BRAID	13	
4/10/02	WBJ	CSR	4	5	3	BRAID	14	
4/10/02	WBJ	CSR	4	5	3	BRAID	15	
4/10/02	WBJ	CSR	4	5	3	BRAID	16	
4/10/02	WBJ	CSR	12	1	4	GRID	17	
4/10/02	WBJ	CSR	12	3	3	BRAID	18	
4/10/02	WBJ	SBU	12	4	6	GRID	19	
4/10/02	WBJ	CSR	12	3	3	GRID	20	
4/10/02	WBJ	CSR	12	6	6	BRAID	21	
4/10/02	WBJ	SBU	12	6	6	GRID	22	
4/10/02	WBJ	SBU	12	6	6	GRID	23	
4/10/02	WBJ	SBU	12	6	6	GRID	24	
4/10/02	WBJ	SBU	12	6	6	GRID	25	
4/10/02	WBJ	SBU	12	6	6	GRID	26	
4/10/02	WBJ	CSR	20	1	2	BRAID	27	
4/10/02	WBJ	CSR	20	1	3	BRAID	28	
4/10/02	WBJ	SBU	20	2	6	GRID	29	
4/10/02	WBJ	CSR	20	3	2	GRID	30	
4/10/02	WBJ	CSR	20	3	5	BRAID	31	
4/10/02	WBJ	CSR	20	3	5	BRAID	32	
4/10/02	WBJ	CSR	20	4	2	BRAID	33	
4/10/02	WBJ	CSR	20	4	3	GRID	34	
4/10/02	WBJ	CSR	20	4	2	GRID	35	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 10

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	SBU	20	4	6	GRID	36	
4/10/02	WBJ	SBU	20	4	6	GRID	37	
4/10/02	WBJ	CSR	20	5	3	BRAID	38	
4/10/02	WBJ	SBU	20	5	6	GRID	39	
4/10/02	WBJ	CSR	20	6	2	BRAID	40	
4/10/02	WBJ	SBU	20	7	6	GRID	41	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 11

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	10	2	4	BRAID	1	
4/10/02	WBJ	CSR	10	4	5	BRAID	2	
4/10/02	WBJ	CSR	10	4	6	BRAID	3	
4/10/02	WBJ	SBU	10	4	6	GRID	4	
4/10/02	WBJ	CSR	10	5	3	BRAID	5	
4/10/02	WBJ	SBU	10	5	6	GRID	6	
4/10/02	WBJ	CSR	16	2	3	BRAID	7	
4/10/02	WBJ	CSR	16	2	5	BRAID	8	
4/10/02	WBJ	CSR	16	2	6	BRAID	9	
4/10/02	WBJ	CSR	16	3	3	BRAID	10	
4/10/02	WBJ	CSR	16	5	6	GRID	11	
4/10/02	WBJ	CSR	13	1	4	GRID	12	
4/10/02	WBJ	CSR	13	4	6	GRID	13	
4/10/02	WBJ	SBU	13	4	6	GRID	14	
4/10/02	WBJ	SBU	15	1	6	GRID	15	
4/10/02	WBJ	CSR	15	3	1	GRID	16	
4/10/02	WBJ	CSR	15	5	3	GRID	17	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 12

Date Inspected	QA Inspector	Deficiency Code [1]	Location of Deficiency [2]			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	17	2	1	BRAID	1	
4/10/02	WBJ	SBU	17	2	6	GRID	2	
4/10/02	WBJ	SBU	17	3	6	GRID	3	
4/10/02	WBJ	SBU	17	3	6	GRID	4	
4/10/02	WBJ	SBU	17	4	6	GRID	5	
4/10/02	WBJ	SBU	17	4	6	GRID	6	
4/10/02	WBJ	CSR	17	5	2	GRID	7	
4/10/02	WBJ	SBU	17	5	6	GRID	8	
4/10/02	WBJ	SBU	17	5	6	GRID	9	
4/10/02	WBJ	SBU	17	6	6	GRID	10	
4/10/02	WBJ	SBU	17	7	6	GRID	11	
4/10/02	WBJ	CSR	3	6	6	BRAID	12	
4/10/02	WBJ	CSR	3	8	4	GRID	13	
4/10/02	WBJ	CSR	3	8	4	BRAID	14	
4/10/02	WBJ	CSR	11	1	6	BRAID	15	
4/10/02	WBJ	CSR	11	4	6	GRID	16	
4/10/02	WBJ	SBU	11	5	2	GRID	17	
4/10/02	WBJ	CSR	19	2	1	BRAID	18	
4/10/02	WBJ	CSR	19	2	2	BRAID	19	
4/10/02	WBJ	CSR	19	2	2	BRAID	20	
4/10/02	WBJ	CSR	19	2	3	GRID	21	
4/10/02	WBJ	SBU	19	3	6	GRID	22	
4/10/02	WBJ	CSR	19	4	5	GRID	23	
4/10/02	WBJ	CSR	19	4	6	BRAID	24	
4/10/02	WBJ	SBU	19	4	6	GRID	25	
4/10/02	WBJ	SBU	19	4	6	GRID	26	
4/10/02	WBJ	CSR	19	5	6	GRID	27	
4/10/02	WBJ	CSR	19	6	5	BRAID	28	
4/10/02	WBJ	SBU	19	6	6	GRID	29	Full unit length grid patch
4/10/02	WBJ	CSR	19	7	4	BRAID	30	
4/10/02	WBJ	CSR	19	7	6	BRAID	31	
4/10/02	WBJ	SBU	19	7	6	GRID	32	
4/10/02	WBJ	CSR	19	8	6	GRID	33	
4/10/02	WBJ	CSR	19	8	6	BRAID	34	

SAEP CAUSEWAY CONSTRUCTION
STRATFORD, CONNECTICUT

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

CONTRACTOR: R. F. WESTON USACE CONTRACT No. DAAD05-97-D-7004-DO 0187

CORRESPONDING PMM ACCEPTANCE FORM NUMBER 13

Date Inspected	QA Inspector	Deficiency Code (1)	Location of Deficiency(2)			REPAIR TYPE	REPAIR NUMBER	Comments
			Row	Unit	Baffle			
4/10/02	WBJ	CSR	15	1	4	BRAID	1	
4/10/02	WBJ	CSR	15	1	4	GRID	2	
4/10/02	WBJ	CSR	15	2	2	BRAID	3	
4/10/02	WBJ	CSR	15	2	3	GRID	4	
4/10/02	WBJ	CSR	15	2	4	BRAID	5	
4/10/02	WBJ	CSR	15	3	2	BRAID	6	
4/10/02	WBJ	CSR	8	4	4	BRAID	7	
4/10/02	WBJ	CSR	10	3	3	BRAID	8	
4/10/02	WBJ	CSR	3	3	1	GRID	9	
4/10/02	WBJ	CSR	3	3	3	GRID	10	

POLYMERIC MARINE MATTRESS REPAIR 20% QA INVENTORY LOG

Notes:

(1) Deficiency Codes are based on Weston's approved QC inspection and repair matrix dated January 2002.

CSR - consecutive severed ribs	SG - seam gap	X - other
TSR - total severed ribs	DBM - damaged braid material	
SIB - splits in bars	SBU - spacing between units	

(2) Locations of inspection / documentation area is provided as follows:

1. Baseline Station is the inclusive baseline for inspected area (I.e., 3+00 to 4+00) with designation of east or west offset and corresponds to the description provided on the identified deployment acceptance form number.
2. The identified row of PMMs is counted from lower to higher baseline location provide for the inspected area beginning with row 1.
3. The unit number of the PMM is oriented from top (interface with rip-rap transition) to bottom (fill/sediment interface) for each corresponding row number.
4. The baffle number is oriented from top to bottom of individual PMMs and corresponds to the identified segmented portion of each PMM.

3. Selection of documented rows for cataloged inventory repairs in each acceptance area utilized a random unit number generator table.
4. The total of all repairs for the cataloged inventory equals approximately twenty percent of deployed PMMs

APPENDIX C

U.S. ARMY STATEMENT OF REVIEW FOR THE TOWN OF STRATFORD, CT CAUSEWAY SURFACE DESIGN

DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK-AUTOMOTIVE AND ARMAMENTS COMMAND
WARREN, MICHIGAN 48397-5000

REPLY TO
ATTENTION OF

January 10, 2002

Mr. Rick Norris
Stratford Town Hall
2725 Main Street Room 1
Stratford, CT 06615

SUBJECT: TOWN OF STRATFORD CAUSEWAY SURFACE DESIGN CAUSEWAY NON-TIME CRITICAL REMOVAL ACTION STRATFORD ARMY ENGINE PLANT

Dear Mr. Norris:

The United States Army (Army), Tank-automotive & Armaments Command (TACOM) is performing a Non-Time Critical Removal Action (NTCRA) at the Stratford Army Engine Plant (SAEP) Causeway, located in Stratford Connecticut. The primary objective of this NTCRA is to prevent exposure to contaminated soils and prevent erosion of soils in accordance with the State of Connecticut Department of Environmental Protection (CTDEP) Remediation Standard Regulations (RSRs). This objective is being accomplished, in part, through the installation of permeable cover systems across the entire causeway surface.

TACOM has contracted, through the U.S. Army Corp of Engineers New England District (NAE), the design services of Harding ESE and construction services of R.F. Weston to implement the NTCRA.

The Town of Stratford has retained the services of Vanasse Hangen Brustlin, Inc. (VHB) and Heller & Johnson to develop the Causeway Surface Design, which details the surface and subsurface features to be installed to make the Causeway usable for a public park in the future. The latest version of the Town's Causeway Surface Design, was issued by VHB on December 19, 2001 and is presumed by TACOM to be the 100% Issue for Construction. The Town's Causeway Surface Design includes the following primary elements: utility chases, utility chambers, light pole foundations, foundation for the planned gazebo, fence post bases, and a concrete bike path.

TACOM has been involved in a review capacity during the Town's design process, and has had its consultant Harding ESE, perform a cursory review of the Town's Causeway Surface Design. This review was limited in scope to only include the effects of the Town's Causeway Surface Design on the ability of the permeable cover systems to meet the objective of preventing exposure to site contaminants.

It is the opinion of TACOM that the performance and adequacy of the Town's Causeway Surface Design is the sole responsibility of the Town of Stratford, and their consultants. TACOM accepts no responsibility for any component of the Causeway Cover Design, other than acknowledgement that the design elements are not expected to adversely affect the ability of the permeable cover

systems to prevent exposure to site sediments. TACOM assumes that the Town of Stratford has assured that the Town's Causeway Surface Design meets the following minimum criterion:

- The materials and details of the design comply with all applicable codes and standards.
- The design is provided with sufficient flexibility to not require future excavation below the permeable cover system.
- The use of the Causeway as a park does not adversely affect the structural stability of the Causeway, resulting in either property damage or loss of life.
- The materials and systems when exposed to the environmental conditions of the Causeway (ex., flooding, settlement, chemical contaminants, and salt water) are suitable to perform as intended over the long-term as designed.

The Town of Stratford or their designated agents must provide review comments (i.e., accept, accept with comments, or reject with justification) for all the Town's design required submittals to assure that the construction materials and methods are in accordance with the requirements of the design. These review comments must be performed in a maximum of three days from receipt to avoid delays in construction, with comments sent directly to NAE for concurrence and final approval. The lack of review shall not relieve the Town of Stratford from their responsibilities for their design. TACOM shall retain the right to accept or reject any submittals approved by The Town of Stratford.

TACOM accepts no responsibility for the maintenance of the elements of the Town's Causeway Surface Design. Should any design element fail in the future and interfere with the objective of prevention of exposure to site contaminants, TACOM may, at its discretion, implement remedial measures that may render the Town's Causeway Surface Design incapable of performing in accordance with its' design intent.

Thank you for your ongoing cooperation in this matter. Should you have any questions, please call me at 203-385-4316.

Sincerely,

John R. Burleson
BRAC Environmental Coordinator
Stratford Army Engine Plant

cc: P. Szymanski, USATACOM-SAEP
L. Newell, USATACOM-Warren
J. Parks, USATACOM-Warren
R. Pettinelli, P.E. VHB
L. Johnsen, P.E. Heller & Johnsen
N. Walter, P.E. Harding ESE ✓
M. Clemens, USACE-NAE
J. Frye, USACE-NYD
T.Walles, R.F. Weston

APPENDIX D

PROJECT PUNCHLIST AND SUPPORTING MEMORANDA

D-1 CLOSEOUT PUNCHLIST MEMORANDA

D-2 PROJECT PUNCHLIST

APPENDIX D-1

CLOSEOUT PUNCHLIST MEMORANDA

MEMORANDUM

DATE: 10/14/02

PROJECT: SAEP Causeway Construction **PROJECT NO:** 53955-03

SUBJECT: Closeout Punch List

FROM: W. Judge, Harding

TO: R. Pendleton, Harding

DISCUSSION:

A final inspection was held at the Causeway Construction site on 10/3/02. Representatives from TACOM, USACE, Weston and Harding were in attendance. The inspection consisted of a tour of the Causeway and staging areas utilized by Weston during execution of the project and a meeting at Building No. 2 to discuss any outstanding issues.

Findings:

1. The aforementioned tour and meeting were determined by USACE to be a "Final Acceptance Inspection".
2. Substantial completion for the project was established as October 3, 2002.
3. No outstanding construction related punch list items were identified during the site inspection with the exception of final housekeeping and administrative closeout project submittals (see attached punch list of identified items prepared by Harding).
4. C. Shah, USACE will prepare and coordinate Contracting Officer documentation for project completion records.
5. All remaining and future correspondence related to project closeout should be forwarded to M. Clemens, USAEC.

END

cc:
M. Clemens, USACE
S. Shah, USACE
N. Walter, Harding
B. Johnson, Harding

APPENDIX D-2

PROJECT PUNCHLIST

PUNCHLIST

Project Name: SAEP Causeway Construction Stratford, Connecticut	**Comp. By:** W. Judge	**Project No:** 53955-03
	CHK. By: DRP	**Date:** 10/3/02

ITEM No.	ITEM DESCRIPTION
	GENERAL ITEMS
1	Remove fuel storage tank at Building #40.
2	Remove debris roll-off containers.
3	Remove mattress fill frames, pallets and materials handling items.
4	Remove heave-monitoring platforms as per specified schedule. Provide final reporting of heave monitoring activities.
5	Determine and document final disposition and/or storage of excess construction materials (i.e., articulating concrete block and polymeric marine mattresses).
6	Perform final cleaning of Building #4 office and storage areas
7	Provide for general condition inspections of the Causeway after significant storm events during maintenance periods.
8	Removal and appropriate disposal of soil drums containing hydraulic oil impacted soil and currently staged in Building No. 4
	PHASE I COMPLETION REPORT
9	Provide report as per Specification Section 02111-8, Part .11
10	Phase I topographic survey
11	All final submittals and approved shop drawings (include submittal register, ENG Form 4288).
12	Final Phase I revised schedule with narrative of delays and extensions.
13	Narrative report of building demolition activities.
14	Narrative and discussion of radiological monitoring activities performed during Causeway excavation activities.
15	Quantities of oversized debris removal and disposal.
	PHASE II COMPLETION REPORT
16	Provide report as per Specification Section 01780, Part 1-1.3
17	Final surveys, working and record drawings as required by Specification Section 01460, Part1-1.3.
18	All final submittals and approved shop drawings (include submittal register, ENG Form 4288).
19	Final Phase II revised schedule with narrative of delays and extensions.
20	Maintenance Plan per specification section 02380, Part 1.3
21	Narrative of inspections (preparatory, initial and final) and CQC activities and reports.
22	Summary of quantities of all material components utilized in the Causeway construction.
23	Quantity summary of all oversized and non-hazardous materials removed from the Causeway during construction, including characterization

PUNCHLIST

	sampling and material tracking logs and identified disposal facilities.
24	Warranty Management Plan as appropriate per specification section 01780, Part1-1.5.
25	Photographic documentation generated for the project.
26	Reports of all testing activities for construction materials (soils, geosynthetics, concrete).

APPENDIX E

SELECTED CONSTRUCTION PHOTOGRAPHS

1. Subgrade soil, 1-foot cut to accommodate lower cover system marine mattresses placement.

2. Compaction of acceptable subgrade fill in upper cover area (static load only).

3. Marine mattress deployment over geogrid reinforced toe detail.

4. Marine mattress deployment at low tide (looking north towards Housatonic River channel).

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

5. Filling factory fabricated marine mattresses with crushed D50 = 3-inch aggregate in South Parking Lot SAEP.

6. Detail of aggregate filling operations for marine mattress. Note tamping of stone into mattress baffles.

7. Reinforced geogrid utilized under riverine sediment/causeway fill interface details to provide support for marine mattresses.

8. Relocating subgrade spoil excavation from lower cover system for scarification and drying.

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

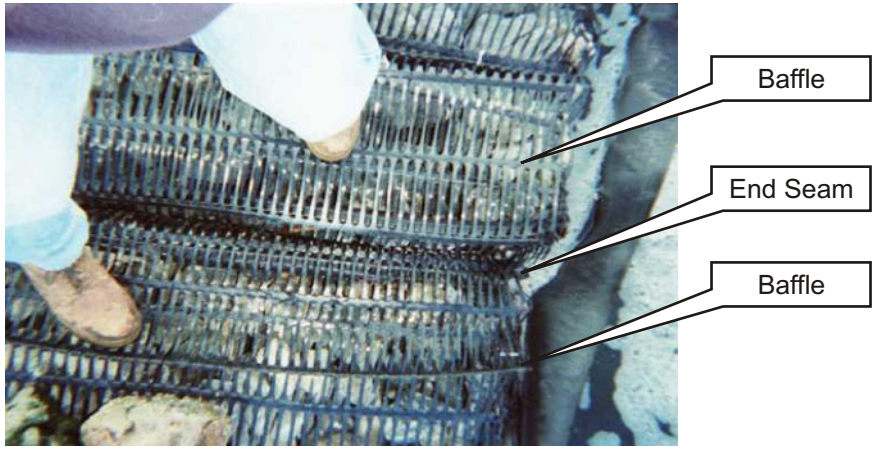
9. Marine mattresses staged in South Parking Lot after fabrication. Note QC flagging on individual units.

10. Survey of causeway and intertidal settlement/heave monitoring platforms.

11. Deployment of lower cover system marine mattresses over woven geotextile. Elevation 6.0 MSL is at silt fence line.

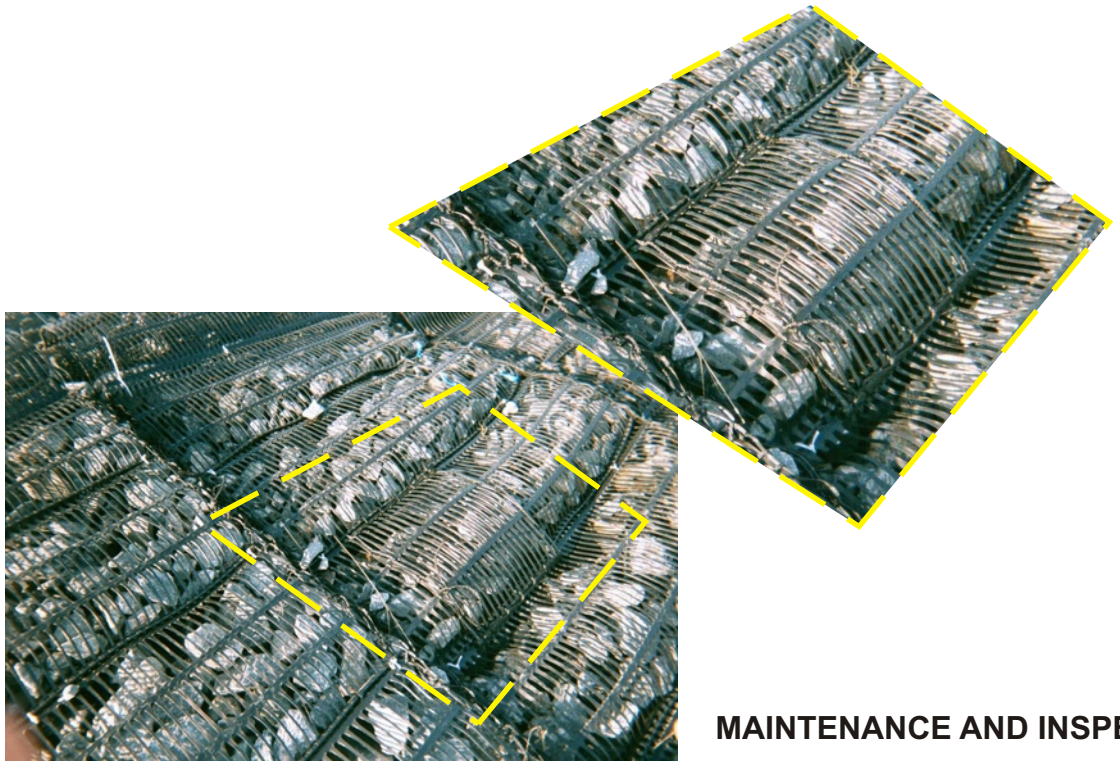
12. Scarification and grading of lower cover system “acceptable” fill material on upper cover area to achieve subgrade contouring.

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT



13. Deployed marine mattress end seam gap.

14. Deployed marine mattress side seam gap. Note individual baffle pillows within mattress units.



15. Typical marine mattress grid repair (Right center of photo).

16. Completed area of marine mattress on east side of causeway. Note red flagging indicating QA inspection identified deficiencies.

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

17. Rock filled transition between upper and lower cover systems.

18. View of deployed marine mattresses to the north and east on the Causeway tip. Note Sea grass windrow and algae accumulation on mattresses.

19. Example fauna in attendance during construction.

20. Completed rip rap transition with installed fence post bases as a component of Town of Stratford surface design. Note geogrid tab restraints under rip rap.

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

21. Pallets of articulating concrete block staged near Building No. 4 inside south guard post.

22. Application of bedding sand and compaction prior to articulating concrete block deployment.

23. Deployment of articulating concrete block over woven geotextile, all deployment was performed by hand. Note concrete light pole base in immediate background.

24. Transition from marine mattress to rip rap apron to upper cover system looking to the south west at approximate baseline station 5+50.

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

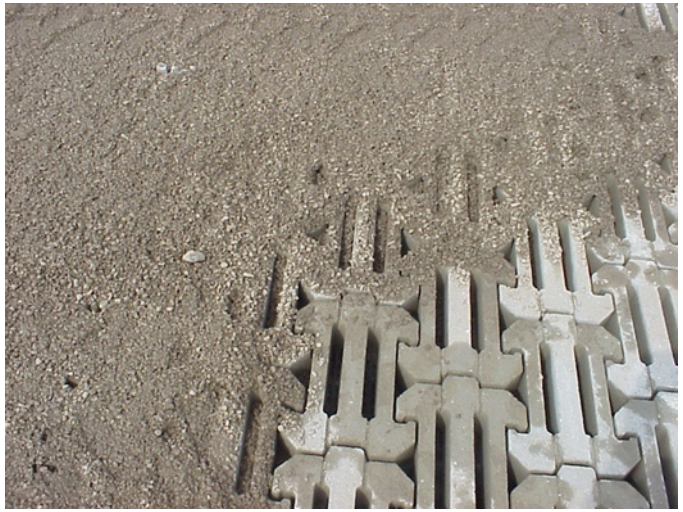
25. Rip-rap transition interface with articulating concrete block.

26. Final detailing of articulating concrete block along rip rap apron. Geotextile layer intended to retain vegetative soil from migration into rip rap stone.

27. Survey documentation of Causeway cover system component limits.

28. Completed articulating concrete block deployment prior to placement of interstitial gravel fill, (photo courtesy of R. F. Weston).

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT



29. Filling of articulating concrete block with interstitial gravel fill (photo courtesy of R. F. Weston).

30. Looking north along Causeway with final grading, jute mat application and straw mulch, (photo courtesy of R. F. Weston).

31. Full aerial view of Causeway at completion of sand application, (photo courtesy of R. F. Weston).

32. Aerial view of Causeway tip post bedding sand application. Note grayish color of marine mattresses indicating algae growth, (photo courtesy of R. F. Weston).

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

33. View of Causeway with established vegetative cover post-construction (Oct 2002), (photo courtesy of R. F. Weston).

CERTIFICATION REPORT PHOTOS
MAINTENANCE AND INSPECTION PLAN FOR CAUSEWAY COVER SYSTEM
APPENDIX E
STRATFORD ARMY ENGINE PLANT

APPENDIX F

CONTRACTOR GENERATED RECORD DRAWINGS

LEGEND

CONC.	CONCRETE	6"	TREE
BIT. CONC.	BITUMINOUS CONCRETE	OHW	OVERHEAD WIRE
DIA.	DIAMETER		WATER GATE
CB □	CATCH BASIN	⊕	BOLLARD
C.L.F.	CHAIN LINK FENCE	⊠	ELECTRIC BOX
	RETAINING WALL	E	ELECTRIC CONDUIT (ON GRADE–REMOVED)
	1' CONTOUR		HYDRANT
	5' CONTOUR	Ⓓ	DRAIN MANHOLE
	APPROXIMATE CONTACT OF FILL/RIVERINE SEDIMENTS	D.I.	DUCTILE IRON
+7.9	EXISTING SPOT GRADE (ELEV. MSL) (– INDICATES NEGATIVE)	INV.	INVERT
	MONITORING WELL		EXISTING RIP–RAP
	SOIL BORING		EDGE OF WATER AT LOW TIDE
UGU	UNDERGROUND UTILITY MARK		EXCAVATION AREA
	TEST PIT		BUILDING REMOVAL
CB–99–01	BORINGS INSTALLED FOR PRE–DESIGN INVESTIGATION		PAVEMENT OR PATHWAY REMOVAL
GB–00–08	BORINGS INSTALLED FOR GEOTECHNICAL INVESTIGATION		REMAINING BUILDINGS
			ASPHALT AREA

NOTES:

1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20–300b–1 THRU 20–300b–20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS OF ACCURACY, CONTENT AND CERTIFICATION FOR SURVEYS AND MAPS" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. IT IS A TOPOGRAPHIC SURVEY BASED ON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY, CLASS A–1 AND TOPOGRAPHIC ACCURACY CLASS T–1 AND IS INTENDED TO BE USED FOR DESIGN PURPOSES.
2. HORIZONTAL AND VERTICAL CONTROL POINTS WERE PROVIDED BY MICHAEL G. WILMES, L.S. OF URS GREINER WOODWARD CLYDE. THE DATUMS WERE REPORTED TO BE ON THE NORTH AMERICAN DATUM OF 1983 AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.
3. CONNECTICUT GEODETIC SURVEY DESIGNATIONS.

CONTROL POINTS

(SEE NOTE #2)

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION (NOTE 3)
501	622340.109131	897135.274591	7.240	F–15
504	623142.399102	898645.030716	10.550	F–23
505	623212.133802	898244.245717	7.350	F–24

4. THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL.
5. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

*FIELD SURVEY PERFORMED ON OR BETWEEN 10/03/01 TO 10/29/01

TO THE BEST OF MY KNOWLEDGE & BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

PAUL J. SANTOS L.S. 70037

\\Washington\C\A M Job Folders\10,200-10,299\10,254 ARMY ENGINE PLANT\MAP.bmp

HOUSATONIC RIVER

US Army Corps of Engineers
New England District

Plan Edits Per Contractor

Mark	Description	Date	Appr.

Designed by | Date:
Drawn by | Cecil by | Design file no.
Reviewed by: | Drawing code:
Submitted by: | File name:
Chief, Arch. Branch | Plot date:
Plot time:

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
CONCORD, MASSACHUSETTS
M.M. ENGINEERING

NON-TIME CRITICAL REMOVAL ACTION
CHEMICAL AGENT DISPOSAL FACILITY
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT
PHASE I
TOPOGRAPHIC SURVEY

Sheet reference number:

SHEET 1 OF 1

NOTES:

1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS OF ACCURACY, CONTENT AND CERTIFICATION FOR SURVEYS AND MAPS" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. IT IS A TOPOGRAPHIC SURVEY BASED ON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY, CLASS A–2 AND TOPOGRAPHIC ACCURACY CLASS T–2 AND IS INTENDED TO BE USED FOR DESIGN PURPOSES.

2. HORIZONTAL AND VERTICAL CONTROL POINTS WERE PROVIDED BY MICHAEL G. WILMES, L.S. OF URS GREINER WOODWARD CLYDE. THE DATUMS WERE REPORTED TO BE ON THE NORTH AMERICAN DATUM OF 1983 AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.

3. CONNECTICUT GEODETIC SURVEY DESIGNATIONS.

CONTROL POINTS
(SEE NOTE #2)

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION (NOTE 3)
A2	622340.109131	897135.274591	7.240	F–15
A4	623142.399102	898645.030716	10.550	F–23
A5	623212.133802	898244.245717	7.350	F–24

4. THIS MAP IS NOT VALID WITHOUT A LIVE SIGNATURE AND EMBOSSED SEAL.

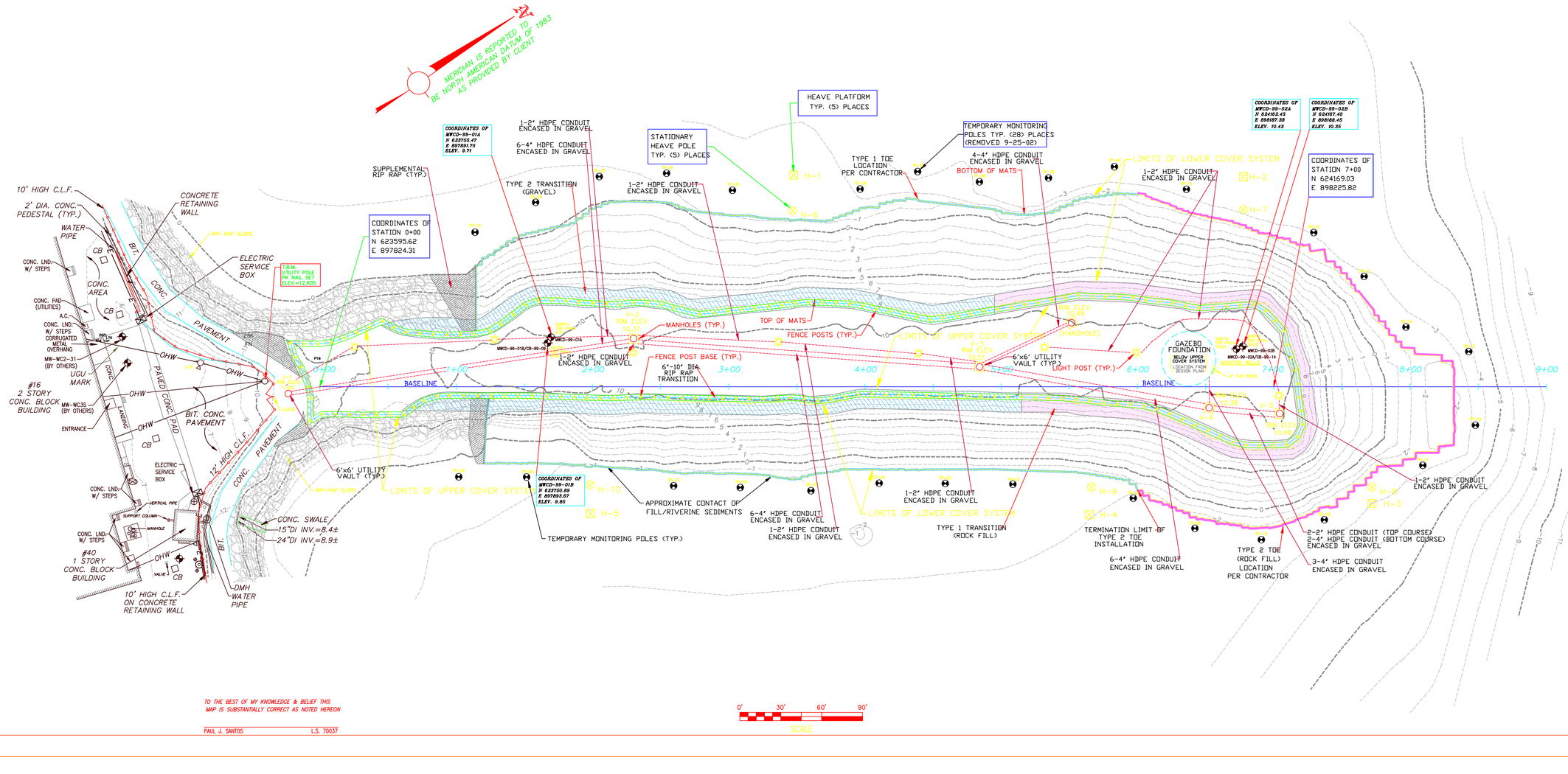
5. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

LEGEND

CONC.	CONCRETE	TREE	MANHOLE
BIT. CONC.	BITUMINOUS CONCRETE	OHW	OVERHEAD WIRE	HEAVE PLATFORM
DIA.	DIAMETER	WATER GATE	STATIONARY HEAVE POLE
CB □	CATCH BASIN	BOLLARD	TEMPORARY MONITORING POLE
C.L.F.	CHAIN LINK FENCE	ELECTRIC BOX	LIGHT POST
	RETAINING WALL	E	ELECTRIC CONDUIT (ON GRADE)	LND.	LANDING
	1' CONTOUR	HYDRANT	A.C.	AIR CONDITIONER
	5' CONTOUR	DRAIN MANHOLE	SUPPLEMENTAL RIP RAP
+7.9	EXISTING SPOT GRADE (ELEV. MSL) (– INDICATES NEGATIVE)	D.I.	DUCTILE IRON
	MONITORING WELL	INV.	INVERT
	SOIL BORING	EXISTING RIP–RAP
UGU	UNDERGROUND UTILITY MARK	TYPE 1 TRANSITION (ROCK FILL) LOCATION PER CONTRACTOR
	TEST PIT	TYPE 2 TRANSITION (GRAVEL) LOCATION PER CONTRACTOR

*FIELD SURVEY PERFORMED ON OR BETWEEN 2/06/03 AND 2/11/03
*TEMPORARY HEAVE MONITORING POINTS REMOVED NOVEMBER 25, 2002

\\Washington\c\A M Jobfolders\10,200-10,299\10,254 ARMY ENGINE PLANT\MAP.bmp



TO THE BEST OF MY KNOWLEDGE & BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

PAUL J. SANTOS L.S. 70037

US Army Corps of Engineers
New England District

No.	Description	Date	Appr.
Mark			
Mark			

Date:
Design file no.:
Drawing code:
Plot scale:
Plot date:
Designed by:
Drawn by:
Cad by:
Reviewed by:
Submitted by:
Chief, Appl. Branch

U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT CONCORD, MASSACHUSETTS

A.M. ENGINEERING

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT
PHASE II
TOPOGRAPHIC SURVEY

Sheet reference number:

SHEET 1 OF 1

APPENDIX G

TYPICAL HEAVE MONITORING SUMMARY REPORT

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE (Read instructions on the reverse side prior to initiating this form)	DATE	TRANSMITTAL NO.
	19-Nov-2001	SAEP-111901-AABL

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor)

TO:	FROM:	CONTRACT NO.	CHECK ONE:
Mr. Champak M. Shah Mechanical Engineer Westover Resident Office 570 Patriot Ave., Box 70 Chicopee, MA 0122-1634	Mr. Joseph Wasiuk Quality Control Manager Roy F. Weston, Inc. 148 Eastern Boulevard Glastonbury, CT 06033	DAAD05-97-D-7004 DO 0187 SAEP Causeway Project - PHASE II	[X] THIS IS A NEW TRANSMITTAL [ ] THIS IS A RESUBMITTAL OF TRANSMITTAL_____

SPECIFICATION SEC. NO. (Cover only one section with each transmitt	PROJECT TITLE AND LOCATION
02110	Stratford Army Engine Plant (SAEP) Non-Time Critical Removal Action - Phase II Causeway

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.)	MFG. OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. (See Instruction No. 8)	NO OF COPIES	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION (See Instruction No. 6)	FOR C E USE CODE
				SPEC. PARA. NO.	DRAWING SHEET NO.			
a.	b.	c.	d.	e.	f.	g.	h.	i.
CA-24	Heave Monitoring Report #2		4	02110; 1.3				

REMARKS

Weston hereby submits four (4) copies of the attached submittal to the Army Corps of Engineers for approval. One (1) copy will be provided directly to the following: Michelle Clemens (CENAE), and Rod Pendleton (Harding ESE). Digital copies will be distributed to all recipiants by e-mail.

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated

for Joseph Wasiuk

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

(Proponent: CEMP-CE)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1		Cumm.		Platform #1			Platform #2			Platform #3			Platform #4			Platform #5			Permanent Pole #6	
2	Date	Time (dy)	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting
3	Initial Meas.		11.09	623969.135	897896.749	10.06	624239.256	898086.679	9.64	624179.326	898337.886	10.72	624004.132	898224.892	11.44	623705.051	898014.267	6.02	623954.009	897917.343
4	24 HR Range		0.05	0.03	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.03	0.01	0.01	0.08	0.04	0.07	0.07	0.03	0.02
5	7 Day Range		0.06	0.18	0.16	0.04	0.03	0.03	0.04	0.13	0.11	0.03	0.03	0.05	0.08	0.09	0.16	0.07	0.04	0.03
6	Project Range		0.09	0.39	0.30	0.09	0.15	0.12	0.17	0.62	0.61	0.08	0.11	0.23	0.10	0.16	0.25	0.08	0.21	0.05
7	Max Deviation from Initial		-0.05	0.38	-0.30	-0.07	-0.15	0.12	-0.15	-0.58	-0.59	-0.06	0.09	0.23	0.08	-0.16	0.25	-0.05	0.19	-0.05
8	9/7/01 13:00	0.00	11.09	623969.135	897896.749	10.06	624239.256	898086.679	9.64	624179.326	898337.886	10.72	624004.132	898224.892	11.44	623705.051	898014.267			
9	9/11/01 9:00	3.83	11.13	623969.137	897896.746	10.08	624239.248	898086.691	9.66	624179.322	898337.903	10.74	624004.134	898224.895	11.51	623705.016	898014.281			
10	9/13/01 12:00	5.96	11.10	623969.154	897896.733	10.08	624239.251	898086.680	9.66	624179.339	898337.886	10.73	624004.134	898224.895	11.49	623705.034	898014.273	6.02	623954.009	897917.343
11	9/18/01 10:00	10.88	11.10	623969.126	897896.741	10.05	624239.205	898086.718	9.63	624179.331	898337.892	10.71	624004.124	898224.913	11.50	623705.007	898014.282	6.00	623954.006	897917.329
12	9/21/01 10:00	13.88	11.12	623969.165	897896.723	10.07	624239.219	898086.712	9.66	624179.353	898337.897	10.74	624004.153	898224.930	11.52	623705.025	898014.317	6.04	623954.008	897917.336
13	9/25/01 9:00	17.83	11.11	623969.181	897896.725	10.06	624239.228	898086.734	9.64	624179.349	898337.910	10.73	624004.155	898224.937	11.50	623705.039	898014.318	6.01	623954.021	897917.344
14	9/27/01 9:30	19.85	11.11	623969.172	897896.710	10.06	624239.222	898086.723	9.63	624179.353	898337.893	10.73	624004.148	898224.903	11.50	623705.026	898014.272	6.02	623954.019	897917.326
15	10/3/01 9:30	25.85	11.08	623969.172	897896.710	10.04	624239.221	898086.708	9.62	624179.354	898337.887	10.70	624004.146	898224.915	11.46	623705.006	898014.288	5.98	623954.008	897917.323
16	10/5/01 8:00	27.79	11.11	623969.195	897896.690	10.08	624239.220	898086.695	9.65	624179.346	898337.882	10.73	624004.149	898224.926	11.51	623704.998	898014.303	6.03	623954.010	897917.316
17	10/9/01 8:30	31.81	11.12	623969.194	897896.702	10.07	624239.204	898086.717	9.65	624179.364	898337.897	10.73	624004.150	898224.951	11.51	623704.982	898014.323	6.03	623954.004	897917.331
18	10/11/01 8:30	33.81	11.06	623969.221	897896.689	10.03	624239.211	898086.720	9.58	624179.115	898337.670	10.69	624004.164	898224.945	11.45	623705.006	898014.312	5.99	623954.016	897917.324
19	10/15/01 9:00	38.83	11.08	623969.249	897896.671	10.02	624239.190	898086.740	9.56	624179.027	898337.599	10.69	624004.149	898224.969	11.46	623704.979	898014.340	5.99	623954.005	897917.329
20	10/22/01 11:00	44.92	11.09	623969.348	897896.603	10.04	624239.183	898086.751	9.56	624178.931	898337.511	10.71	624004.157	898224.974	11.46	623704.975	898014.357	6.01	623954.019	897917.317
21	10/22/01 13:45	45.03																		
22	10/22/01 15:15	45.09																		
23	10/23/01 9:09	45.84																		
24	10/23/01 12:20	45.97				10.01	624239.182	898086.749	9.54	624178.929	898337.498									
25	10/23/01 15:30	46.10																		
26	10/24/01 8:39	46.82				10.03	624239.176	898086.753	9.55	624178.928	898337.493									
27	10/24/01 12:10	46.97				10.01	624239.183	898086.749	9.56	624178.926	898337.492									
28	10/24/01 15:20	47.10				10.03	624239.177	898086.751	9.56	624178.924	898337.487									
29	10/25/01 15:30	46.10																		
30	10/25/01 10:00	47.88	11.07	623969.330	897896.621	10.03	624239.179	898086.757	9.54	624178.922	898337.488	10.69	624004.165	898224.974	11.47	623704.981	898014.365	6.00	623954.018	897917.333
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32	10/26/01 13:10	49.01				10.03	624239.178	898086.750	9.56	624178.900	898337.477									
33	10/26/01 17:10	49.17				10.03	624239.165	898086.756	9.56	624178.893	898337.475									
34	10/29/01 10:17	51.89				10.02	624239.178	898086.754	9.52	624178.778	898337.376									
35	10/29/01 11:05	51.92	11.06	623969.339	897896.578	10.02	624239.178	898086.754	9.52	624178.778	898337.376	10.68	624004.168	898224.993	11.46	623704.966	898014.375	6.00	623954.023	897917.318
36	10/29/01 12:07	51.96				10.02	624239.191	898086.754	9.53	624178.777	898337.377									
37	10/29/01 16:15	52.14				10.04	624239.185	898086.745	9.55	624178.783	898337.381									
38	10/30/01 9:50	52.87				10.02	624239.166	898086.750	9.52	624178.762	898337.366	10.69	624004.158	898224.999						
39	10/30/01 13:00	53.00				10.03	624239.181	898086.768	9.54	624178.758	898337.384	10.70	624004.164	898225.023						
40	10/30/01 16:30	53.15				10.04	624239.179	898086.758	9.55	624178.759	898337.380	10.71	624004.165	898225.049						
41	10/31/01 10:00	53.88				10.01	624239.177	898086.753	9.51	624178.751	898337.360	10.69	624004.158	898224.999						
42	10/31/01 14:20	54.06				10.02	624239.171	898086.744	9.53	624178.743	898337.355	10.69	624004.161	898225.006						
43	10/31/01 16:55	54.16				10.04	624239.160	898086.764	9.54	624178.756	898337.380	10.71	624004.165	898225.049						
44	11/1/01 8:55	54.83				10.03	624239.162	898086.763	9.53	624178.753	898337.363	10.69	624004.158	898224.999						
45	11/1/01 13:45	55.03				10.02	624239.164	898086.757	9.53	624178.759	898337.360	10.67	624004.178	898225.045						
46	11/1/01 17:15	55.18				10.03	624239.166	898086.760	9.54	624178.800	898337.392	10.70	624004.192	898225.030						
47	11/2/01 10:45	55.91	11.06	623969.393	897896.552	10.01	624239.161	898086.756	9.52	624178.806	898337.368	10.69	624004.194	898225.031	11.47	623704.972	898014.410	6.00	623954.010	897917.318
48	11/4/01 7:40	57.78				10.04	624239.148	898086.746	9.54	624178.806	898337.366	10.70	624004.178	898225.039						
49	11/4/01 10:55	57.91				10.02	624239.137	898086.758	9.52	624178.800	898337.366	10.69	624004.180	898225.038						
50	11/4/01 14:45	58.07				10.01	624239.150	898086.769	9.52	624178.801	898337.372	10.69	624004.192	898225.035						
51	11/5/01 10:00	58.88				10.03	624239.142	898086.786	9.53	624178.794	898337.390	10.70	624004.180	898225.062						
52	11/5/01 13:30	59.02				10.02	624239.129	898086.787	9.51	624178.782	898337.389	10.69	624004.169	898225.062						
53	11/5/01 14:45	59.07				10.02	624239.135	898086.791	9.52	624178.791	898337.392	10.73	624004.169	898225.053						
54	11/6/01 11:20	59.93	11.04	623969.393	897896.556	10.00	624239.127	898086.791	9.49	624178.766	898337.368	10.67	624004.165	898225.086	11.43	623704.929	898014.421	5.97	623953.997	897917.336
55	11/6/01 13:05	60.00				9.99	624239.128	898086.795	9.49	624178.754	898337.368	10.66	624004.169	898225.068						
56	11/6/01 16:30	60.15				10.01	624239.132	898086.788	9.51	624178.771	898337.361	10.68	624004.177	898225.062						
57	11/7/01 9:00	60.83				10.02	624239.157	898086.769	9.52	624178.804	898337.349	10.69	624004.196	898225.091						
58	11/7/01 13:40	61.03				10.01			9.51			10.69								
59	11/7/01 15:00	61.08				10.01	624239.106	898086.756	9.50	624178.828	898337.354	10.68	624004.198	898225.084						
60	11/8/01 8:30	61.81	11.06	623969.359	897896.578	10.00	624239.162	898086.792	9.49	624178.801	898337.307	10.67	624004.198	898225.094	11.46	623704.966	898014.375	6.00	623954.203	897917.318
61	11/8/01 11:20	61.93	11.06	623969.393	897896.552	10.02	624239.149	898086.774	9.52	624178.792	898337.299	10.66	624004.169	898225.068	11.47	623704.972	898014.410	6.00	623954.010	897917.318
62	11/8/01 15:45	62.11	11.04	623969.393	897896.556	10.01	624239.145	898086.789	9.51	624178.782	898337.297	10.70	624004.190	898225.063	11.43	623704.929	898014.421	5.97	623953.997	897917.336
63	11/9/01 9:00	62.83	11.08	623969.411	897896.537	10.04	624239.118	898086.787	9.52	624178.789	898337.315	10.70	624004.181	898225.089	11.47	623704.906	898014.464	6.02	623954.010	897917.338
64	11/9/01 14:00	63.04	11.07	623969.422	897896.534	10.04	624239.147	898086.785	9.53	624178.800	898337.306	10.70	624004.191	898225.079	11.46	623704.920	898014.449	5.99	623954.034	897917.298
65	11/9/01 15:00	63.08	11.06	623969.442	897896.523	10.03	624239.144	898086.784	9.52	624178.802	898337.305	10.70	624004.192	898225.079	11.45	623704.930	898014.448	6.01	623954.016	897917.314
66	11/10/01 9:13	63.84	11.06	623969.359	897896.578	10.04	624239.139	898086.781	9.52	624178.802	898337.310	10.71	624004.194	898225.080	11.46	623704.966	898014.434	6.01	623954.025	897917.318
67	11/10/01 11:36	63.94	11.06	623969.393	897896.552	10.05	624239.160	898086.780	9.54	624178.849	898337.342	10.70	624004.199	898225.083	11.47	623704.972	898014.421	6.00	623954.021	897917.336
68	11/10/01 14:16	64.05	11.05	623969.393	897896.556	10.04	624239.147	898086.777	9.54	624178.856	898337.344	10.71	624004.194	898225.086	11.47	623704.929	898014.410	6.00	623954.011	897917.336
69	11/11/01 9:37	64.86	11.06	623969.330	897896.575	10.04	624239.143	898086.797	9.52	624178.833	898337.347	10.71	624004.188	898225.104	11.47	623704.966	898014.365	6.01	623954.023	897917.317
70	11/11/01 11:15	64.93	11.07	623969.348	897896.600	10.04	624239.138	898086.793	9.53	624178.829	898337.353	10.72	624004.188	898225.095	11.46	623704.981	898014.357	6.00	623954.019	897917.318
71	11/11/01 12:46	64.99	11.06	623969.352	897896.581	10.04	624239.148	898086.788	9.54	624178.829	898337.341	10.71	624004.193	898225.106	11.46	623704.975	898014.375	6.00	623954.018	897917.333
72	11/12/01 9:00	65.83	11.06	623969.345	897896.578	10.02	624239.138	898086.800	9.51	624178.879	898337.371	10.70	624004.196	898225.097	11.47	623704.971	898014.361	6.01	623954.020	897917.321
73	11/13/01 8:50	66.83	11.08	623969.469	897896.496	10.03	624239.139	898086.799	9.51	624178.907	898337.397	10.69	624004.201	898225.104	11.47	623704.917	898014.480	6.01	623954.024	897917.331
74	11/13/01 13:07	67.00	11.05	623969.484	897896.492	10.03	624239.149	898086.794	9.51	624178.911	898337.393	10.69	624004.210	898225.101	11.45	623704.947	898014.464	6.00	623954.018	897917.326
75	11/13/01 15:01	67.08	11.09	623969.491	897896.486	10.03	624239.145	898086.795	9.53	624178.928	898337.416	10.71	624004.208	898225.126	11.48	623704.924	898014.491	6.00	623954.027	897917.314
76	11/14/01 9:12	67.84	11.07	623969.480	897896.489	10.02	624239.142	898086.800	9.51	624178.919	898337.396	10.69	624004.212	898225.110	11.46	623704.927	898014.487	6.00	623953.989	897917.331
77	11/14/01 11:01	67.92	11.07	623969.483	897896.499	10.02	624239.148	898086.803	9.51	624178.920	898337.398	10.69	624004.217	898225.112	11.46	623704.934	898014.496	6.01	623954.015	897917.319
78	11/14/01 15:50	68.12	11.1	623969.501	897896.475	10.05	624239.151	898086.786	9.54	624178.933	898337.403	10.72	624004.222	898225.126	11.49	623704.924	898014.483	6.00	623954.020	897917.331
79	11/15/01 10:08	68.88	11.06	623969.493	897896.475	10.02	624239.148	898086.797	9.50	624178.913	898337.380	10.69	624004.217	898225.101	11.47	623704.937	898014.457	6.01	623954.017	897917.325
80	11/15/01 12:35	68.98	11.08	623969.495	897896.478	10.04	624239.147	898086.791	9.53	624178.920	898337.380	10.72	624004.216	898225.110	11.48	623704.929	898014.488			
81	11/15/01 15:10	69.09	11.09	623969.494	897896.477	10.03	624239.145	898086.789	9.53	624178.922	898337.379	10.72	624004.216	898225.112	11.48	623704.924	898014.494	6.03	623954.007	897917.321
82	11/16/01 8:22	69.81	11.08	623969.489	897896.479	10.02	624239.146	898086.789	9.51	624178.917	898337.384	10.70	624004.218	898225.110	11.46	623704.930	898014.478	6.02	623954.014	897917.325
83	11/16/01 11:46	69.95	11.07	623969.502	897896.471	10.01	624239.135	898086.797	9.50	624178.914	898337.389	10.69	624004.218	898225.121	11.48	623704.932	898014.498	6.01	623954.021	897917.325
84	11/16/01 15:50	70.12	11.09	623969.513	897896.472	10.04	624239.153	898086.793	9.52	624178.917	898337.391	10.72	624004.218	898225.115	11.50	623704.931	898014.481	6.05	623954.021	897917.319
85	11/17/01 8:42	70.82	11.08	623969.490	897896.445	10.04	624239.142	898086.778	9.50	624178.910	898337.388	10.71	624004.205	898225.102	11.49	623704.905	898014.442	6.04	623954.004	897917.319
86	11/17/01 13:17	71.01	11.04	623969.481	897896.469	10.01	624239.149	898086.792	9.50	624178.905	898337.387	10.69	624004.213	898225.112	11.42	623704.888	898014.513	5.98	623953.993	897917.331
87	11/17/01 14:46	71.07	11.04	623969.504	897896.454	10.02	624239.154	898086.791	9.50	624178.900	898337.390	10.69	624004.212	898225.101	11.46	623704.917	898014.464	6.00	623954.012	897917.311
88																				
89																				
90																				
	Red Type		*Northing and Easting readings collected at 11/7/01 13:40 contain inconsistent northing and easting data - surveyor attributes to unstable transit setup, possibly due to heavy equipment operation in close proximity to transit setup. Previous and subsequent readings support conclusion that 13:40 readings are anomalous. Weston has not included these data points in the summary calculations.*																	
91																				

GINE PLANT
TA SUMMARY

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
Permanent Pole #7			Permanent Pole #8			Permanent Pole #9			Permanent Pole #10			Temporary Pole #11			Temporary Pole #12	
Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting
624225.066	898106.688	5.50	624185.617	898327.476	5.68	624017.225	898209.400	6.30	623716.541	897997.026	5.99	624199.603	898070.353	5.62	624257.847	898149.885
0.02	0.01	0.02	0.05	0.11	0.04	0.02	0.02	0.05	0.02	0.03	0.05	0.05	0.03	0.04	0.02	0.05
0.02	0.01	0.03	0.09	0.12	0.05	0.04	0.04	0.07	0.03	0.05	0.05	0.08	0.05	0.05	0.06	0.07
0.08	0.05	0.06	0.10	0.13	0.10	0.06	0.06	0.09	0.04	0.08	0.07	0.11	0.06	0.07	0.10	0.12
0.08	-0.05	0.04	0.06	0.07	-0.08	0.03	0.04	0.06	0.03	-0.07	0.04	-0.08	-0.05	0.05	0.10	-0.09
624225.066	898106.688				5.68	624017.225	898209.400	6.30	623716.541	897997.026						
624225.077	898106.683	5.50	624185.617	898327.476	5.65	624017.252	898209.403									
624225.097	898106.669	5.53	624185.660	898327.476	5.70	624017.257	898209.416	6.36	623716.545	897997.044						
624225.101	898106.686	5.52	624185.662	898327.486	5.66	624017.266	898209.427	6.31	623716.550	897997.041						
624225.094	898106.670	5.52	624185.649	898327.474	5.66	624017.261	898209.411	6.32	623716.554	897996.986						
624225.109	898106.661	5.50	624185.646	898327.452	5.65	624017.265	898209.408	6.32	623716.554	897996.986						
624225.115	898106.651	5.53	624185.644	898327.450	5.67	624017.253	898209.394	6.32	623716.548	897997.005						
624225.115	898106.666	5.53	624185.652	898327.468	5.67	624017.260	898209.418	6.31	623716.545	897997.012						
624225.117	898106.663	5.49	624185.641	898327.459	5.63	624017.268	898209.407	6.27	623716.540	897996.983						
624225.103	898106.673	5.49	624185.635	898327.455	5.63	624017.216	898209.414	6.27	623716.543	897997.000						
624225.118	898106.667	5.51	624185.624	898327.458	5.66	624017.244	898209.407	6.29	623716.550	897997.011	6.01	624199.586	898070.337	5.64	624257.854	898149.883
											5.99	624199.585	898070.332	5.63	624257.85	898149.879
											5.99	624199.589	898070.335	5.62	624257.851	898149.889
											5.98	624199.581	898070.317	5.61	624257.859	898149.866
624225.124	898106.662	5.49	624185.655	898327.468							5.98	624199.597	898070.324	5.61	624257.858	898149.873
											5.98	624199.589	898070.320	5.61	624257.855	898149.871
624225.112	898106.662	5.51	624185.643	898327.451							5.99	624199.579	898070.323	5.62	624257.86	898149.887
624225.119	898106.660	5.49	624185.655	898327.468							6.00	624199.590	898070.319	5.63	624257.859	898149.882
624225.115	898106.659	5.51	624185.649	898327.452							5.99	624199.596	898070.323	5.63	624257.856	898149.876
											5.98	624199.589	898070.320	5.61	624257.855	898149.871
624225.122	898106.671	5.49	624185.645	898327.457	5.64	624017.278	898209.411	6.30	623716.554	897997.016						
624225.112	898106.674	5.50	624185.644	898327.458							5.99	624199.603	898070.353	5.62	624257.847	898149.885
624225.135	898106.681	5.51	624185.650	898327.461							5.99	624199.610	898070.364	5.63	624257.848	898149.907
624225.122	898106.670	5.51	624185.648	898327.469							5.99	624199.609	898070.356	5.64	624257.847	898149.900
624225.132	898106.668	5.49	624185.650	898327.458							5.98	624199.615	898070.328	5.61	624257.868	898149.901
624225.132	898106.668	5.49	624185.650	898327.458	5.63	624017.260	898209.395	6.27	623716.547	897996.959						
624225.130	898106.663	5.50	624185.652	898327.446							5.98	624199.596	898070.310	5.61	624257.871	898149.881
624225.122	898106.670	5.52	624185.655	898327.461							6.01	624199.610	898070.319	5.65	624257.947	898149.791
624225.114	898106.653	5.50	624185.653	898327.444	5.63	624017.260	898209.395				5.99	624199.576	898070.315	5.62	624257.869	898149.901
624225.127	898106.663	5.51	624185.629	898327.462	5.65	624017.249	898209.404				5.98	624199.596	898070.310	5.64	624257.915	898149.842
624225.128	898106.653	5.52	624185.655	898327.467	5.67	624017.241	898209.406				6.00	624199.589	898070.315	5.65	624257.912	898149.819
624225.116	898106.654	5.50	624185.641	898327.438	5.63	624017.260	898209.395				5.97	624199.590	898070.316	5.62	624257.901	898149.830
624225.122	898106.652	5.51	624185.637	898327.440	5.65	624017.251	898209.400				5.99	624199.590	898070.312	5.63	624257.899	898149.820
624225.128	898106.660	5.52	624185.635	898327.455	5.67	624017.228	898209.401				6.00	624199.595	898070.323	5.65	624257.902	898149.831
624225.117	898106.663	5.50	624185.646	898327.439	5.64	624017.241	898209.402				5.97	624199.590	898070.316	5.63	624257.901	898149.839
624225.120	898106.658	5.51	624185.646	898327.439	5.64	624017.246	898209.412				5.98	624199.598	898070.318	5.62	624257.890	898149.826
624225.142	898106.657	5.52	624185.635	898327.455	5.67	624017.245	898209.405				6.00	624199.612	898070.320	5.63	624257.912	898149.833
624225.120	898106.655	5.50	624185.654	898327.432	5.62	624017.253	898209.413	6.27	623716.557	897996.995						
624225.122	898106.650	5.52	624185.640	898327.431	5.67	624017.236	898209.405				6.01	624199.592	898070.312	5.64	624257.891	898149.836
624225.105	898106.651	5.51	624185.651	898327.424	5.64	624017.246	898209.403				5.98	624199.573	898070.312	5.63	624257.876	898149.815
624225.119	898106.665	5.50	624185.643	898327.431	5.63	624017.230	898209.395				5.98	624199.594	898070.327	5.62	624257.901	898149.847
624225.130	898106.680	5.51	624185.627	898327.440	5.65	624017.249	898209.421				6	624199.586	898070.341	5.62	624257.892	898149.866
624225.125	898106.679	5.51	624185.614	898327.428	5.64	624017.248	898209.416				5.99	624199.566	898070.333	5.62	624257.889	898149.875
624225.133	898106.684	5.51	624185.614	898327.434	5.64	624017.246	898209.401				5.99	624199.598	898070.347	5.62	624257.894	898149.897
624225.115	898106.672	5.49	624185.611	898327.434	5.64	624017.232	898209.388	6.27	623716.539	897997.011	5.97	624199.581	898070.337	5.61	624257.885	898149.862
624225.112	898106.675	5.48	624185.619	898327.442	5.60	624017.248	898209.415				5.96	624199.521	898070.305	5.6	624257.893	898149.862
624225.120	898106.668	5.50	624185.629	898327.426	5.64	624017.251	898209.411				5.99	624199.580	898070.328	5.61	624257.896	898149.865
624225.146	898106.658	5.51	624185.662	898327.429	5.66	624017.249	898209.412				6.00	624199.625	898070.318	5.63	624257.905	898149.841
		5.50			5.64						5.98			5.62		
624225.083	898106.642	5.50	624185.681	898327.419	5.63	624017.256	898209.444				5.98	624199.555	898070.315	5.61	624257.880	898149.812
624225.137	898106.681	5.49	624185.629	898327.439	5.63	624017.254	898209.436	6.27	623716.547	897996.959	5.98	624199.588	898070.334	5.61	624257.904	898149.874
624225.116	898106.663	5.51	624185.621	898327.431	5.60	624017.248	898209.415	6.27	623716.557	897996.995	6.00	624199.589	898070.325	5.63	624257.886	898149.844
624225.120	898106.668	5.51	624185.621	898327.424	5.64	624017.244	898209.408	6.27	623716.539	897997.011	5.99	624199.580	898070.328	5.63	624257.888	898149.842
624225.098	898106.663	5.52	624185.603	898327.418	5.66	624017.238	898209.427	6.31	623716.527	897997.035	6.00	624199.555	898070.314	5.64	624257.884	898149.873
624225.125	898106.664	5.53	624185.615	898327.423	5.67	624017.241	898209.394	6.29	623716.535	897997.003	6.01	624199.590	898070.312	5.65	624257.892	898149.858
624225.117	898106.660	5.52	624185.628	898327.424	5.66	624017.241	898209.396	6.27	623716.538	897997.016	6.01	624199.591	898070.325	5.65	624257.891	898149.851
624225.117	898106.672	5.52	624185.622	898327.428	5.66	624017.251	898209.418	6.27	623716.539	897996.999	6.01	624199.585	898070.332	5.65	624257.888	898149.859
624225.133	898106.673	5.53	624185.631	898327.437	5.65	624017.254	898209.408	6.27	623716.541	897997.012	6.01	624199.635	898070.356	5.66	624257.890	898149.866
624225.122	898106.666	5.53	624185.643	898327.437	5.66	624017.249	898209.436	6.28	623716.531	897997.023	6.02	624199.609	898070.343	5.66	624257.888	898149.854
624225.125	898106.680	5.52	624185.611	898327.430	5.65	624017.252	898209.427	6.27	623716.554	897997.000	6.01	624199.583	898070.353	5.64	624257.881	898149.878
624225.120	898106.670	5.53	624185.604	898327.427	5.68	624017.237	898209.404	6.28	623716.543	897997.011	6.01	624199.569	898070.317	5.65	624257.885	898149.879
624225.122	898106.666	5.53	624185.584	898327.427	5.68	624017.222	898209.400	6.28	623716.530	897997.016	6.02	624199.568	898070.308	5.66	624257.887	898149.851
624225.124	898106.688	5.52	624185.628	898327.428	5.65	624017.252	898209.425	6.27	623716.531	897997.018	6.00	624199.614	898070.339	5.63	624257.893	898149.903
624225.118	898106.676	5.52	624185.620	898327.432	5.64	624017.253	898209.430	6.28	623716.531	897997.034	6.01	624199.577	898070.330	5.64	624257.893	898149.860
624225.128	898106.673	5.51	624185.626	898327.429	5.65	624017.249	898209.415	6.29	623716.543	897997.002	6.00	624199.595	898070.334	5.63	624257.894	898149.871
624225.124	898106.663	5.53	624185.627	898327.439	5.67	624017.232	898209.413	6.31	623716.534	897997.022	6.01	624199.614	898070.337	5.66	624257.893	898149.852
624225.109	898106.675	5.51	624185.630	898327.434	5.64	624017.242	898209.413	6.29	623716.540	897997.023	5.99	624199.611	898070.340	5.63	624257.890	898149.883
624225.119	898106.678	5.52	624185.630	898327.433	5.65	624017.266	898209.422	6.28	623716.538	897997.038	6.00	624199.609	898070.351	5.63	624257.901	898149.870
624225.133	898106.661	5.54	624185.635	898327.435	5.69	624017.243	898209.410	6.34	623716.549	897997.027	6.03	624199.612	898070.330	5.67	624257.901	898149.846
624225.121	898106.675	5.51	624185.616	898327.433	5.65	624017.257	898209.412	6.30	623716.553	897996.993	6.00	624199.590	898070.329	5.62	624257.887	898149.859
624225.118	898106.669	5.54	624185.618	898327.426	5.67	624017.250	898209.417	6.31	623716.540	897997.022	6.02	624199.605	898070.338	5.65	624257.887	898149.862
624225.113	898106.662	5.54	624185.622	898327.427	5.68	624017.245	898209.415	6.31	623716.539	897997.024	6.02	624199.586	898070.326	5.66	624257.887	898149.859
624225.120	898106.679	5.52	624185.619	898327.426	5.65	624017.263	898209.417	6.30	623716.547	897997.012	6.00	624199.617	898070.343	5.64	624257.883	898149.858
624225.127	898106.679	5.51	624185.603	898327.425	5.65	624017.261	898209.412	6.28	623716.542	897997.023	6.00	624199.618	898070.327	5.63	624257.845	898149.845
624225.127	898106.673	5.53	624185.623	898327.434	5.68	624017.259	898209.410	6.34	623716.549	897997.019	6.02	624199.606	898070.334	5.65	624257.894	898149.866
624225.112	898106.658	5.51	624185.664	898327.541	5.68	624017.238	898209.404	6.33	623716.541	897996.993	6.03	624199.555	898070.306	5.66	624257.879	898149.838
624225.128	898106.677	5.51	624185.672	898327.547	5.64	624017.251	898209.425	6.29	623716.529	897997.020	5.98	624199.604	898070.338	5.62	624257.890	898149.883
624225.126	898106.677	5.51	624185.667	898327.544	5.64	624017.251	898209.407	6.30	623716.542	897996.996	5.98	624199.608	898070.330	5.62	624257.890	898149.869

	A	B	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD
1		Comm.		Temporary Pole #13			Temporary Pole #14			Temporary Pole #15			Temporary Pole #16			Temporary Pole #17			Temporary Pole #18	
2	Date	Time (dy)	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting
3		Initial Meas.	5.72	624269.639	898197.532	5.81	624273.285	898245.789	6.06	624301.303	898286.556	6.03	624273.422	898332.726	5.65	624225.207	898335.616	5.70	624143.438	898326.88
4		24 HR Range	0.04	0.06	0.03	0.03	0.04	0.01	0.03	0.06	0.03	0.03	0.01	0.06	0.04	0.02	0.15	0.02	0.01	0.04
5		7 Day Range	0.05	0.08	0.07	0.07	0.21	0.34	0.04	0.12	0.03	0.03	0.03	0.12	0.05	0.28	0.17	0.03	0.02	0.04
6		Project Range	0.07	0.09	0.09	0.09	0.22	0.36	0.07	0.22	0.11	0.07	0.10	9.15	0.07	0.39	0.30	0.06	0.05	0.06
7	Max Deviation from Initial		0.05	-0.05	-0.05	0.07	0.16	-0.33	0.04	-0.14	-0.06	0.04	-0.08	-9.04	0.04	-0.26	0.14	0.04	0.04	-0.01
8	9/7/01 13:00	0.00																		
9	9/11/01 9:00	3.83																		
10	9/13/01 12:00	5.96																		
11	9/18/01 10:00	10.88																		
12	9/21/01 10:00	13.88																		
13	9/25/01 9:00	17.83																		
14	9/27/01 9:30	19.85																		
15	10/3/01 9:30	25.85																		
16	10/5/01 8:00	27.79																		
17	10/9/01 8:30	31.81																		
18	10/11/01 8:30	33.81																		
19	10/16/01 9:00	38.83																		
20	10/22/01 11:00	44.92	5.74	624269.627	898197.544	5.82	624273.265	898245.810	6.06	624301.376	898286.610	6.03	624273.414	898332.658	5.66	624225.200	898335.567			
21	10/22/01 13:45	45.03	5.73	624269.633	898197.539	5.81	624273.267	898245.802	6.05	624301.337	898286.591	6.02	624273.41	898332.652	5.64	624225.205	898335.570			
22	10/22/01 15:15	45.09	5.72	624269.637	898197.542	5.81	624273.255	898245.801	6.06	624301.329	898286.588	6.03	624273.408	898332.651	5.64	624225.196	898335.587			
23	10/23/01 9:09	45.84	5.71	624269.642	898197.538	5.79	624273.275	898245.799	6.04	624301.306	898286.58	6.01	624273.415	898332.667	5.62	624225.211	898335.568			
24	10/23/01 12:20	45.97	5.71	624269.639	898197.540	5.79	624273.288	898245.803	6.04	624301.329	898286.579	6.01	624273.418	898332.663	5.63	624225.210	898335.562			
25	10/23/01 15:30	46.10	5.71	624269.645	898197.534	5.8	624273.282	898245.795	6.05	624301.292	898286.556	6.02	624273.421	898332.645	5.63	624225.201	898335.559			
26	10/24/01 8:39	46.82	5.72	624269.637	898197.531	5.81	624273.273	898245.784	6.06	624301.287	898286.556	6.02	624273.42	898332.687	5.64	624225.216	898335.598			
27	10/24/01 12:10	46.97	5.74	624269.628	898197.528	5.81	624273.270	898245.789	6.06	624301.285	898286.563	6.03	624273.414	898332.681	5.65	624225.210	898335.585			
28	10/24/01 15:20	47.10	5.73	624269.631	898197.531	5.81	624273.273	898245.788	6.06	624301.279	898286.551	6.03	624273.415	898332.671	5.64	624225.221	898335.569			
29	10/25/01 15:30	48.10	5.71	624269.645	898197.534	5.80	624273.282	898245.795	6.05	624301.292	898286.556	6.02	624273.421	898332.645	5.63	624225.201	898335.559			
30	10/25/01 10:00	47.88																		
31	10/26/01 8:45	48.82	5.72	624269.639	898197.532	5.81	624273.288	898245.789	6.05	624301.303	898286.556	6.03	624273.422	898332.726	5.65	624225.207	898335.616			
32	10/26/01 13:10	49.01	5.73	624269.635	898197.527	5.81	624273.268	898245.794	6.05	624301.290	898286.557	6.03	624273.416	898332.727	5.65	624225.208	898335.593			
33	10/26/01 17:10	49.17	5.74	624269.643	898197.545	5.81	624273.306	898245.810	6.05	624301.301	898286.576	6.03	624273.426	898332.759	5.65	624225.212	898335.583			
34	10/29/01 10:17	51.89	5.71	624269.673	898197.528	5.80	624273.300	898245.785	6.05	624301.313	898286.569	6.02	624273.421	898332.755	5.63	624225.210	898335.642			
35	10/29/01 11:05	51.92																		
36	10/29/01 12:07	51.96	5.71	624269.657	898197.521	5.80	624273.282	898245.784	6.06	624301.300	898286.563	6.02	624273.414	898332.725	5.63	624225.220	898335.614			
37	10/29/01 16:15	52.14	5.74	624269.637	898197.525	5.82	624273.292	898245.798	6.07	624301.278	898286.560	6.04	624273.414	898332.709	5.66	624225.227	898335.558			
38	10/30/01 9:50	52.87	5.72	624269.673	898197.535	5.81	624273.261	898245.778	6.06	624301.246	898286.541	6.02	624273.413	898332.711	5.65	624225.209	898335.607	5.70	624143.438	898326.883
39	10/30/01 13:00	53.00	5.73	624269.628	898197.534	5.81	624273.255	898245.797	6.06	624301.225	898286.551	6.03	624273.413	898332.735	5.63	624225.220	898335.614	5.71	624143.440	898326.892
40	10/30/01 16:30	53.15	5.74	624269.619	898197.534	5.82	624273.274	898245.810	6.06	624301.242	898286.562	6.03	624273.415	898332.730	5.65	624225.209	898335.576	5.70	624143.436	898326.911
41	10/31/01 10:00	53.88	5.71	624269.646	898197.512	5.80	624273.261	898245.775	6.05	624301.246	898286.531	6.02	624273.407	898332.689	5.64	624225.214	898335.616	5.68	624143.447	898326.891
42	10/31/01 14:20	54.06	5.73	624269.629	898197.518	5.81	624273.280	898245.782	6.06	624301.260	898286.545	6.03	624273.402	898332.712	5.65	624225.210	898335.585	5.71	624143.441	898326.863
43	10/31/01 16:55	54.16	5.74	624269.624	898197.516	5.82	624273.280	898245.806	6.07	624301.264	898286.572	6.03	624273.400	898332.720	5.66	624225.207	898335.588	5.72	624143.435	898326.872
44	11/1/01 8:55	54.83	5.73	624269.631	898197.526	5.81	624273.285	898245.789	6.06	624301.284	898286.562	6.03	624273.396	898332.702	5.63	624225.195	898335.601	5.71	624143.434	898326.871
45	11/1/01 13:45	55.03	5.72	624269.642	898197.525	5.80	624273.286	898245.782	6.05	624301.284	898286.554	6.02	624273.407	898332.727	5.65	624225.210	898335.596	5.71	624143.443	898326.866
46	11/1/01 17:15	55.18	5.74	624269.637	898197.529	5.81	624273.295	898245.795	6.06	624301.293	898286.562	6.01	624273.412	898332.720	5.65	624225.221	898335.584	5.72	624143.451	898326.862
47	11/2/01 10:45	55.91																		
48	11/4/01 7:40	57.78	5.75	624269.622	898197.516	5.82	624273.288	898245.784	6.07	624301.280	898286.551	6.04	624273.406	898332.714	5.66	624225.219	898335.579	5.72	624143.446	898326.852
49	11/4/01 10:55	57.91	5.72	624269.619	898197.508	5.81	624273.280	898245.776	6.07	624301.251	898286.533	6.03	624273.408	898332.703	5.65	624225.214	898335.578	5.71	624143.445	898326.852
50	11/4/01 14:45	58.07	5.72	624269.655	898197.520	5.80	624273.287	898245.780	6.05	624301.294	898286.557	6.02	624273.396	898332.745	5.65	624225.208	898335.628	5.71	624143.440	898326.858
51	11/5/01 10:00	58.88	5.73	624269.612	898197.539	5.81	624273.247	898245.799	6.06	624301.245	898286.564	6.03	624273.399	898332.746	5.65	624225.208	898335.631	5.71	624143.432	898326.876
52	11/5/01 13:30	59.02	5.71	624269.666	898197.505	5.81	624273.265	898245.785	6.06	624301.216	898286.540	6.03	624273.394	898332.718	5.64	624225.220	898335.665	5.71	624143.440	898326.873
53	11/5/01 14:45	59.07	5.72	624269.641	898197.537	5.80	624273.326	898245.814	6.06	624301.249	898286.582	6.02	624273.425	898332.842	5.64	624225.182	898335.662	5.71	624143.429	898326.883
54	11/6/01 11:20	59.93	5.7	624269.596	898197.522	5.79	624273.245	898245.798	6.03	624301.226	898286.567	6.00	624273.394	898332.749	5.62	624225.202	898335.615	5.69	624143.435	898326.887
55	11/6/01 13:05	60.00	5.7	624269.619	898197.523	5.79	624273.224	898245.791	6.04	624301.213	898286.555	6.00	624273.346	898332.736	5.62	624225.205	898335.613	5.69	624143.434	898326.877
56	11/6/01 16:30	60.15	5.72	624269.624	898197.528	5.80	624273.252	898245.784	6.06	624301.159	898286.520	6.02	624273.386	898332.762	5.64	624225.202	898335.631	5.71	624143.436	898326.879
57	11/7/01 9:00	60.83	5.74	624269.632	898197.521	5.81	624273.287	898245.820	6.07	624301.280	898286.560	6.03	624273.409	898332.731	5.65	624225.199	898335.591	5.72	624143.466	898326.862
58	11/7/01 13:40	61.03	5.72			5.80			6.05			6.02			5.64			5.71		
59	11/7/01 15:00	61.08	5.72	624269.633	898197.484	5.80	624273.289	898245.756	6.05	624301.242	898286.499	6.02	624273.442	898332.711	5.65	624225.244	898335.583	5.70	624143.479	898326.867
60	11/8/01 8:30	61.81	5.71	624269.630	898197.516	5.79	624273.279	898245.817	6.04	624301.247	898286.578	6.02	624273.403	898332.766	5.63	624225.218	898335.616	5.69	624143.463	898326.878
61	11/8/01 11:20	61.93	5.73	624269.614	898197.526	5.82	624273.274	898245.799	6.07	624301.246	898286.563	6.03	624273.395	898332.743	5.65	624225.210	898335.579	5.72	624143.442	898326.856
62	11/8/01 15:45	62.11	5.72	624269.620	898197.524	5.81	624273.253	898245.787	6.07	624301.235	898286.554	6.03	624273.376	898332.718	5.66	624225.208	898335.611	5.72	624143.438	898326.869
63	11/9/01 9:00	62.83	5.74	624269.619	898197.515	5.83	624273.235	898245.784	6.08	624301.182	898286.533	6.05	624273.401	898332.759	5.66	624225.220	898335.640	5.72	624143.444	898326.880
64	11/9/01 14:00	63.04	5.75	624269.610	898197.522	5.83	624273.263	898245.788	6.08	624301.244	898286.554	6.05	624273.400	898332.743	5.66	624225.213	898335.620	5.73	624143.447	898326.860
65	11/9/01 15:00	63.08	5.74	624269.602	898197.520	5.83	624273.258	898245.787	6.08	624301.193	898286.534	6.05	624273.400	898332.746	5.67	624225.220	898335.588	5.73	624143.448	898326.857
66	11/10/01 9:13	63.84	5.74	624269.626	898197.526	5.83	624273.291	898245.787	6.08	624301.258	898286.560	6.05	624273.389	898332.766	5.66	624225.209	898335.617	5.73	624143.440	898326.870
67	11/10/01 11:16	63.94	5.76	624269.629	898197.526	5.83	624273.299	898245.804	6.08	624301.285	898286.575	6.05	624273.398	898332.781	5.65	624225.201	898335.613	5.74	624143.436	898326.878
68	11/10/01 14:16	64.05	5.76	624269.627	898197.527	5.83	624273.305	898245.800	6.08	624301.295	898286.573	6.05	624273.402	898332.747	5.67	624225.220	898335.588	5.74	624143.446	898326.853
69	11/11/01 9:37	64.86	5.74	624269.626	898197.535	5.83	624273.272	898245.793	6.08	624301.227	898286.564	6.05	624273.399	898332.827	5.66	624225.201	898335.635	5.72	624143.439	898326.885
70	11/11/01 11:15	64.93	5.75	624269.597	898197.533	5.83	624273.238	898245.794	6.08	624301.178	898286.562	6.05	624273.407	898332.839	5.66	624225.201	898335.638	5.73	624143.434	898326.897
71	11/11/01 12:46	64.99	5.75	624269.584	898197.529	5.83	624273.250	898245.797	6.08	624301.187	898286.550	6.05	624273.378	898332.759	5.68	624225.198	898335.620	5.74	624143.432	898326.891
72	11/12/01 9:00	65.83	5.74	624269.631	898197.548	5.82	624273.286	898245.797	6.07	624301.275	898286.568	6.04	624273.395	898332.791	5.66	624225.227	898335.678	5.72	624143.444	898326.880
73	11/13/01 8:50	66.83	5.74	624269.636	898197.527	5.83	624273.272	898245.782	6.08	624301.261	898286.556	6.05	624273.391	898332.732	5.65	624225.214	898335.640	5.72	624143.444	898326.889
74	11/13/01 13:07	67.00	5.73	624269.632	898197.531	5.82	624273.292	898245.792	6.06	624301.266	898286.574	6.04	624273.392	898332.760	5.66	624225.218	898335.611	5.72	624143.437	898326.865
75	11/13/01 15:01	67.08	5.76	624269.624	898197.528	5.83	624273.291	898245.794	6.08	624301.263	898286.567	6.05	624273.395	898332.758	5.66	624225.212	898335.589	5.74	624143.441	898326.865
76	11/14/01 9:12	67.84	5.73	624269.621	898197.527	5.81	624273.301	898245.788	6.07	624301.293	898286.576	6.04	624273.374	898332.739	5.65	624225.220	898335.658	5.71	624143.442	898326.872
77	11/14/01 11:01	67.92	5.73	624269.640	898197.532	5.82	624273.276	898245.786	6.07	624301.300	898286.577	6.04	624273.375	898332.772	5.64	624225.211	898335.670	5.72	624143.443	898326.874
78	11/14/01 15:50	68.12	5.77	624269.629	898197.524	5.88	624273.432	898245.482	6.09	624301.269	898286.562	6.06	624273.401	898332.746	5.67	624225.225	898335.591	5.72	624143.440	898326.869
79	11/15/01 10:08	68.88	5.72	624269.634	898197.528	5.85	624273.411	898245.461	6.07	624301.248	898286.556	6.04	624273.38	898332.725	5.65	624225.208	898335.643	5.72	624143.438	898326.870
80	11/15/01 12:05	68.98	5.75	624269.628	898197.523	5.86	624273.441	898245.469	6.08	624301.274	898286.567	6.06	624273.385	898332.746	5.67	624224.951	898335.755	5.74	624143.441	898326.863
81	11/15/01 13:10	69.09	5.76	624269.624	898197.523	5.86	624273.435	898245.467	6.09	624301.257	898286.561	6.06	624273.389	898332.740	5.69	624225.231	898335.604	5.74	624143.443	898326.859
82	11/16/01 8:22	69.81	5.74	624269.661	898197.527	5.85	624273.423	898245.471	6.07	624301.236	898286.546	6.04	624273.391	898332.732	5.66	624225.217	898335.623	5.72	624143.441	898326.858
83	11/16/01 11:46	69.95	5.73	624269.653	898197.512	5.84	624273.416	898245.469	6.07	624301.270	898286.533	6.04	624273.395	898332.725	5.65	624225.213	898335.649	5.71	624143.445	898326.857
84	11/16/01 15:50	70.12	5.75	624269.621	898197.532	5.85	624273.435	898245.486	6.08	624301.282	898286.543	6.05	624273.387	898332.721	5.67	624225.222	898335.627	5.73	624143.444	898326.860
85	11/17/01 8:42	70.82	5.76	624269.598	898197.508	5.86	624273.409	898245.483	6.10	624301.218	898286.551	6.07	624273.387	898332.722	5.68	624225.203	898335.600	5.74	624143.435	898326.853
86	11/17/01 13:17	71.01	5.72	624269.657	898197.540	5.84	624273.420	898245.482	6.07	624301.244	898286.570	6.04	624273.384	898332.756	5.64	624225.220	898335.748	5.72	624143.430	898326.888
87	11/17/01 14:46	71.07	5.73	624269.636	898197.530	5.83	624273.446	898245.488	6.07	624301.240	898286.564	6.04	624273.39	898332.783	5.65	624225.208	898335.649	5.72	624143.430	898326.867
88																				
89																				
90																				
	Red Type	*Northing or subsequent*																		
91																				

NGINE PLANT
ATA SUMMARY

BP	BQ	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY
Temporary Pole #19		Temporary Pole #20			Temporary Pole #21			Temporary Pole #12			Temporary Pole #23			Temporary Pole #24			Temporary Pole #25		
Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting
624097.095	898312.580	5.94	624061.898	898277.760	5.28	624037.566	898233.653	6.35	623971.195	898174.661	6.63	623930.857	898145.791	6.59	623891.262	898117.761	7.02	623847.074	898093.595
0.03	0.01	0.02	0.01	0.01	0.03	0.01	0.00	0.04	0.06	0.10	0.04	0.09	0.12	0.02	0.05	0.08	0.02	0.05	0.08
0.04	0.04	0.03	0.03	0.02	0.04	0.07	0.03	0.08	0.09	0.11	0.10	0.58	0.67	0.06	0.69	0.70	0.09	0.06	0.08
0.06	0.05	0.07	0.05	0.06	0.07	0.07	0.05	0.08	0.09	0.12	0.10	0.58	0.67	0.06	0.69	0.70	0.09	0.08	0.08
-0.04	-0.04	0.05	0.03	0.04	0.06	-0.05	0.05	-0.05	0.06	0.07	-0.05	-0.54	0.58	-0.05	-0.62	0.68	-0.06	0.04	0.07
624097.095	898312.580	5.94	624061.898	898277.760	5.28	624037.566	898233.653												
624097.082	898312.573	5.95	624061.897	898277.776	5.30	624037.562	898233.666												
624097.089	898312.571	5.96	624061.894	898277.781	5.31	624037.553	898233.673												
624097.069	898312.574	5.94	624061.896	898277.770	5.28	624037.566	898233.653												
624097.069	898312.563	5.95	624061.892	898277.765	5.30	624037.554	898233.653												
624097.066	898312.573	5.96	624061.895	898277.773	5.31	624037.553	898233.673												
624097.078	898312.578	5.95	624061.896	898277.761	5.28	624037.566	898233.653												
624097.077	898312.560	5.95	624061.908	898277.757	5.30	624037.554	898233.653												
624097.086	898312.559	5.96	624061.916	898277.759	5.31	624037.545	898233.675												
624097.076	898312.557	5.96	624061.904	898277.759	5.32	624037.532	898233.668												
624097.076	898312.556	5.95	624061.904	898277.760	5.30	624037.544	898233.664												
624097.077	898312.546	5.94	624061.902	898277.750	5.29	624037.564	898233.649												
624097.068	898312.565	5.96	624061.891	898277.782	5.31	624037.528	898233.675	6.35	623971.195	898174.661									
624097.074	898312.569	5.95	624061.902	898277.777	5.30	624037.533	898233.678	6.35	623971.221	898174.653									
624097.069	898312.560	5.95	624061.886	898277.769	5.30	624037.543	898233.672	6.34	623971.212	898174.663									
624097.052	898312.586	5.92	624061.887	898277.790	5.29	624037.528	898233.678	6.32	623971.199	898174.638									
624097.052	898312.584	5.93	624061.894	898277.776	5.27	624037.537	898233.681	6.36	623971.180	898174.618									
624097.074	898312.556	5.95	624061.902	898277.769	5.29	624037.550	898233.672	6.34	623971.212	898174.663									
624097.073	898312.539	5.96	624061.907	898277.739	5.31	624037.543	898233.682												
		5.95			5.30														
624097.111	898312.572	5.95	624061.932	898277.794	5.29	624037.562	898233.704												
624097.089	898312.578	5.93	624061.921	898277.799	5.29	624037.554	898233.705	6.34	623971.212	898174.663	6.63	623930.857	898145.791	6.59	623891.262	898117.761	7.02	623847.074	898093.595
624097.073	898312.563	5.96	624061.902	898277.778	5.27	624037.537	898233.681	6.32	623971.199	898174.638	6.63	623930.848	898145.802	6.57	623891.250	898117.764	7.01	623847.036	898093.619
624097.070	898312.560	5.96	624061.904	898277.769	5.31	624037.554	898233.671	6.36	623971.180	898174.618	6.63	623930.864	898145.758	6.60	623891.255	898117.736	7.02	623847.065	898093.584
624097.067	898312.571	5.97	624061.897	898277.793	5.32	624037.529	898233.695	6.36	623971.220	898174.663				6.60	623891.275	898117.762	7.03	623847.069	898093.615
624097.079	898312.553	5.97	624061.909	898277.769	5.32	624037.534	898233.680	6.30	623971.218	898174.611	6.61	623930.843	898145.774	6.56	623891.290	898117.737	7.00	623847.084	898093.592
624097.086	898312.554	5.97	624061.908	898277.773	5.32	624037.531	898233.675	6.32	623971.223	898174.618	6.60	623930.897	898145.759	6.56	623891.288	898117.738	7.00	623847.082	898093.593
624097.070	898312.560	5.97	624061.903	898277.771	5.32	624037.557	898233.673	6.35	623971.218	898174.634	6.63	623930.886	898145.783	6.59	623891.288	898117.746	7.01	623847.092	898093.589
624097.074	898312.540	5.98	624061.907	898277.768	5.33	624037.546	898233.674	6.37	623971.239	898174.642	6.65	623930.900	898145.808	6.60	623891.332	898117.775	7.04	623847.090	898093.616
624097.086	898312.555	5.98	624061.910	898277.772	5.33	624037.549	898233.674	6.38	623971.224	898174.626	6.68	623930.876	898145.789	6.59	623891.302	898117.754	7.05	623847.066	898093.625
624097.074	898312.580	5.97	624061.887	898277.776	5.31	624037.545	898233.681	6.30	623971.210	898174.637	6.60	623930.874	898145.775	6.57	623891.276	898117.746	6.99	623847.101	898093.594
624097.077	898312.570	5.98	624061.897	898277.787	5.33	624037.526	898233.675	6.33	623971.210	898174.637	6.60	623930.854	898145.779	6.57	623891.247	898117.759	7.00	623847.060	898093.601
624097.059	898312.576	5.98	624061.893	898277.787	5.33	624037.515	898233.688	6.30	623971.205	898174.622	6.62	623930.321	898146.372	6.58	623891.284	898117.751	7.01	623847.065	898093.601
624097.082	898312.567	5.96	624061.908	898277.778	5.31	624037.562	898233.675	6.31	623971.224	898174.636	6.59	623930.897	898145.783	6.56	623891.281	898117.745	6.98	623847.106	898093.595
624097.083	898312.572	5.96	624061.915	898277.777	5.30	624037.562	898233.682	6.32	623971.226	898174.631	6.58	623930.904	898145.774	6.56	623891.292	898117.739	6.97	623847.117	898093.586
624097.081	898312.555	5.96	624061.909	898277.769	5.31	624037.557	898233.673	6.34	623971.229	898174.636	6.61	623930.895	898145.794	6.59	623891.303	898117.755	7.01	623847.111	898093.599
624097.086	898312.558	5.98	624061.905	898277.776	5.33	624037.553	898233.675	6.34	623971.231	898174.639	6.64	623930.879	898145.795	6.57	623891.289	898117.767	7.00	623847.079	898093.622
624097.077	898312.559	5.96	624061.914	898277.766	5.30	624037.569	898233.672	6.33	623971.252	898174.661	6.62	623930.895	898145.788	6.58	623891.290	898117.751	7.01	623847.093	898093.593
624097.096	898312.552	5.96	624061.918	898277.766	5.31	624037.585	898233.654	6.34	623971.246	898174.645	6.62	623930.894	898145.793	6.58	623891.327	898117.771	7.01	623847.113	898093.590
624097.084	898312.559	5.99	624061.918	898277.768	5.34	624037.554	898233.675	6.35	623971.228	898174.640	6.63	623930.878	898145.795	6.57	623891.294	898117.751	7.01	623847.078	898093.614
624097.069	898312.561	5.96	624061.907	898277.766	5.30	624037.556	898233.662	6.30	623971.226	898174.645	6.58	623930.897	898145.787	6.56	623891.256	898117.753	6.97	623847.117	898093.601
624097.096	898312.551	5.98	624061.911	898277.768	5.33	624037.551	898233.672	6.31	623971.214	898174.637	6.59	623930.879	898145.779	6.54	623891.278	898117.753	6.96	623847.096	898093.591
624097.087	898312.554	5.98	624061.913	898277.767	5.33	624037.550	898233.677	6.33	623971.210	898174.630	6.62	623930.844	898145.795	6.56	623890.642	898118.438	7.00	623847.075	898093.601
624097.082	898312.558	5.97	624061.902	898277.768	5.32	624037.555	898233.669	6.32	623971.207	898174.618	6.61	623930.863	898145.821	6.57	623891.290	898117.759	6.99	623847.114	898093.608
624097.100	898312.554	5.96	624061.910	898277.767	5.30	624037.569	898233.695	6.31	623971.220	898174.646	6.60	623930.871	898145.699	6.57	623891.276	898117.754	6.99	623847.101	898093.598
624097.089	898312.557	5.98	624061.914	898277.769	5.33	624037.554	898233.676	6.38	623971.224	898174.633	6.65	623930.805	898145.719	6.59	623891.284	898117.751	7.03	623847.085	898093.602
624097.063	898312.558	5.98	624061.915	898277.771	5.33	624037.541	898233.674	6.37	623971.215	898174.628	6.64	623930.896	898145.841	6.60	623891.299	898117.745	7.03	623847.094	898093.589
624097.087	898312.557	5.97	624061.914	898277.765	5.30	624037.549	898233.672	6.35	623971.161	898174.728	6.61	623930.887	898145.833	6.58	623891.246	898117.824	7.01	623847.056	898093.665
624097.083	898312.544	5.96	624061.905	898277.765	5.31	624037.546	898233.673	6.34	623971.225	898174.647	6.61	623930.888	898145.784	6.58	623891.269	898117.754	7.01	623847.101	898093.596

11/19/01

	A	B	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ
1		Cumm.		Temporary Pole #26			Temporary Pole #27			Temporary Pole #28			Temporary Pole #29			Temporary Pole #38			Temporary Pole #39	
2	Date	Time (dy)	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting
3	Initial Meas.		6.91	623805.925	898061.892	7.70	623766.542	898032.759	7.11	623681.860	897965.622	6.82	623641.208	897936.966	6.09	624078.403	897978.727	6.93	624121.523	898005.5
4	24 HR Range		0.03	0.05	0.04	0.01	0.05	0.06	0.02	0.02	0.04	0.02	0.02	0.02	0.03	0.03	0.13	0.04	0.02	0.10
5	7 Day Range		0.08	0.05	0.05	0.08	0.05	0.06	0.06	0.05	0.05	0.05	0.02	0.03	0.07	0.04	0.14	0.07	0.04	0.10
6	Project Range		0.08	0.05	0.05	0.08	0.05	0.06	0.06	0.05	0.05	0.05	0.02	0.03	0.07	0.08	0.15	0.07	0.22	0.10
7	Max Deviation from Initial		0.08	-0.04	0.03	0.08	-0.05	0.06	-0.05	0.04	0.04	-0.04	0.02	-0.03	-0.06	-0.05	0.08	-0.04	-0.18	0.06
8	9/7/01 13:00	0.00																		
9	9/11/01 9:00	3.83																		
10	9/13/01 12:00	5.96																		
11	9/18/01 10:00	10.88																		
12	9/21/01 10:00	13.88																		
13	9/25/01 9:00	17.83																		
14	9/27/01 9:30	19.85																		
15	10/3/01 9:30	25.85																		
16	10/5/01 8:00	27.79																		
17	10/9/01 8:30	31.81																		
18	10/11/01 8:30	33.81																		
19	10/16/01 9:00	38.83																		
20	10/22/01 11:00	44.92																		
21	10/22/01 13:45	45.03																		
22	10/22/01 15:15	45.09																		
23	10/23/01 9:09	45.84																		
24	10/23/01 12:20	45.97																		
25	10/23/01 15:30	46.10																		
26	10/24/01 8:29	46.82																		
27	10/24/01 12:10	46.97																		
28	10/24/01 15:20	47.10																		
29	10/25/01 15:30	46.10																		
30	10/25/01 10:00	47.88																		
31	10/26/01 8:45	48.82																		
32	10/26/01 13:10	49.01																		
33	10/26/01 17:10	49.17																		
34	10/29/01 10:17	51.89																		
35	10/29/01 11:05	51.92																		
36	10/29/01 12:07	51.96																		
37	10/29/01 16:15	52.14																		
38	10/30/01 9:50	52.87																		
39	10/30/01 13:00	53.00																		
40	10/30/01 16:30	53.15																		
41	10/31/01 10:00	53.88																		
42	10/31/01 14:20	54.06																		
43	10/31/01 16:55	54.16																		
44	11/1/01 8:55	54.83																		
45	11/1/01 13:45	55.03																		
46	11/1/01 17:15	55.18																		
47	11/2/01 10:45	55.91																		
48	11/4/01 7:40	57.78																		
49	11/4/01 10:55	57.91																		
50	11/4/01 14:45	58.07																		
51	11/5/01 10:00	58.88																		
52	11/5/01 13:30	59.02																		
53	11/5/01 14:45	59.07																		
54	11/6/01 11:20	59.93																		
55	11/6/01 13:05	60.00																		
56	11/6/01 16:30	60.15																		
57	11/7/01 9:00	60.83																		
58	11/7/01 13:40	61.03													6.09	624078.403	897978.727	6.93	624121.523	898005
59	11/7/01 15:00	61.08													6.05	624078.349	897978.690	6.94	624121.479	898005
60	11/8/01 8:30	61.81													6.06	624078.379	897978.691	6.95	624121.499	898005
61	11/8/01 11:20	61.93													6.07	624078.359	897978.688	6.94	624121.341	898005
62	11/8/01 15:45	62.11							7.11	623681.860	897965.622	6.82	623641.208	897936.966	6.05	624078.399	897978.665	6.90	624121.537	898005
63	11/9/01 9:00	62.83							7.07	623681.857	897965.611	6.79	623641.218	897936.947	6.04	624078.394	897978.661	6.90	624121.513	898005
64	11/9/01 14:00	63.04							7.08	623681.857	897965.613	6.79	623641.216	897936.950	6.08	624078.411	897978.682	6.94	624121.553	898005
65	11/9/01 15:00	63.08							7.11	623681.881	897965.629	6.82	623641.214	897936.955	6.09	624078.415	897978.675	6.95	624121.547	898005
66	11/10/01 9:13	63.84							7.12	623681.868	897965.630	6.83	623641.212	897936.953	6.10	624078.406	897978.672	6.95	624121.535	898005
67	11/10/01 11:36	63.94							7.12	623681.857	897965.614	6.83	623641.212	897936.945	6.04	624078.402	897978.684	6.91	624121.515	898005
68	11/10/01 14:16	64.05							7.08	623681.875	897965.621	6.80	623641.225	897936.951	6.05	624078.383	897978.700	6.93	624121.517	898005
69	11/11/01 9:37	64.86							7.10	623681.868	897965.627	6.81	623641.219	897936.952	6.06	624078.390	897978.670	6.90	624121.523	898005
70	11/11/01 11:15	64.93							7.09	623681.849	897965.610	6.81	623641.223	897936.954	6.03	624078.398	897978.725	6.90	624121.521	898005
71	11/11/01 12:46	64.99							7.09	623681.884	897965.632	6.79	623641.231	897936.960	6.07	624078.427	897978.676	6.90	624121.544	898005
72	11/12/01 9:00	65.83							7.08	623681.892	897965.625	6.79	623641.229	897936.956	6.07	624078.426	897978.670	6.93	624121.555	898005
73	11/13/01 8:50	66.83							7.10	623681.879	897965.635	6.82	623641.227	897936.953	6.06	624078.405	897978.693	6.92	624121.559	898005
74	11/13/01 13:07	67.00							7.09	623681.861	897965.626	6.80	623641.221	897936.952	6.07	624078.408	897978.675	6.92	624121.545	898005
75	11/13/01 15:01	67.08							7.10	623681.896	897965.641	6.81	623641.223	897936.962	6.08	624078.417	897978.689	6.95	624121.545	898005
76	11/14/01 9:12	67.84							7.10	623681.894	897965.643	6.81	623641.223	897936.965	6.06	624078.406	897978.686	6.91	624121.557	898005
77	11/14/01 11:01	67.92							7.09	623681.873	897965.628	6.80	623641.217	897936.947	6.05	624078.404	897978.689	6.91	624121.547	898005
78	11/14/01 15:50	68.12							7.07	623681.898	897965.640	6.78	623641.232	897936.958	6.04	624078.410	897978.697	6.89	624121.526	898005
79	11/15/01 10:08	68.88							7.06	623681.877	897965.630	6.78	623641.216	897936.948	6.06	624078.397	897978.696	6.91	624121.537	898005
80	11/15/01 12:35	68.98							7.08	623681.868	897965.625	6.80	623641.215	897936.938	6.08	624078.412	897978.698	6.92	624121.555	898005
81	11/15/01 15:10	69.09							7.09	623681.888	897965.634	6.79	623641.226	897936.951	6.05	624078.409	897978.718	6.92	624121.552	898005
82	11/16/01 8:22	69.81	6.91	623805.925	898061.892	7.70	623766.542	898032.759	7.07	623681.883	897965.636	6.79	623641.223	897936.956	6.09	624078.406	897978.680	6.96	624121.531	898005
83	11/16/01 11:46	69.95	6.94	623805.917	898061.876	7.74	623766.536	898032.764	7.11	623681.879	897965.627	6.82	623641.223	897936.947	6.08	624078.396	897978.675	6.93	624121.529	898005
84	11/16/01 15:50	70.12	6.99	623805.917	898061.892	7.78	623766.521	898032.767	7.12	623681.877	897965.622	6.83	623641.230	897936.946	6.06	624078.392	897978.807	6.92	624121.530	898005
85	11/17/01 8:42	70.82	6.99	623805.913	898061.892	7.78	623766.494	898032.737	7.11	623681.863	897965.661	6.81	623641.208	897936.969	6.07	624078.418	897978.702	6.93	624121.552	898005
86	11/17/01 13:17	71.01	6.96	623805.886	898061.924	7.77	623766.504	898032.814	7.10	623681.887	897965.632	6.81	623641.228	897936.951						
87	11/17/01 14:46	71.07	6.97	623805.932	898061.887	7.77	623766.542	898032.763												
88																				
89																				
90																				
91	Red Type	*Northing at subsequent*																		

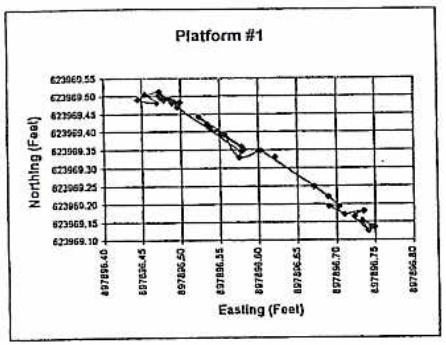
GINE PLANT
TA SUMMARY

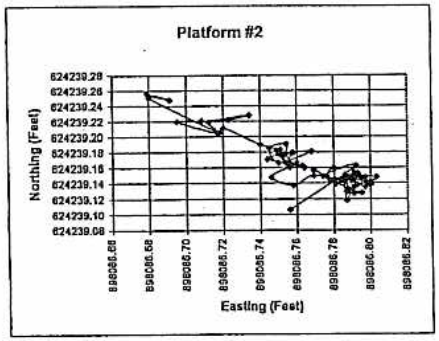
CS	CT
Temporary Pole #40	
Northing	Easting
624165.852	898026.305
0.03	0.15
0.06	0.15
0.09	0.16
-0.06	0.09

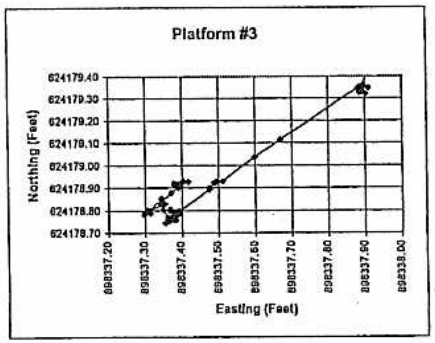
624165.852	898026.305
624165.806	898026.296
624165.812	898026.264
624165.796	898026.261
624165.853	898026.255
624165.851	898026.241
624165.858	898026.256
624165.875	898026.259
624165.865	898026.235
624165.850	898026.260
624165.831	898026.270
624165.865	898026.255
624165.864	898026.255
624165.877	898026.250
624165.888	898026.257
624165.879	898026.273
624165.884	898026.262
624165.867	898026.262
624165.867	898026.272
624165.871	898026.273
624165.852	898026.261
624165.854	898026.261
624165.870	898026.279
624165.864	898026.271
624165.852	898026.260
624165.855	898026.243
624165.837	898026.397
624165.870	898026.273

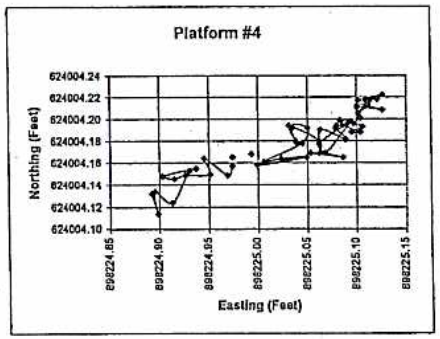
nf 3

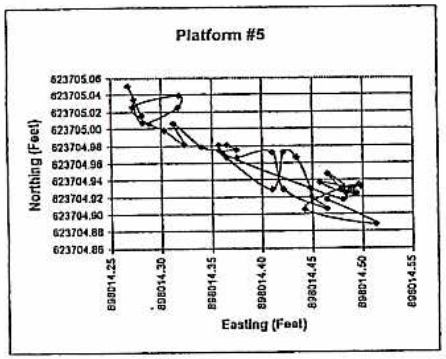
STRATFORD ARMY ENGINE PLANT
HEAVE MONITORING DATA
NORTHING-EASTING LOCATIONS

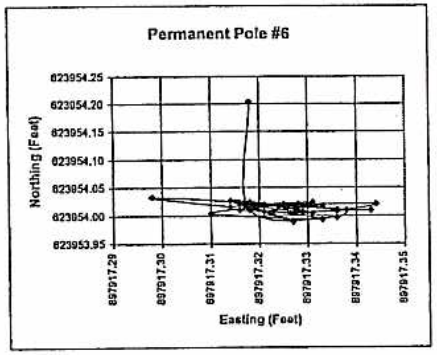


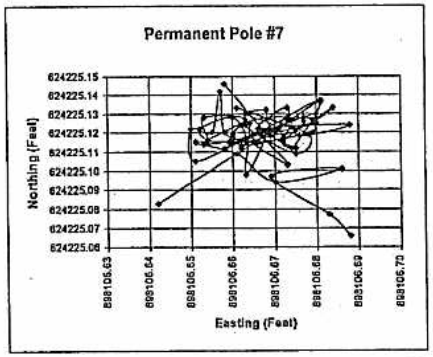


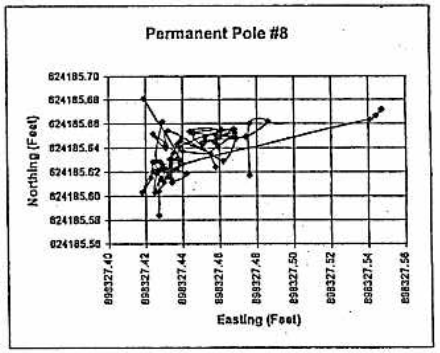


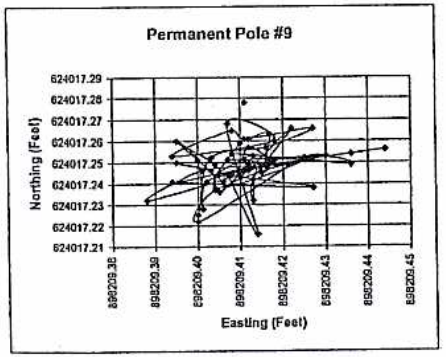


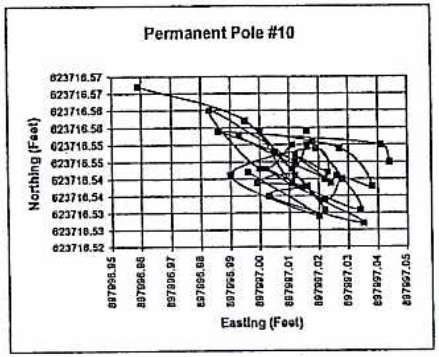


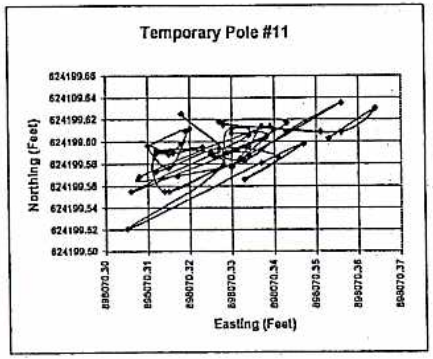


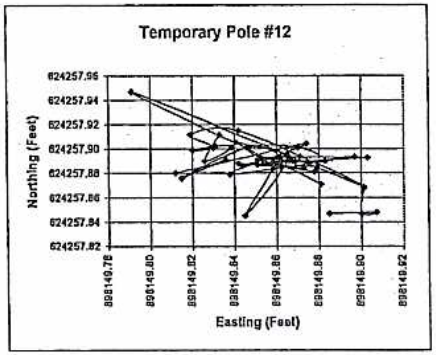


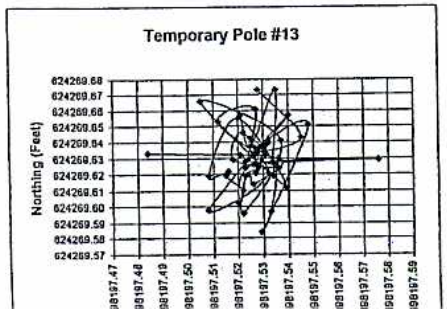


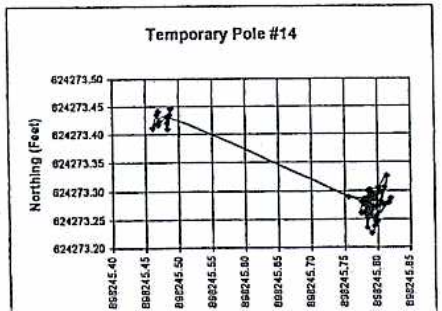


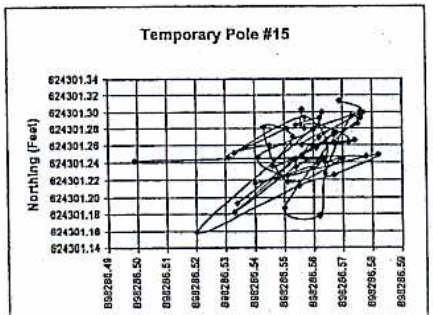


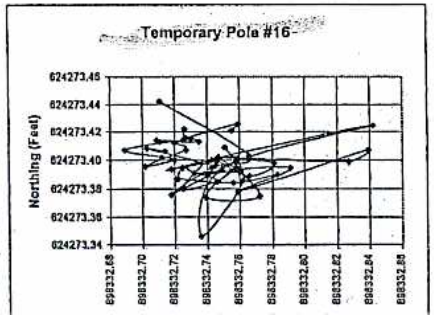


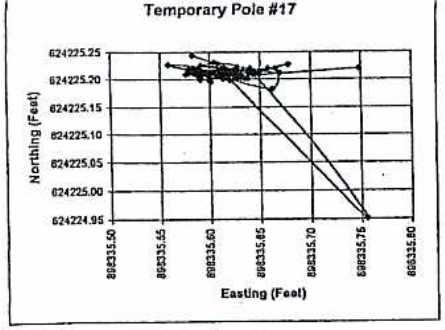


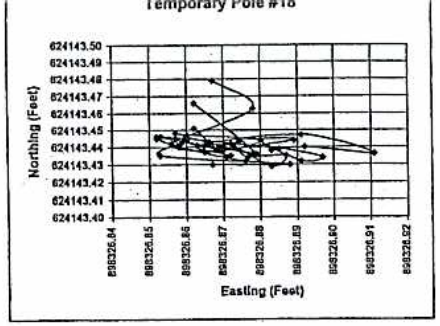


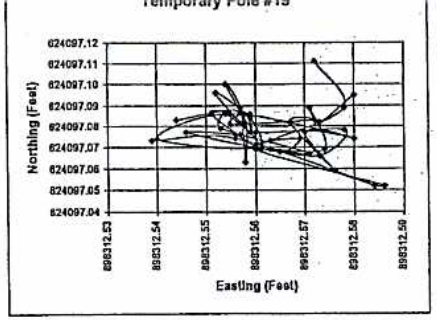


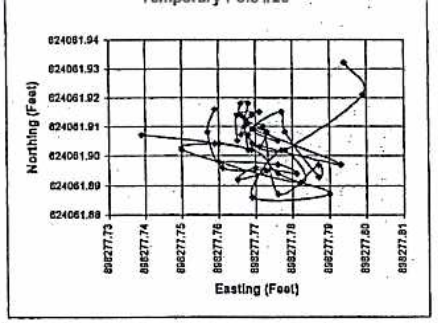


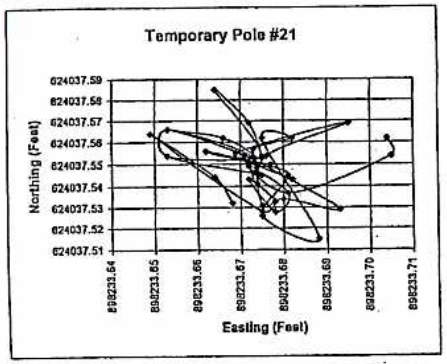


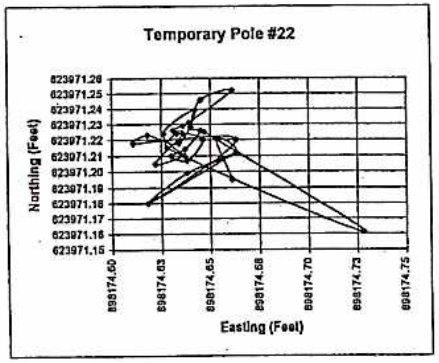


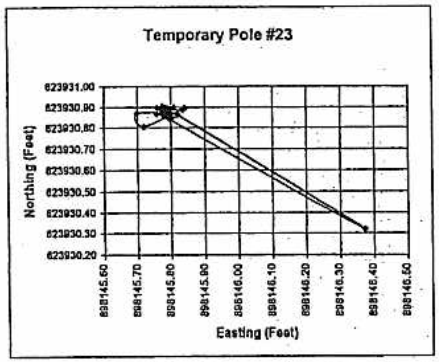


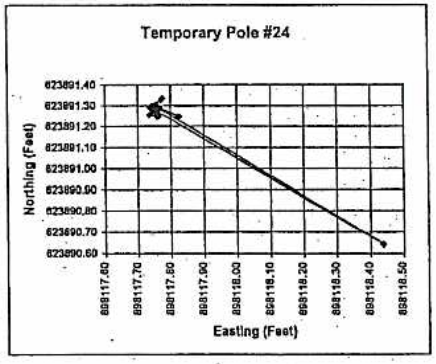


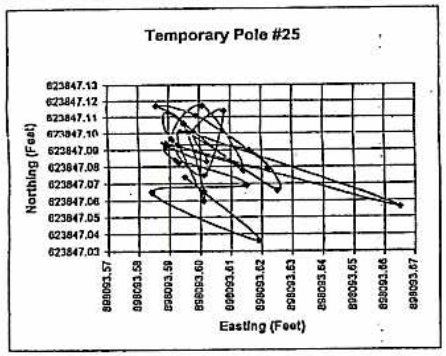


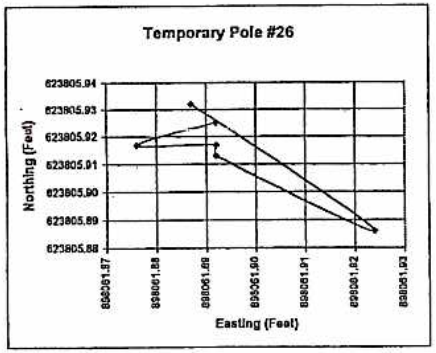


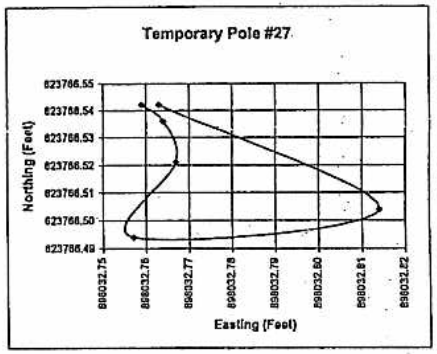


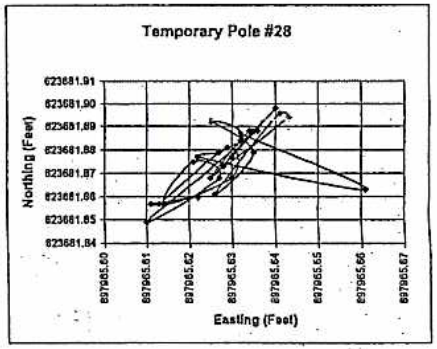


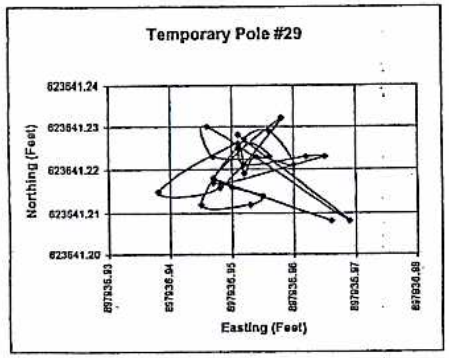


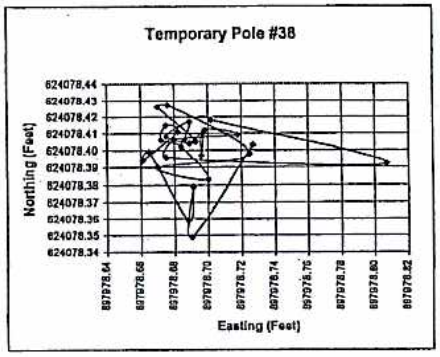


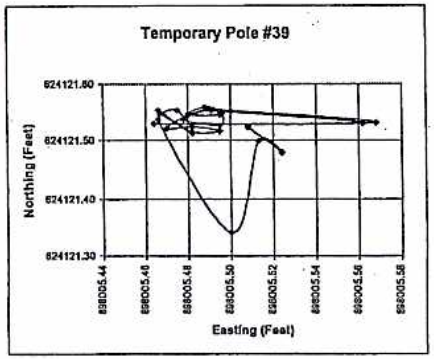


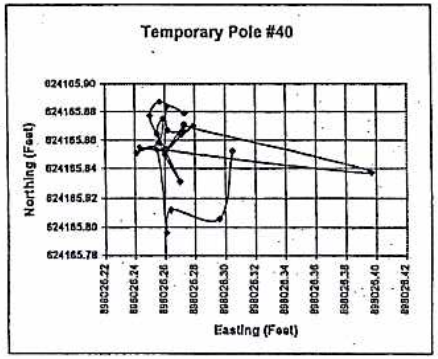






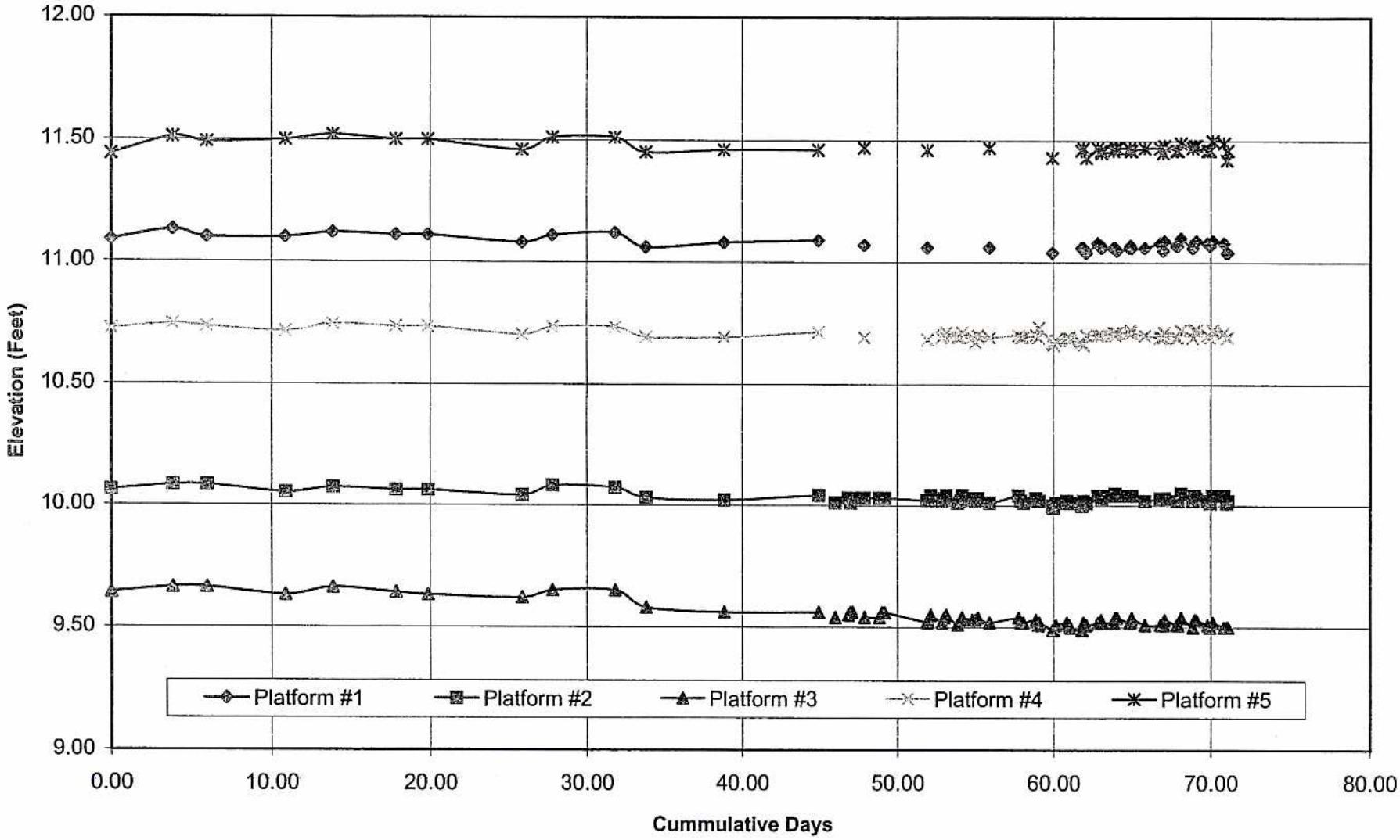






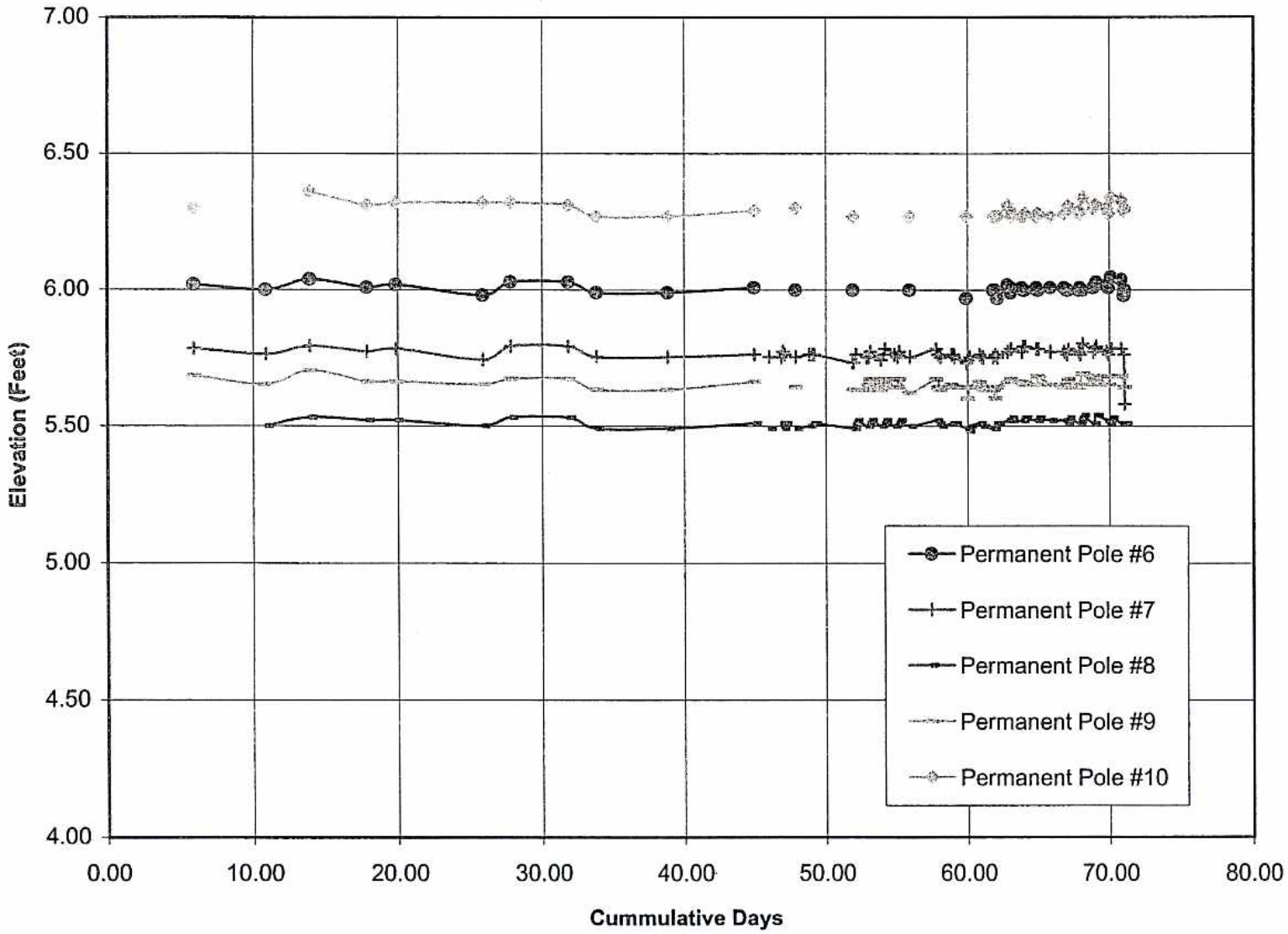
Data Date: 11/17/01

Stratford Army Engine Plant
Heave Monitoring Data
Heave Platform Elevations



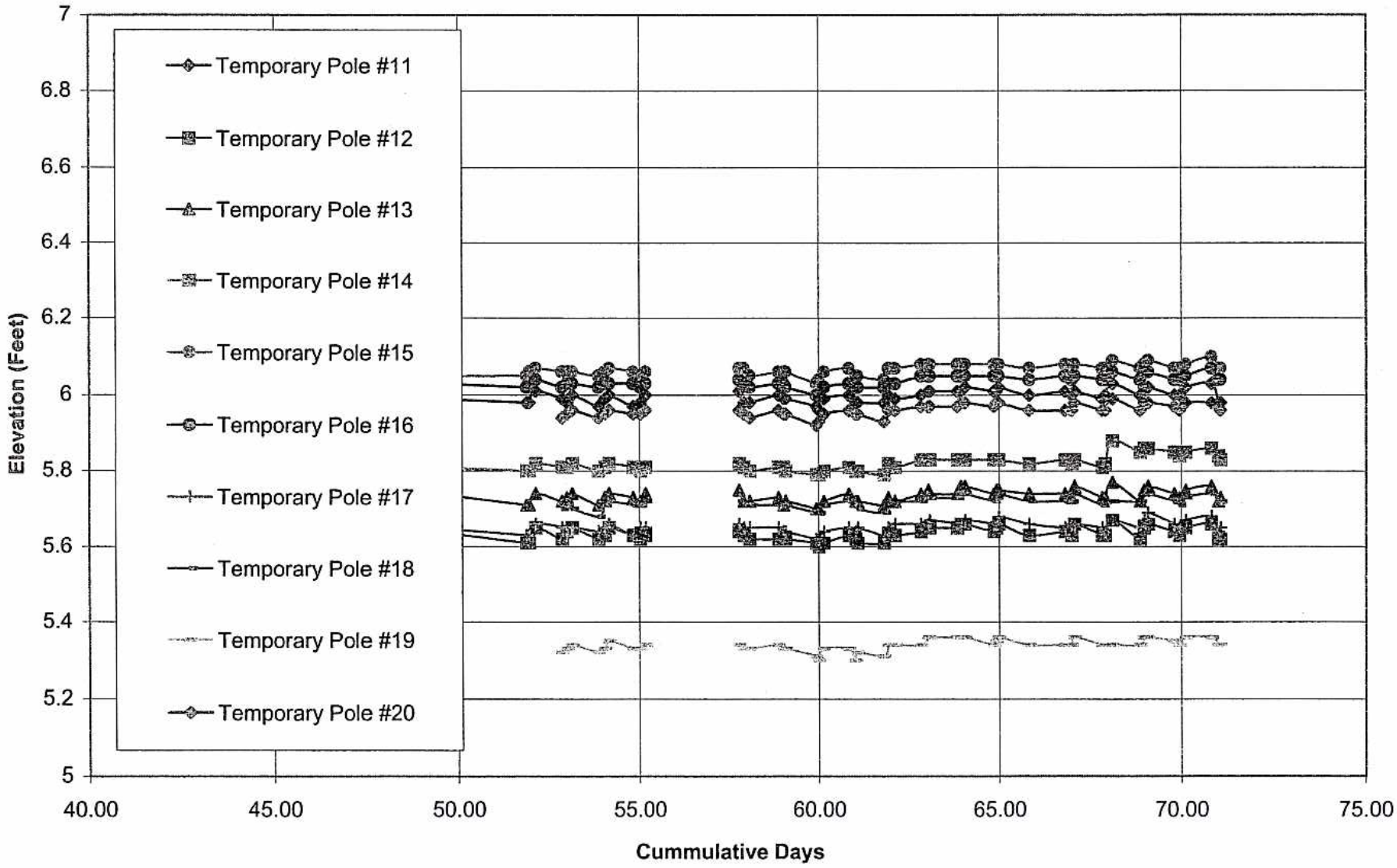
Data Date: 11/17/01

Stratford Army Engine Plant
Heave Monitoring Data
Stationary Heave Pole Elevations



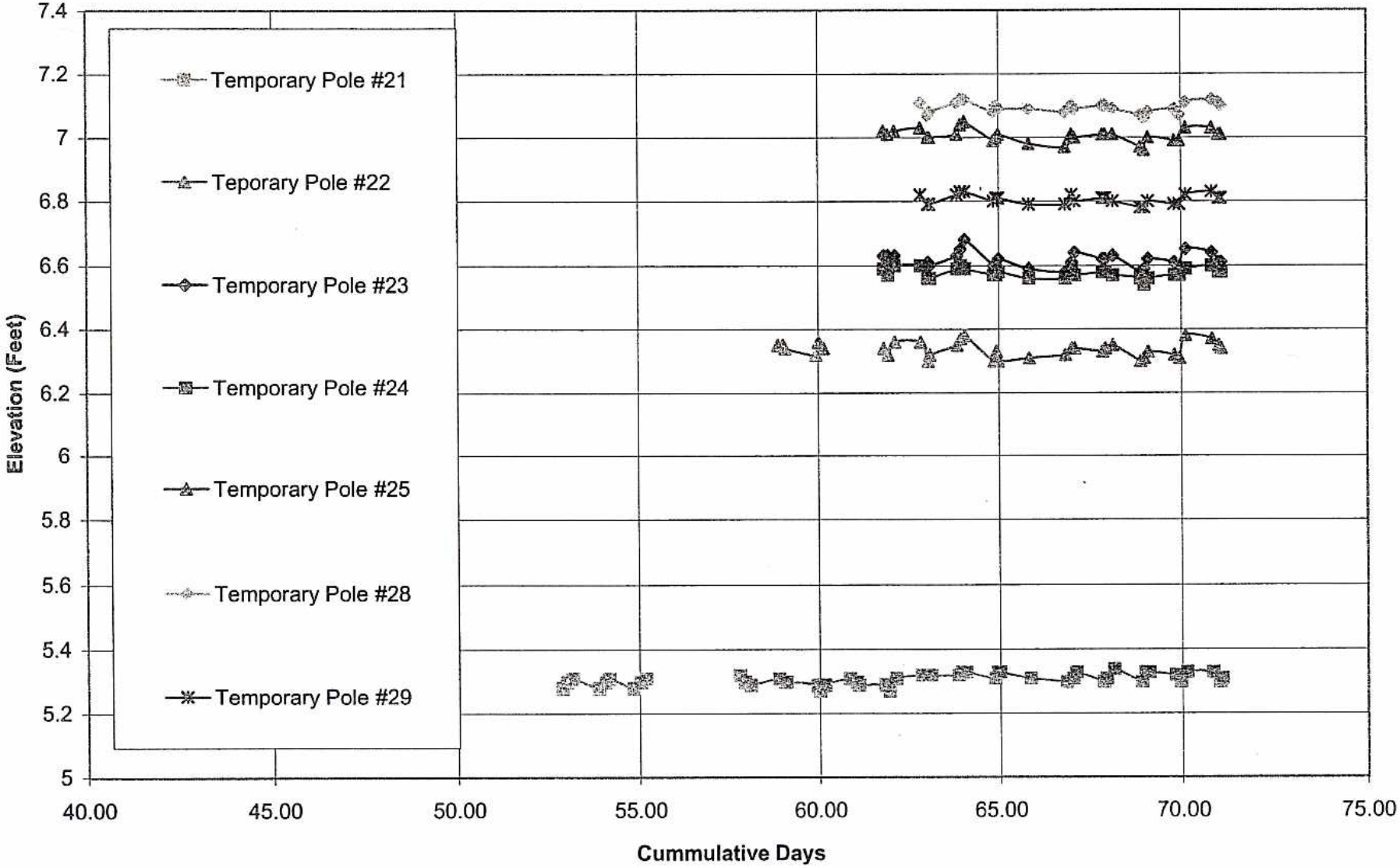
Data Date: 11/17/01

Stratford Army Engine Plant
Heave Monitoring Data
Temporary Heave Pole 11 through 20
Elevations



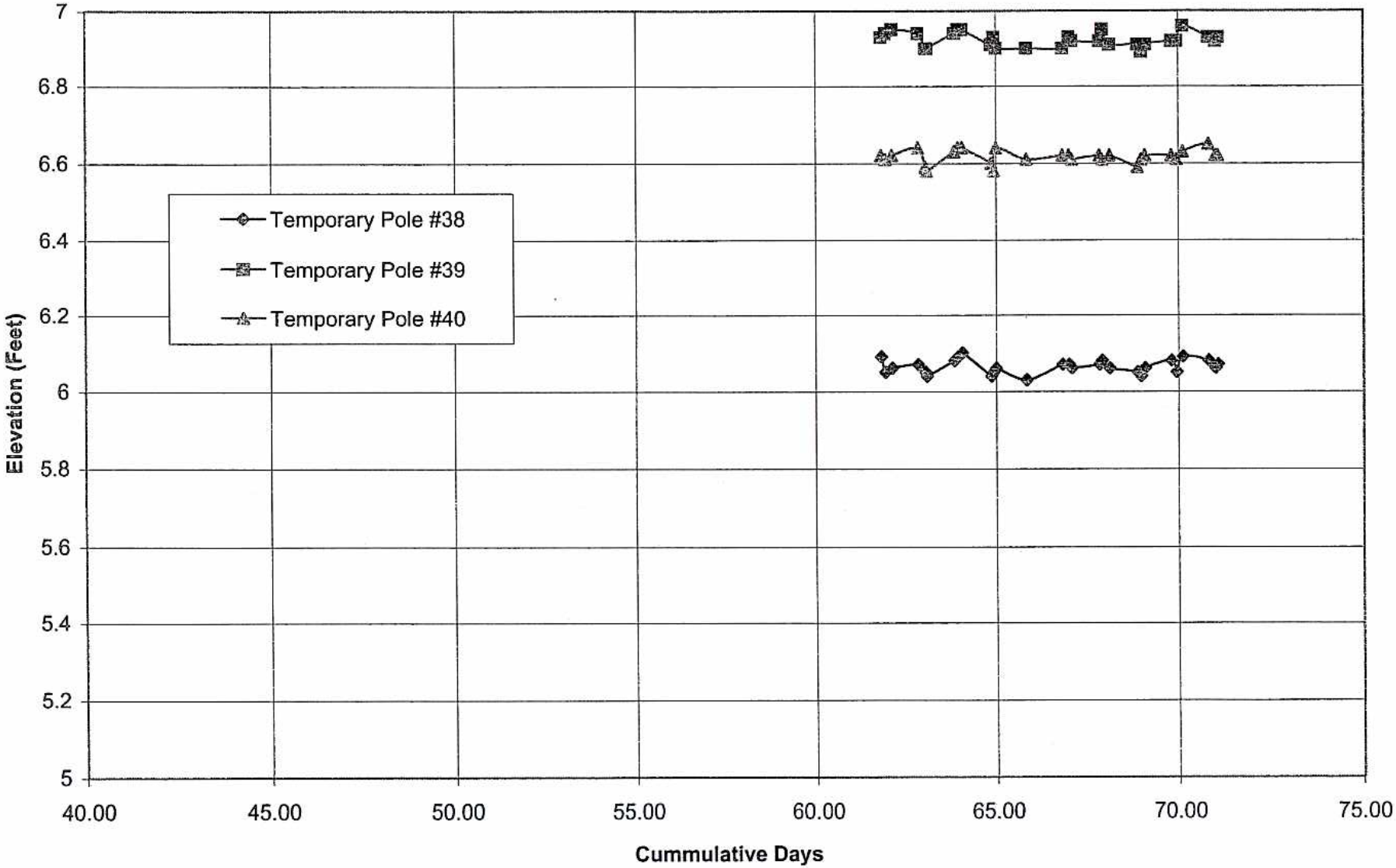
Data Date: 11/17/01

Stratford Army Engine Plant
Heave Monitoring Data
Temporary Heave Pole 21 through 30
Elevations



Data Date: 11/17/01

Stratford Army Engine Plant
Heave Monitoring Data
Temporary Heave Pole 31 through 40
Elevations



Data Date: 11/17/01

APPENDIX H

STATISTICAL ASSESSMENT OF PCB SOIL CONCENTRATIONS

September 27, 2001

Mr. Kenneth Feathers
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, CT 06106

SUBJECT: STATISTICAL ASSESSMENT
PCB SOIL CONCENTRATIONS
CAUSEWAY CONSTRUCTION
STRATFORD ARMY ENGINE PLANT

Dear Mr. Feathers,

Based on telephone conversations with you on September 24 and 26, 2001, Harding ESE has performed a statistical assessment of PCBs detected in Causeway soils at the Stratford Army Engine Plant (SAEP). The objective of the assessment is to determine the need to excavate soil excavation areas EA-7 through EA-10 identified in the Causeway 100% Design (Harding ESE, August 2001).

There are 23 Causeway soil samples that were previously analyzed for PCBs. The individual PCB aroclor results for each sample were summed to arrive at a total PCB concentration for each sample; detection limit values were used for non-detect results. The following table contains the calculated total PCB concentrations in soil for the 23 samples:

EXPLORATION ID	SAMPLE DEPTH (FEET, BGS)	CALCULATED TOTAL PCB CONCENTRATION (mg/kg)
CB-99-01	0-2	0.238
CB-99-02	0-2	4.38
CB-99-03	2-4	0.234
CB-99-04	0-2	0.316
CB-99-05	0-2	0.264
CB-99-07	0-2	1.99
CB-99-08	1-3	0.273
CB-99-09	0-2	0.259
CB-99-11	0-2	0.266
CB-99-12	0-2	0.306
CB-99-13	1-3	0.456
CB-99-14	1-3	0.362
CB-99-15	1-3	0.245
CB-99-16	1-3	0.259
CB-99-17	1-3	0.245

EXPLORATION ID	SAMPLE DEPTH (FEET, BGS)	CALCULATED TOTAL PCB CONCENTRATION (mg/kg)
TP-99-06	6-8	20
TP-99-10	3-5	4.2
TP-99-22	3-5	2.9
TP-99-23	1-3	2.2
TP-99-24	8-10	0.43
TP-DEP-11	0-1	4.12
TP-DEP-12	1-3	0.532
TP-DEP-17	1-3	0.302

Under the CTDEP Remediation Standard Regulations (RSRs), page 8 of 66, Section 22a-133k-2 (b)(3):

"The direct exposure criteria for substances other than PCB do not apply to inaccessible soil at a release area provided that if such inaccessible soil is less than 15 feet below the ground surface an environmental land use restriction is in effect with respect to the subject parcel or to the portion of such parcel containing such release area, which environmental land use restriction ensures that such soils will not be exposed as a result of excavation, demolition or other activities and that any pavement which is necessary to render such soil inaccessible is maintained in good condition unless and until such restriction is released in accordance with said section 22a-133q-1. Unless an alternative criterion has been approved in accordance with subsection 22a-133k-2(d)(7), **inaccessible soil polluted with PCB may be remediated to a concentration of 10 ppm PCB by weight** provided that (A) if such inaccessible soil is located on a parcel which is an other restricted access location as defined in said section 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or (B) if such inaccessible soil is located on a parcel which is an outdoor electrical substation as defined in 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or if a label or notice is visibly placed in the area in accordance with 40 CFR Part 761, to a concentration of 50 ppm PCB by weight."

Under the CTDEP Remediation Standard Regulations, page 16 of 66, Section 22a-133k-2 (e)(1):

"Unless an alternative method for determining compliance with a direct exposure criterion has been approved by the Commissioner in writing, compliance with a direct exposure criterion is achieved when (A) **the ninety-five percent upper confidence level of the arithmetic mean of all sample results of laboratory analyses of soil from the subject release area is equal to or less than such criterion, provided that the results of no single sample exceeds two times the applicable direct exposure criterion** or (B) the results of all laboratory analyses of samples from the subject release area are equal to or less than the applicable direct exposure criterion."

Calculating the 95 % UCL of arithmetic mean of PCB concentrations from the 23 samples:

Arithmetic Mean:	1.947 ppm
t-value for 22 samples:	1.717
Standard Deviation of sample set:	4.186
Number of Samples:	23
95% UCL of Arithmetic Mean =	3.445 ppm

The 95% UCL of the arithmetic mean (3.445 ppm) is less than the 10 ppm criterion specified in RSRs Section 22a-133k-2 (b)(3) and no sample result exceeds two times the criterion. Our interpretation of these data under the CTDEP RSRs is that the DEC is met for PCBs in soils. We are still evaluating compliance with the PMC by analyzing areas EA-8 through EA-10 by SPLP PCBs where PCBs were detected. We will inform you of those results when they become available.

If you have any questions regarding this issue, please feel free to contact myself, or Rod Pendleton, at (207) 775-5401.

Sincerely,

HARDING ESE, INC.
A MACTEC Company

Nelson Walter, P.E.
Project Manager

NW/kaf

cc: Meghan Cassidy (USEPA)
John Burleson (TACOM-SAEP)
Michelle Clemens (NAE)
Champak Shah (NAE)
John-Eric Andersson (Roy F. Weston)

APPENDIX I

DATA VALIDATION SUMMARY REPORT

DATA VALIDATION SUMMARY REPORT
CAUSEWAY CONSTRUCTION
STRATFORD ARMY ENGINE PLANT
January 8, 2002

1.0 INTRODUCTION

The purpose of this report is to summarize data validation activities and actions for soil samples collected during investigations at the Causeway at the Stratford Army Engine Plant. Samples were collected by HLA in September 2001 and analyzed by Severn Trent Services of Shelton, Connecticut. Data validation was completed using USEPA Region I Tier II guidelines (USEPA, 1996; USEPA, 1989). Tier III calculation and raw data checks were completed on 10% of the samples. Results were reported in four delivery groups identified as 7001-2517A, 7001-2517B, 7001-2589A, and 7001-2672A.

1.1 Analytical Methods

With the exception of a subset of soil samples analyzed for PCBs, all samples were extracted using USEPA synthetic precipitation leaching procedure (SPLP) Method 1312. The aqueous leachate samples were subsequently analyzed using the methods listed below. In addition to the SPLP samples, soils were also analyzed for total PCBs.

- Volatile Organic Compounds (VOCs) by Method 8260B
- Semivolatile organic compounds (SVOCs) by Method 8270C
- Polychlorinated Biphenyls (PCBs) by 8082
- Inorganics by 6010B (vanadium and zinc only)

2.0 DATA QUALITY EVALUATION

The majority of the results provided by the laboratory were determined to be usable without qualification. A subset of results has been qualified as estimated J values based on the validation guidance. For some results potential bias have been identified for the reported results. Unless noted below quality control measurements associated with these data sets were within method specifications. A summary of validation actions is provided in the following subsections for each analytical method.

2.1 Inorganics

Reporting

The laboratory reported target analytes detected between the instrument detection limit (IDL) and the quantitation limit with a B qualifier. During validation the B qualifiers were changed to J qualifiers indicating the results are estimated.

Blanks

Zinc was detected in lab blanks associated with samples. The action levels calculated for both the prep blank and TCLP blank were greater than zinc results in samples. Zinc results were qualified non-detect U in all samples. The highest concentration of zinc reported in samples was 42.9 µg/L which is well below applicable standards.

2.2 VOA

The samples were analyzed for the following volatile organic compounds:

- Benzene
- Carbon Tetrachloride
- Chlorobenzene
- Chloroform
- 2-Butanone
- Tetrachloroethene
- Trichloroethene
- Vinyl Chloride
- 1,2-Dichloroethane
- 1,1-Dichloroethene

Blanks

The target compound 2-butanone was reported at a concentration of 3 J µg/L in the lab blanks associated with samples EA-04-S0105 and EA-04-F0200. Low concentrations of 2-butanone in these samples were qualified non-detect U.

2.3 SVOA

Instrument Calibration

The initial calibration percent relative standard deviations (%RSDs) of semivolatile organic compounds were less than the 30% Region I guidelines with the exception of Benzo(ghi)perylene. Results for Benzo (ghi) perylene have been qualified as estimated (J) in all samples.

The Chrysene-d12 internal standard area counts in sample EA-05-F0200 were below criteria. The sample was reanalyzed with a confirmation of low internal standard area counts. The original sample results were reported and the results for Pyrene, Benzo (a) anthracene, and chrysene in the affected sample were qualified as estimated (J).

2.4 PCBs

Second Column Confirmation Reporting

Several results reported for aroclor 1260 (AR1260) were repotted with the percent difference (%D) greater than 25%. Results were reviewed and qualified as estimated (J) for the following samples: EA-03-S0105, EA-03-N0105A-SPLP, and EA-03-E0105-SPLP.

References:

U.S. Environmental Protection Agency (USEPA), 1986. Test Methods for the Evaluation of Solid Waste, SW846. 3rd Edition, 1986.

U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.

U.S. Environmental Protection Agency (USEPA), 1996. "Region 1 EPA-NE Data Validation Guidelines For Evaluating Environmental Analyses"; Quality Assurance Unit Staff; Office of Environmental Measurement and Evaluation; December 1996