# U.S. Army Corps of Engineers

New England Division
Waltham, Massachusetts


## Remedial Action Operable Unit Completion Report

# REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOCs 44 & 52 FORT DEVENS, MASSACHUSETTS


Contract/Purchase Order No.
**DACW33-95-D-0004**

**Delivery Order No. 0001**

# REMEDIATION OF
# BARNUM ROAD MAINTENANCE YARDS
# AOCs 44 & 52
# FORT DEVENS, MASSACHUSETTS

**REMEDIAL ACTION OPERABLE UNIT COMPLETION REPORT**
**Contract No. DACW-33-95-D-0004**
**Delivery Order No. 0001**

Prepared for


**U.S. ARMY CORPS OF ENGINEERS**
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Work Order No. 03886-118-001-2106

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CBR | California Bearing Ratio |
| CDAP | Chemical Data Acquisition Plan |
| CENED | U.S. Army Corps of Engineers, New England Division |
| CPAH | Carcinogenic Polycyclic aromatic hydrocarbons |
| CPM | Critical path method |
| CQCP | Contractor Quality Control Plan |
| CRZ | Contamination reduction zone |
| CY | Cubic yards |
| DEP | Department of Environmental Protection |
| DO | Delivery Order |
| DQO | Data Quality Objectives |
| EPA | U.S. Environmental Protection Agency |
| EZ | Exclusion zone |
| FAR | Federal Acquisition Regulation |
| GC/MS | Gas chromatography/mass spectroscopy |
| LF | inear feet |
| MCP | Massachusetts Contingency Plan |
| MSDS | Material Safety Data Sheet |
| NDIR | Non-Dispersive Infrared |
| NPDES | National Pollutant Discharge Elimination System |
| PPE | Personal Protective Equipment |
| PVC | Polyvinyl chloride |
| QA/QC | Quality Assurance/Quality Control |
| RAM | Release Abatement Measures |
| RCP | Reinforced Concrete Pipe |
| RFP | Request for Proposal |

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| SOS | Scope of Services |
| SSHO | Site Safety and Health Officer |
| SY | Square Yards |
| T&D | Transportation and Disposal |
| TCL | Target Compound List |
| TCLP | Toxic Characteristic Leachate Procedure |
| TPH | Total Petroleum Hydrocarbon |
| TSDF | Transportation, Storage, and Disposal Facility |
| USGS | U.S. Geological Survey |
| UST | Underground Storage Tank |
| VOC | Volatile Organic Compound |
| WBS | Work Breakdown Structure |
| WESTON | Roy F. Weston, Inc. |
| WP | Project Work Plan |

## EXECUTIVE SUMMARY

This report summarizes the remediation activities performed at the Barnum Road Maintenance Yards, AOC's 44 & 52 for Contract No. DACW-33-95-D-0004 at Fort Devens, Massachusetts. The remediation effort described in this report is based on the Administrative Record set forth by the Fort Devens Base Realignment and Closure (BRAC) Environmental Office, Building P12, Fort Devens, Massachusetts as part of an effort to close the base by July 1997. This project, which is the subject of this Remedial Action Operable Unit Completion Report, involved excavation and sampling of over 30,000 cy of surface soils from the top 2 feet of surface soils from within the 7.8 acre Maintenance Yard Facility to segregate and treat site soils exceeding the cleanup levels for cPAH and TPH contamination via on-site asphalt batching and to backfill and compact both the clean material and the asphalt batched material as a sub-base material prior to the placement of 4 inches of bituminous pavement. A total of 3 Hot Spot areas were excavated below the 2 foot surface soil depths to delineate and batch contaminated soil at both the UST overexcavated area and at the mogas spill area. In addition, a drainage system was installed throughout the Maintenance Yards area to collect surface stormwater. A Detention pond was constructed ahead of the outfall to store accumulated rainfall during heavy storms. Also an oil/water separator was installed along the drain line. The following items were performed during this remediation effort:

- Excavation of 30,000 cy of surface soils (top two feet across the site)
- Excavation of three Hot Spot areas
- Stockpiling of soils for sampling and analysis
- Cold mixing asphalt batching 11,800 cy of soils exceeding site cleanup levels of 7ppm of carcinogenic polynuclear aromatic hydrocarbons (CPAHs) and 500 ppm total petroleum hydrocarbon compounds (TPHC)
- Backfilling excavations with uncontaminated stockpiled soil
- Applying the asphalt batched material as a pavement subbase
- Installing a stormwater collection system, detention pond, and oil/water separator
- Constructing a pavement wearing course for vehicle parking

A complete summary of the work that was performed including methodologies used for work activities, a discussion of the analytical program, special tasks performed and documented, operation and maintenance requirements, recommendations, and conclusions were prepared and are contained in this report.

## 1.0 INTRODUCTION

This Remedial Action Operable Unit Completion Report summarizes the activities performed by Roy F. Weston, Inc.(WESTON®) under Contract No. DACW33-95-D-0004 as outlined in the Scope of Services (SOS, ABB-ES and Stone & Webster, 1995) described herein for the Barnum Road Maintenance Yards, Fort Devens, MA Delivery Order (DO) NO. 0004. The project involved excavation of contaminated material within the Maintenance Yards, batching the contaminated site soils with emulsifying agent, installing drainage, constructing a detention pond, backfilling, and compacting clean subgrade, applying asphalt batched material, and paving the entire surface area.

### 1.1 Site Description

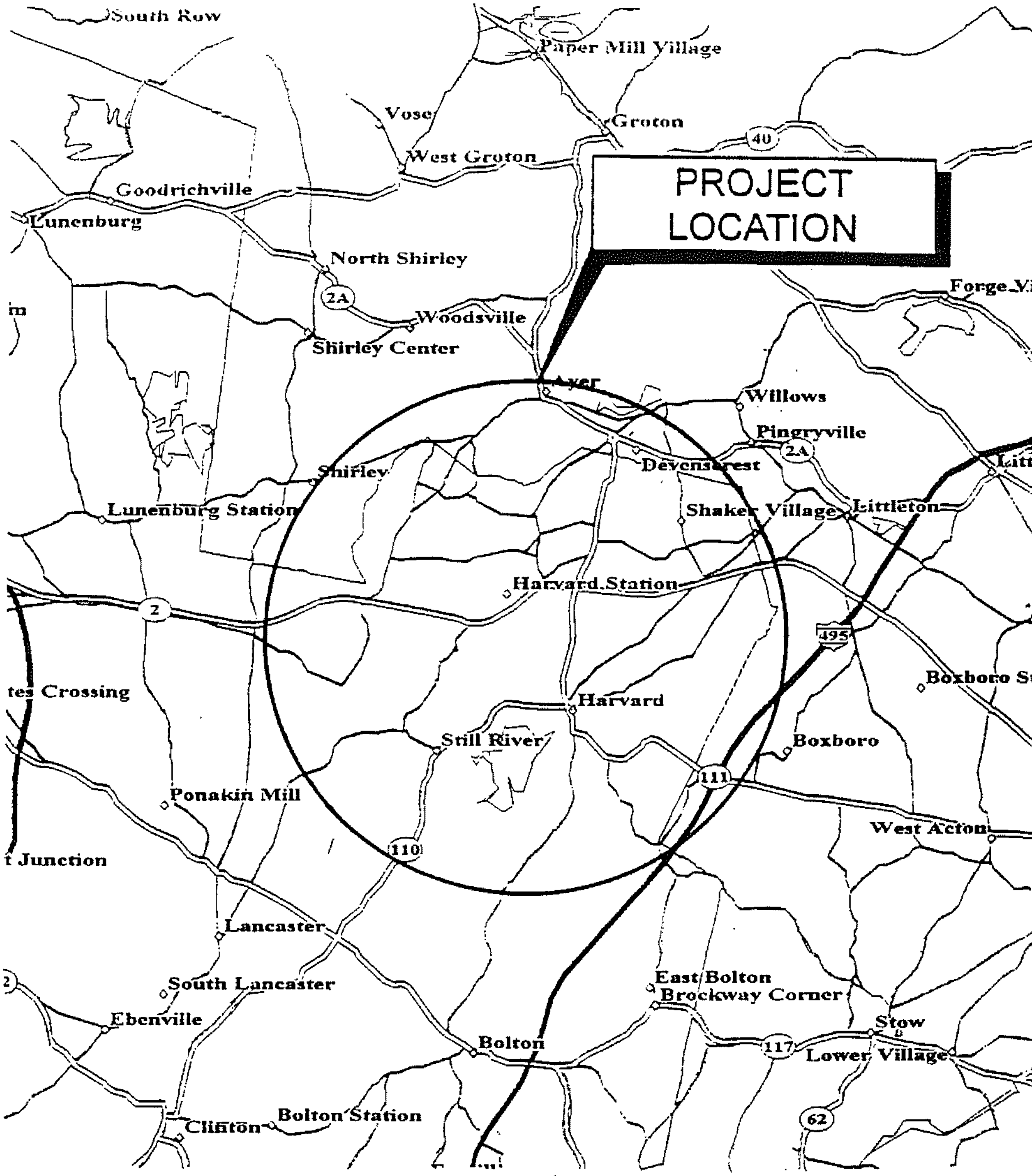
Fort Devens is located in the towns of Ayer and Shirley (Middlesex County) and Harvard and Lancaster (Worcester County), approximately 35 miles northwest of Boston, MA as shown in Figure 1-1. It lies within the Ayer, Shirley, and Clinton quadrangle maps prepared by the United States Geological Survey (USGS) as shown in Figure 1-2. The installation occupies approximately 9,260 acres. Over 6,000 acres at Fort Devens are used for training and military maneuvers, and over 3,000 acres are developed housing, buildings, and other facilities.

### 1.2 Site Background

Fort Devens is a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) National Priorities List (NPL) site. The Barnum Road Maintenance Yards were combined into a single operable unit that is undergoing environmental restoration under CERCLA as a result of petroleum contaminated soil. The Yards are located in the northeast corner of the Main Post approximately one mile southwest of the Town of Ayer route 2A and route 110 intersection. Property owned by Boston and Maine Railroad lies to the west of the Maintenance Yards within the Reservation Boundary as shown in Figure 1-3.

The total area of the Barnum Road Maintenance Yards is approximately 7.8 acres. The Barnum Road Maintenance Yards were initially divided into four individually fenced Yards; the TDA Maintenance Yard, Cannibalization Yard, K-Yard, and RTS Yard as shown in Figure 1-4. AOC 44 is known as the Cannibalization Yard. It is an area where vehicles were stored before being dismantled for usable parts. AOC 52 is a maintenance yard where vehicles were stored while awaiting repairs. It was previously known as the TDA Maintenance Yard. Northwest of the Cannibalization Yard is a separately fenced vehicle storage yard known as the RTS Yard. An area that is fenced southeast of the main portion of the TDA Maintenance yard is known as the K-Yard. All four of these Yards have a long and continuing history of vehicle storage and possible crankcase releases and have been combined as one site identified as the Maintenance Yards. The only known significant recorded vehicle release was an estimated 20 gallons of "Mogas" (motor vehicle gasoline) and hydraulic fluid released near the center of the Cannibalization Yard in 1985.

WESTON
MANAGERS DESIGNERS/CONSULTANTS




SCALE: 1" = 2 Mi (APPROX.)

SOURCE: ABB ENVIRONMENTAL SERVICES

| DEPARTMENT OF THE ARMY<br>NEW ENGLAND DIVISION<br>CORPS OF ENGINEERS<br>WALTHAM, MASS | FORT DEVENS, MASSACHUSETTS<br>REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS<br><br>LOCATION MAP |
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FIG. 1-1

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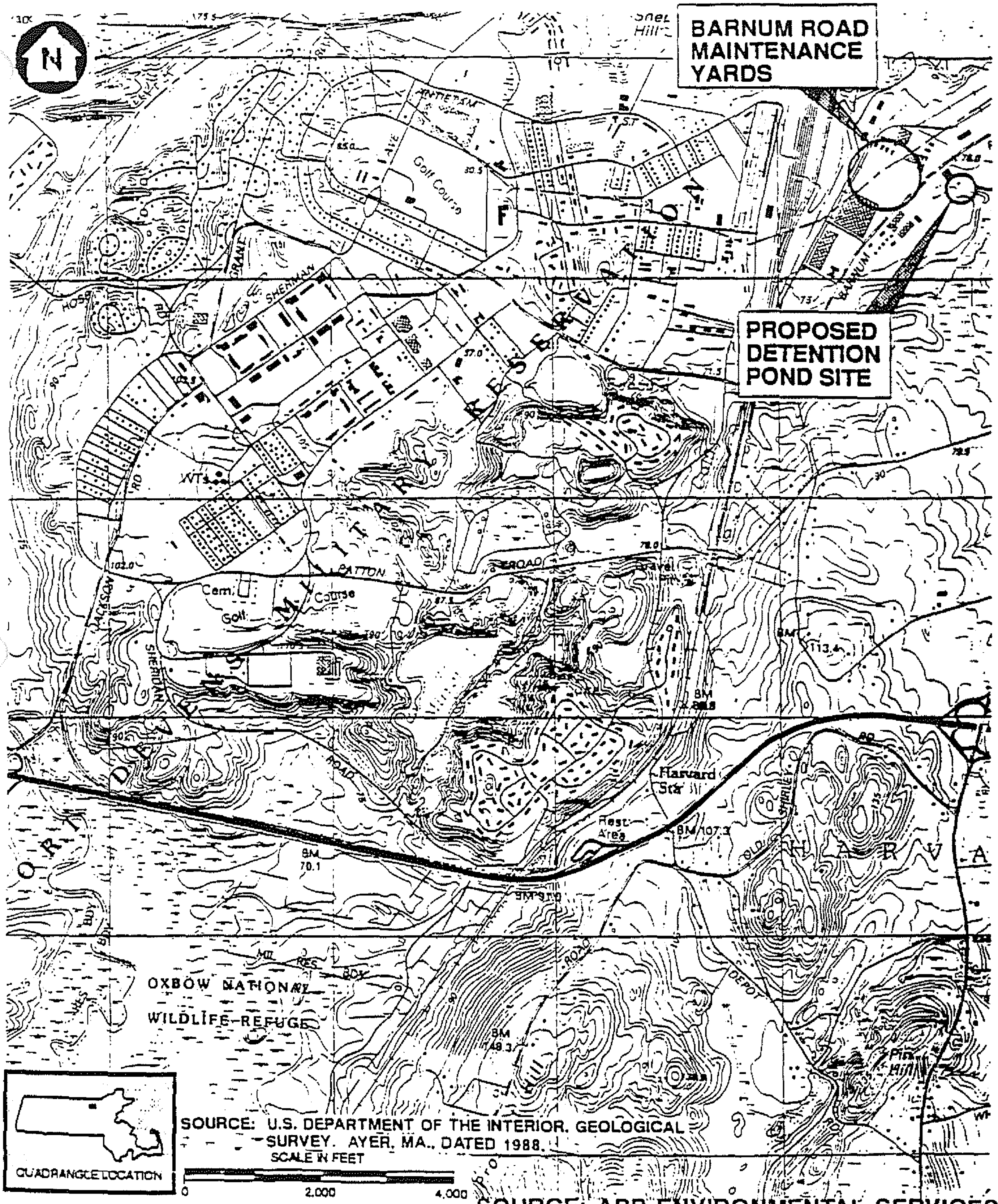


SOURCE: ABB ENVIRONMENTAL SERVICES

| DEPARTMENT OF THE ARMY<br>NEW ENGLAND DIVISION<br>CORPS OF ENGINEERS<br>WALTHAM, MASS | FORT DEVENS, MASSACHUSETTS<br>REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS<br><br>VICINITY MAP |
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FIG. 1-2

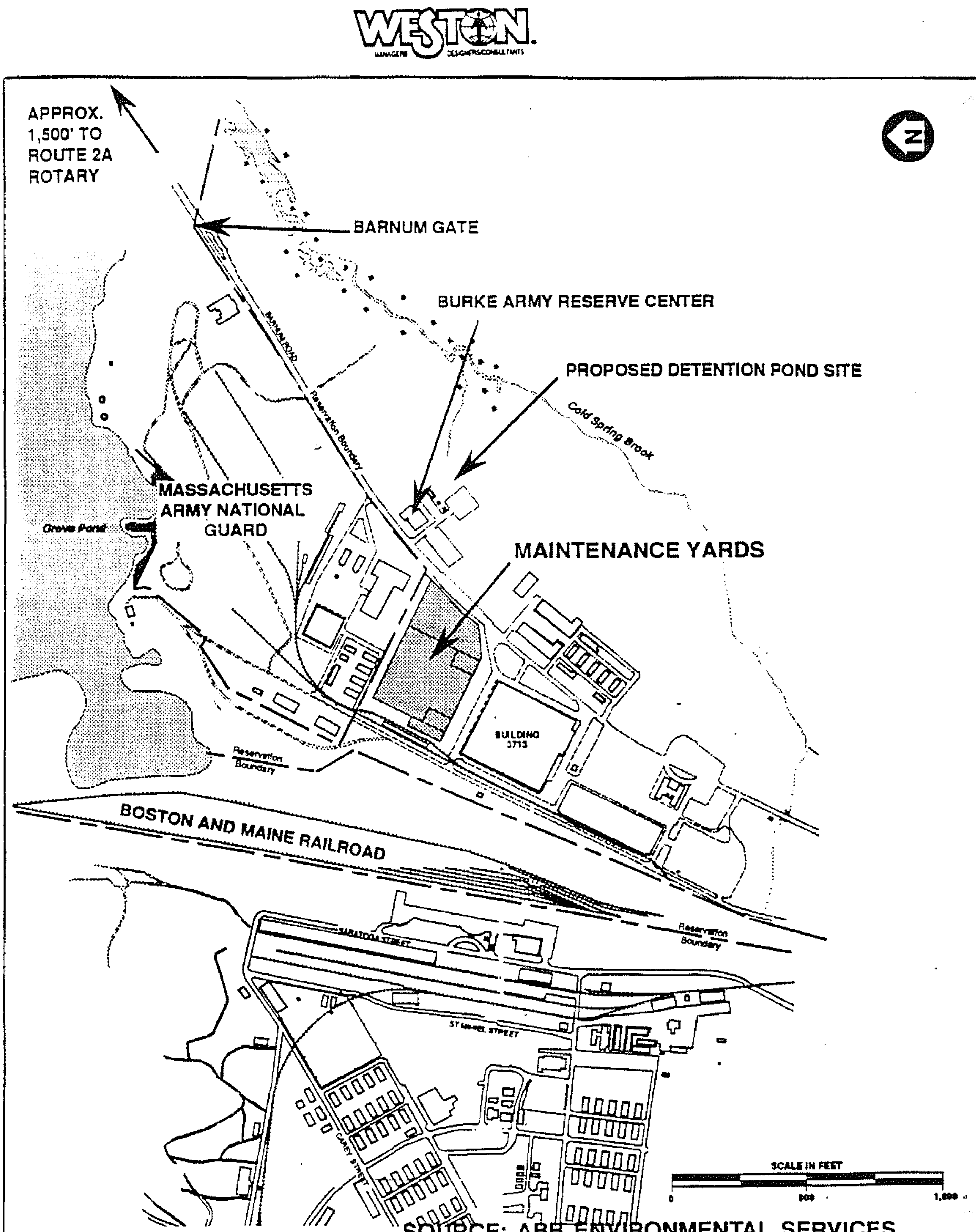


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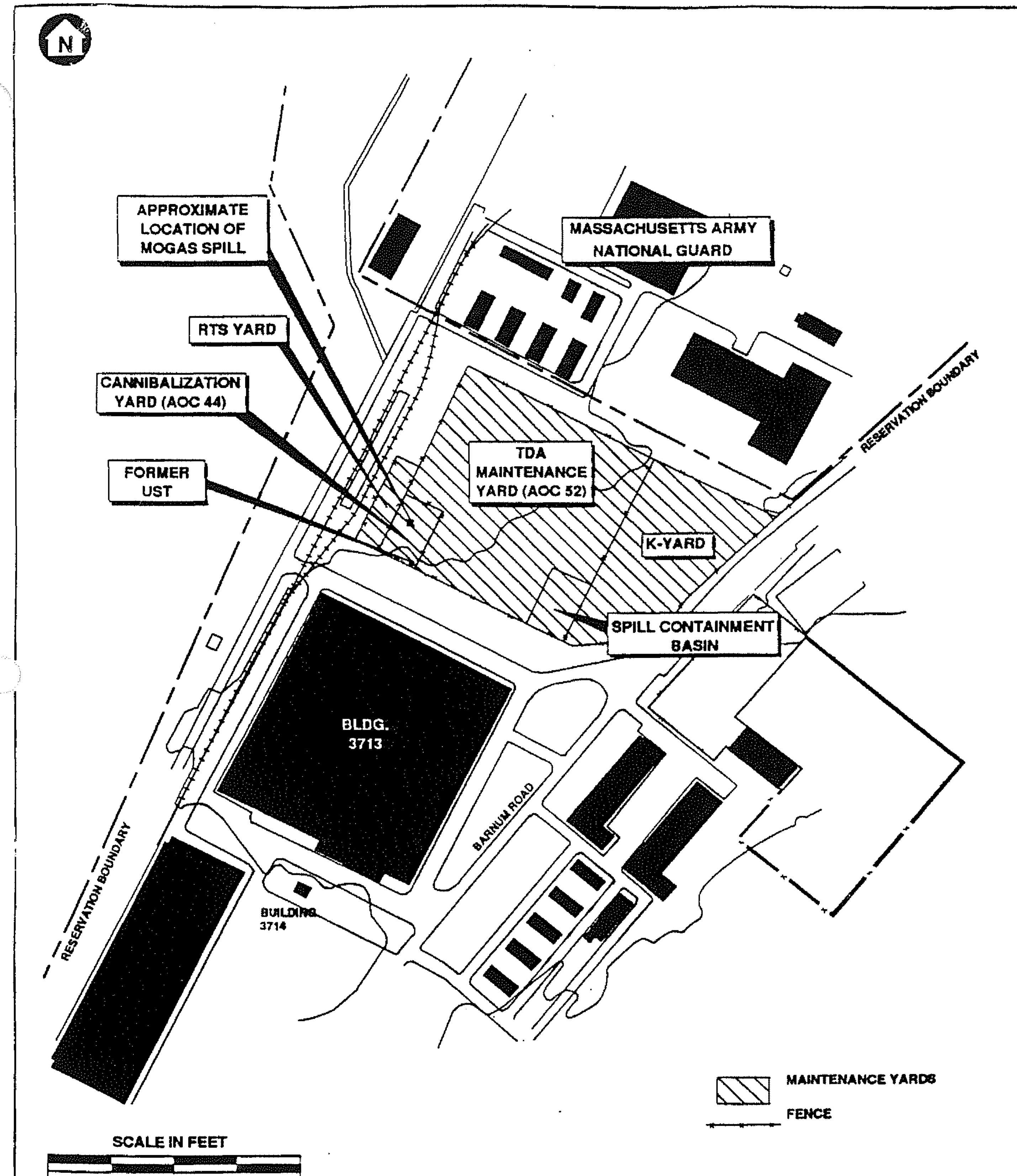
FIG. 1-3

WESTON MANAGERS DESIGNERS/CONSULTANTS




SOURCE: ABB ENVIRONMENTAL SERVICES

| DEPARTMENT OF THE ARMY<br>NEW ENGLAND DIVISION<br>CORPS OF ENGINEERS<br>WALTHAM, MASS | FORT DEVENS, MASSACHUSETTS<br>REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS<br><br>SITE MAP |
|---|---|

7147-00 (05)

FIG. 1-4

A 1,000-gallon underground waste oil storage tank was located in the Cannibalization Yard until its removal in May 1992.

Contamination in the Yards consisted of organic pollutants commonly associated with used motor oil; carcinogenic polynuclear aromatic hydrocarbons(cPAHs) are located in the surface soil (top two feet) at the site. Additionally, contaminants were detected in deeper soil around the former waste oil storage tank and in the vicinity of the reported Mogas spill (Hot Spot areas). Approximate depth to groundwater is 26-28 feet below ground surface.

### 1.2.1 Discussion of Site Investigations

The Army conducted a series of field investigations during 1992 and 1993. Site investigation and feasibility study reports were written in 1993 detailing the investigations performed, the nature and extent of contamination found at the Maintenance Yards, and the potential health risks associated with the site. In general, contamination at the Maintenance Yards consisted of pollutants commonly associated with used motor oil. Contamination creating a potential health risk were located in the surface soil (top two feet) at the site. Additionally, contaminants were detected in deeper soils around the former waste oil storage tanks and in the vicinity of the reported Mogas Spill in the Cannibalization Yard.

The Army evaluated alternatives set forth in the "Final Feasibility Study" for the remediation of the Maintenance Yards using criteria developed by the United States Environmental Protection Agency (USEPA).

Details of the preferred alternative were issued to the public on May 16, 1994 in the Fact Sheet and Proposed Plan. On May 24, 1994, the Army held an informational meeting at Fort Devens to discuss the results of the field investigations and to present the Army's Proposed Plan. The Army held a 30-day public comment period from May 25 to June 24, 1994 to accept public comments on the alternatives presented in the Feasibility Study and the Proposed Plan. A formal public meeting was held by the Army on June 15, 1994 at Fort Devens to accept any verbal comments on the preferred alternative and the Record of Decision was signed on 21 March 1995.

The method chosen in the Feasibility Study utilized treatment as a principal element to reduce the toxicity, mobility, or volume of hazardous substances. In addition, the method utilizes permanent solutions and innovative treatment technologies to perform the remediation. A Work Plan prepared by WESTON was submitted to CENED on June 20, 1995 to identify the technical approach for satisfying the selected remedy for the "Remediation of Barnum Road Maintenance Yards". This report documents completion of the selected remedy.

## 1.3 Project Objectives

The objective of this project was to establish an effective and appropriate plan for the Remediation of the Barnum Road Maintenance Yards. More specifically, to remediate on-site soil contaminants to acceptable site cleanup levels of 500 ppm for TPH and 7 ppm for cPAH. To achieve this objective, excavation and sampling of surface soils from the top 2' of the 7.8 acre Maintenance Yards as well from three on-site Hot Spot areas were necessary to identify, segregate, and treat soils exceeding the TPH and cPAH contamination levels mentioned above. Treatment for contaminated soils was cold mix asphalt batching and the application of the batched products to the surface of the site. Uncontaminated soils were used for backfilling excavation.

The objective of this report is to document operable unit completion for the Remediation of the Barnum Road Maintenance Yards while providing a detailed summary of the remedial action work program that was performed between August 1995 and April 1996. This report was developed to satisfy the requirements set forth in the specifications by CENED for Final Project Closeout activities and the close out procedures for National Priorities List Sites, EPA/540/R-95/062, August 1995. This report summarizes the technical methods used while performing excavation, stockpiling, batching, drainage installation, paving, and detention pond construction. Tasks covered in this plan include mobilization, site preparation, delineation of contaminated areas, excavation and field screening of surface soils containing both cPAH and TPH contaminated soil, excavation of Hot Spot areas, asphalt batching, backfilling and compaction of material, pavement installation, storm water drainage installation, and construction of the detention pond.

All project data for material handling, sampling, and quality control are contained in the attached appendices to this report. In addition, the Health and Safety Phase out Report and Final Contract Drawings are also provided.

## 2.0 MOBILIZE/CONSTRUCTION SUPPORT AND MANAGEMENT

### 2.1 Mobilizing Construction Equipment and Facilities

WESTON's temporary facilities were established in the support zone which included the set-up of a site office trailer, a staging area at the containment pad, decontamination facilities (personnel and equipment), and sanitary facilities. Temporary electrical installation was provided to the field trailer throughout the project. Webster Engineering set-up facilities concurrent with WESTON and utilized the same office trailer. Construction equipment was mobilized on-site in a phased manner as required, to support the field work. In addition, a project office was established at building 1611 Antietam Street to provide project management and other administrative support.

#### 2.1.1 Work Zones and Support Areas

Site controls for the baseline area were established by Bartlett Engineering, Co., to delineate project boundaries, maintain line and grade and to establish a grid system as shown in the Work Plan. The WESTON SSHO set-up work zones prior to personnel access into the Maintenance Yards. These zones included areas for placement of a storage trailer, equipment staging, and access ways.

To prevent both exposure to unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas and personal protective equipment requirements within those areas were clearly identified prior to construction activities. Signs were posted at gates, access ways and at intervals along the perimeter barbed wire chain link fence which declared the area as hazardous. Signs were also erected indicating "authorized entry only" within the Maintenance Yards during the remediation. WESTON designated work areas or zones, as suggested in the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH/OSHA/USCG/EPA, November 1985. The work area was divided into the following three zones:

1. Exclusion zone (EZ).
2. Contamination reduction zone (CRZ).
3. Support zone.

These are shown on Figure 2-1.

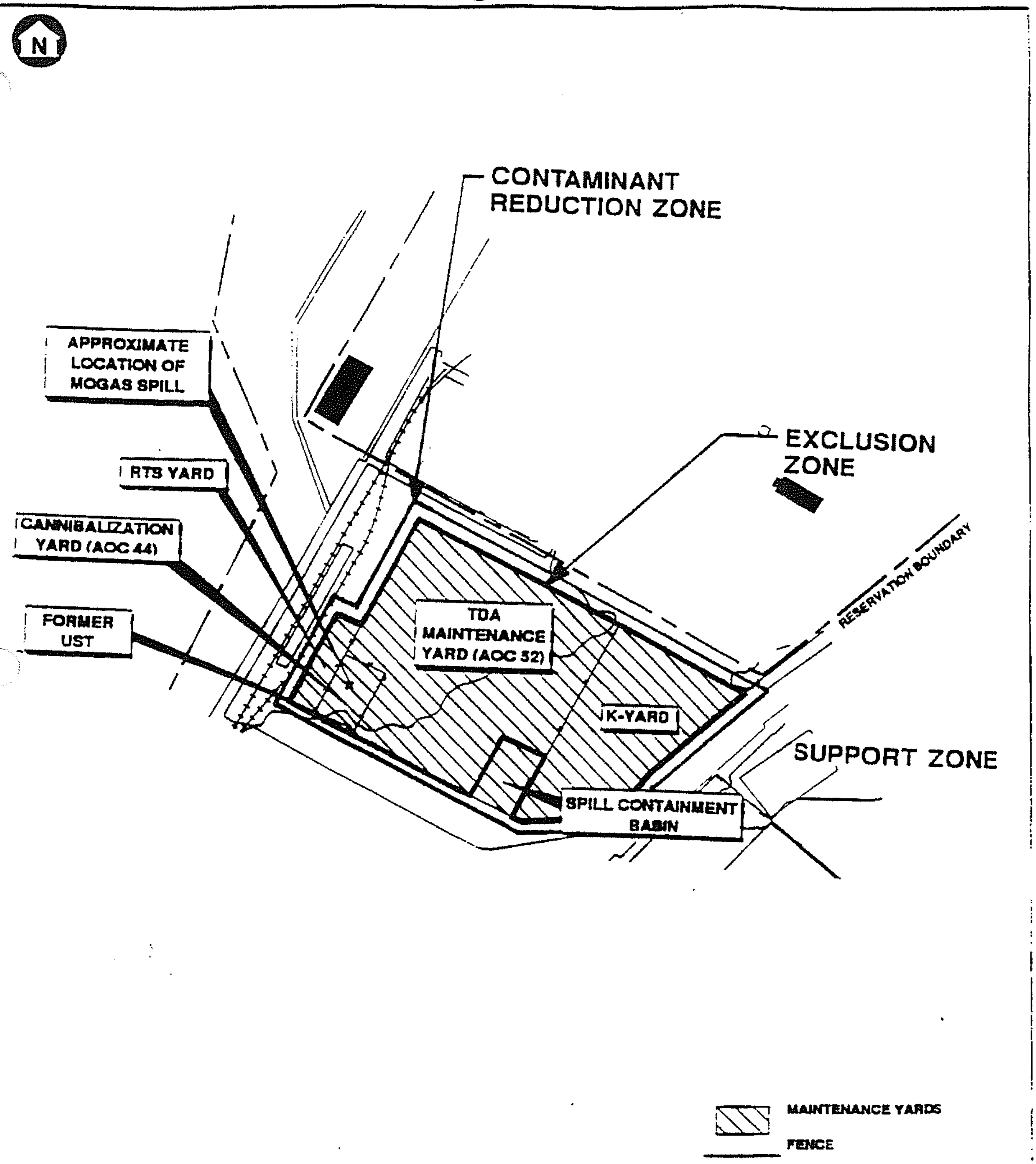
## 2.2 Project Tracking

Activities performed under the SOW for the Barnum Road Maintenance Yards Remediation were inspected and documented by WESTON. Quality Control inspections were performed to maintain both CENED specification requirements and WESTON standards. Preconstruction tasks included the following: review of the WP, CDAP, SSHP, CQCP, coordination events pertinent to the SOW with WESTON staff at the job opening meeting following the NTP, attending a pre-construction meeting between CENED, WESTON, and Webster, and a pre-construction meeting with each subcontractor to review mobilization and specific SOW task requirements.

Other field measures included; coordination of mobilization events with all subcontractors/vendors during project startup, full time supervision of sitework and subcontractors, daily inspections of field activities, evaluation and review of all subcontractor daily reports, weekly meetings with subcontractors, and submittal review and evaluation. A task tracking report and cost/schedule was maintained weekly and reviewed with CENED (See Appendix A and B). Inspection reports were completed daily and preliminary, follow-up and completion Quality Control reports were completed for the definable features of work.

## 2.3 Project Schedule

The critical path method (CPM) Project Schedule was submitted to CENED on a weekly basis and was also included in the monthly project status reports. "Primavera" Systems software was used for the schedule, which was organized by the tasks outlined in the WBS. The activities in the schedule display the task description, duration, early start dates and early finish dates. Actual start and finish dates were delineated by the suffix "A" as shown in the final project schedule contained in Appendix B of this report.




SOURCE: ABB ENVIRONMENTAL SERVICES

| DEPARTMENT OF THE ARMY<br>NEW ENGLAND DIVISION<br>CORPS OF ENGINEERS<br>WALTHAM, MASS | FORT DEVENS, MASSACHUSETTS<br>REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS<br>DESIGNATION OF WORK ZONES |
|---|---|

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FIG. 2-1

All project support and site activities were tracked on a daily basis. The schedule was updated weekly which allowed WESTON to observe the actual progress of work as compared to the target schedule and milestone completion dates. This information facilitated the coordination of support tasks, project staffing, subcontractors and shop drawings to maintain the project completion date.

### 2.4 Monthly Status Report

A monthly status report was prepared by WESTON and submitted each month to CENED, EPA, MADEP and Ft. Devens, for the previous months activity. The status report included the project name, report date, name, title, telephone number, telefax number, addresses, and company name of the person completing the report. A summary of the work performed for the project during the reporting period for both on and off-site activity items included the following:

- A summary of any deviations from the scope of work

- Discussions, recommendations, and resolutions of all problems

- Scheduling information including percent of field/project work complete to date and delays, if any

- Notification of personnel changes

- Regulatory agency correspondence

- Computed material handling information. This included the number of samples taken, confirmation results from off-site laboratory and stockpiled material quantities

- Current and cumulative quantity of total asphalt batched material for the reporting period

- Weekly cost summary

### 2.5 Management and Meetings

The WESTON field team was organized to optimize the execution of each phase of the field operations. The crew consisted of a Site Manager, Site Safety and Health Officer (SSHO), a QC Site System Manager, and general construction personnel, as needed. WESTON designated certain qualified individuals to perform dual roles to maximize operation efficiency.

A sitewalk was held at the Barnum Road Maintenance Yards with CENED on July 28, 1995 prior to mobilization. A Job Opening meeting was held on Aug. 2, 1995, to discuss specific project issues in order to provide and maintain an effective program for the Fort Devens Barnum Road Maintenance Yard Project. Topics included project objectives, safety, task reporting procedures, communication, files, purchasing, project and team roles, costs and budgets, and schedule.

A Preconstruction Meeting was held on Aug. 3, 1995 to review the proposed project execution and coordination. WESTON, CENED, Webster Engineering, and Maintenance Yard staff attended. Items deleted from the SOW include fence removal along the perimeter of the Maintenance Yards, and temporary security fencing. It was reiterated that WESTON was responsible for site access and control. It was also determined that the site will be used by the Maintenance Yards staff following completion of the remediation effort, therefore perimeter fencing will stay for security along the Maintenance Yard limits. WESTON coordinated weekly performance meetings with CENED Personnel to maintain project schedule, communication and coordination. A Project Contact List (See Appendix C) was maintained by WESTON. Performance meetings were held regularly to document and identify any potential problem areas. Conversation records with CENED were prepared and maintained on file. (See Appendix D - Conversation Records)

## 3.0 MONITORING

### 3.1 Air Monitoring

An exposure monitoring program was implemented to identify and quantify levels of potential airborne hazardous substances and the associated safety and health hazards during excavation, trenching and confined space entry activities. The monitoring provided data to assist in determining the proper selection of engineering controls, working controls and personal protective equipment for site personnel within the Maintenance Yards. The program included baseline monitoring and daily monitoring. Refer to the Health and Safety Phase out Report contained in Appendix E for a summary of the monitoring activities.

Confined space entry and real-time air monitoring were performed during site operations inside manholes and drainage structures. Confined space entry monitoring was performed prior to, during, and following these entries for 1) Oxygen, 2) Lower Explosive Limit, and 3) Organics. Real time monitoring for dust, TPH and dust surrogate for cPAHs were performed in the workers' breathing zone. Perimeter monitoring was performed using real-time field monitoring instruments.

### 3.2 Monitoring Wells

Monitoring wells located within the limits of the Maintenance Yards were either modified, abandoned, or removed as designated in the contract drawings and specifications. N.H. Boring Co. performed this work. Three existing monitoring wells (G3M-92-04X, G3M-93-10X, and G3M-93-11X) were lowered from their existing elevations to flush mount elevations. Two soil vent wells (44B-93-09X and 44B-93-10X) were abandoned in place, and the remaining two wells (44B-93-07X and 44B-93-08X) were removed. Detailed well modifications, abandonment, and removal logs are presented in Appendix F.

### 3.2.1 Remove Soil Vent Wells

Two soil vent wells located within the Cannibalization Yard were removed. Venting wells (44B-93-07X and 44B-93-08X) were removed by pulling the well materials from the ground. In each case, soil from the upper 2 feet from around the well casing was excavated and stockpiled in order allow the drilling apparatus access for removing the well casing. Sections of 4 inch Polyvinyl Chloride (PVC) pipe were filled with grout and removed simultaneously. The hole was capped off with grout following removal of all well casings and debris. Written records documenting the abandonment of the soil venting wells were logged and are provided in this report.

### 3.2.2 Install Flush Mount Casings

Three existing groundwater monitoring wells (G3M-92-04X, G3M-93-10X, and G3M-93-11X) that were located within the Maintenance Yards were converted to flush mount wells. All three wells were constructed of 4-inch-diameter PVC pipe and fitted with 6-inch-diameter steel standpipe protectors. Bollards that protected the wells from vehicles within the Maintenance Yard were removed since all finished monitoring wells are now flush mounted. At each location, the concrete surface seal was broken up in order to provide excavation access for the equipment. The upper 3.5 to 4.0 feet of soil was excavated from around the wells to the bottom of the coupling. All excavated material was stockpiled with the soil removed from the surface excavation of the Maintenance Yards for asphalt batching. The PVC well casings were sawcut at the proper depth (approximately 3.5') and a PVC riser section was installed. The casing was secured with grout at the coupling, and backfilled with a sand drainage layer. Road boxes were set in place with a 2′ x 2′ x 6″ thick concrete pad.

### 3.2.3 Abandon Soil Vent Wells

Two soil venting wells located within the Cannibalization Yard were abandoned. Two of the soil venting wells (44B-93-09X and 44B-93-10X) were decommissioned in-place by filling them with grout. Both casings were excavated by hand to 2 feet below existing ground, then cut and plugged with grout to grade. Additional grout was placed following a 24 hour period to smooth out settlement depression.

Written records documenting the abandonment of the soil venting wells were kept by site personnel and are provided in this report in Appendix F.

## 4.0 SITEWORK

### 4.1 Clearing and Grubbing

Following mobilization on August 8, 1995, 900 linear feet of interior fencing was removed from within the Maintenance Yard. The interior fencing which separated the TDA Maintenance Yard, Cannibalization Yard, K-Yard, and RTS Yard (Cannibalization Yard) was removed using a 235 Excavator. All fence posts, fencing fabric, barbed wire, and other hardware associated with the fencing was staged on the decontamination pad for disposal. Concrete footings were removed from the fence posts using the excavator, and staged in a stockpile, then later crushed and asphalt batched. Installation of temporary security fencing in the support zone of the Maintenance Yards and removal of the perimeter fencing surrounding the Maintenance Yards were deleted from the SOW at the Preconstruction Meeting. The Maintenance Yard was cleared of all trees, vegetation, wood ties, curb stops, brush, and miscellaneous debris following removal of the interior fencing. All visual surface debris was cleared and removed at or below the existing ground level. All debris below the existing surface was removed and separated from the soil during excavation and or screening operations. All debris was staged on the decontamination pad then disposed at the completion of project activities.

### 4.2 Maintenance Yard Earthwork

Excavation within the Maintenance Yards consisted of surface soil removal within the top 2 feet of soil across the entire 7.8 acre area and other designated Hot Spot areas within the Cannibalization Yard which consisted of the "mogas" spill area, and former UST location. The surface soil was excavated in 6 inch layers, stockpiled in 100 cubic yard piles, field screened, backfilled and/or asphalt batched based on analytical results, compacted, and then graded to final proposed elevations.

#### 4.2.1 Excavate Surface Soils

All surface soils within the 7.8 acre fenced in area of the Maintenance Yards were excavated to a depth of two feet. The excavation plan showing the grid layout and cell number designating the order of excavation is shown on the Final Contract Drawings. For the purpose of this report, all areas formerly designated as the TDA Maintenance Yard, K-Yard, Cannibalization Yard and RTS Yard will be referred to as the Maintenance Yards.

Grids were excavated according to the sequence in the Excavation Plan which is contained within the Work Plan. Cells within the grid system were separated into 105 feet x 52 feet areas so that each 6 inch layer was approximately 100 cy.

Prior to excavation, areas were established for both the contaminated material and clean material. The contaminated materials stockpile location was within cells C4, D4, C5, and D5. The area was lined with a 6 mil polyethylene layer, covering an initial area of approximately 20,400 sf. The clean stockpile located in cells G3, and G4 was also lined to prevent potential contamination migration from existing surface soils. Excavation began along the east limits of the site in order to minimize long haul distances. The first six inch layer was excavated using a 235 CAT Excavator in cell G1 until a 100 cy stockpile was maintained. Excavation continued in adjacent grids.

Following review of analytical results for the previous days excavation, WESTON coordinated haul routes for final stockpile location at either the clean pile or the contaminated stockpile. The entire top 6" of material was determined by on-site analytical to be contaminated with either cPAH(over 7 ppm) or TPH(over 500 ppm). All of this material was loaded, hauled, stockpiled, and consolidated within the designated contaminated stockpile area. The underlying layers (i.e., 6-18") were also excavated in 6 inch lifts, sampled, and following analytical evaluation, hauled to the designated piles in the same manner. The fourth layer from 18"-24" was excavated, tested, and backfilled in the same cell without relocation if the analytical results determined that the material was below the site cleanup goals. This expedited unnecessary material handling and potential cross contamination. See the Appendix G - Excavation Summary Table for a cumulative report of excavation quantities.

All cells were sequentially excavated in 6" layers to the full depth of 24". The sequence of excavation was a spiral pattern surrounding the contaminated pile which allowed backfilling operations to be performed simultaneous with asphalt batching.

### 4.2.2 Excavate Hot Spot Soils

Three Hot Spot areas were excavated below the limits of the initial surface soil excavation. These are former overexcavated areas at soil vent well locations 44B-93-07X and 44B-93-08X, vent well location 44B-93-10X, and at soil boring location 44B-92-06X.

The first area known as the UST area was excavated to the initial limits of 25.5' x 19' x 14' as a baseline prior to field screening to establish contaminant levels as determined by OVM response factor. Slopes of 2:1 were maintained in order to access the 14' deep excavation for soil screening. Initial headspace samples were taken from each of the sidewalls and at the bottom of the excavation as a preliminary measure to screen Hot Spot locations. All material from this Hot Spot area was stockpiled in one location since screening results yielded a response of zero (background). On-site field screening samples taken from the sidewalls and bottom of the excavation yielded results of less than 500 ppm for TPH so the excavation was left open until confirmatory lab analysis determined that all insitu and stockpiled material was below the site cleanup level of 500 ppm. The clean stockpiled soil was then used to backfill the excavation.

A 1.5 foot deep trench was excavated at soil vent well location 44B-93-10X (mogas spill), in order to screen for contaminated material from the top of the surface soil excavation to a total depth of 3.5 feet. A 2' wide by 80' long and a 2' wide by 50' long trench was excavated with a CAT 235 Excavator. Material excavated from within the trench was stockpiled on 6 mil polyethylene to prevent potential cross contamination. NDIR samples were collected every 25 feet along the floor and sidewalls of the excavation. Since screening samples were negative, confirmatory soil samples were collected and sent to the laboratory. Confirmatory samples confirmed that NDIR samples were below the 500 ppm level and the excavation was backfilled with the clean stockpiled soils.

The third Hot Spot area at soil boring location 44B-92-06X was excavated to 5.5' or 3.5' below the surface soil excavation. Two 10' long by 2' wide trenches were excavated to the limits shown on the drawings. OVM screening performed on the stockpiled material yielded negative results, NDIR samples taken from the bottom of the excavation yielded elevated levels but below site cleanup levels. Confirmatory samples confirmed that NDIR samples were below the 500 ppm level and the excavation was backfilled with the clean stockpiled soils.

### 4.2.3 Backfill Excavation Areas

Backfilling was performed when, 1) surface soils were excavated to the 2 foot depth within the Maintenance Yard area and confirmation sampling indicated that the bottom layer was clean, 2) analytical data confirmed site cleanup levels below 500 ppm for TPH and 7 ppm for cPAH for stockpiled surface soils, 3) analytical data confirmed site cleanup levels below 500 ppm for TPH from Hot Spot area excavation limits, and 4) drainage installation was completed.

All stockpiled surface soils which tested below the site cleanup levels were backfilled using a CAT D8 Dozer and compacted using a vibratory drum roller. Grids were backfilled in 6" lifts and compacted throughout the entire 24" subgrade. To optimize compaction efficiency, water was applied to cohesionless soils as needed to maintain optimum moisture content. Perimeter grids within the Maintenance Yards were backfilled in a spiral pattern surrounding the contaminated stockpile to decrease the active area of the site and to expedite site restoration procedures for completed backfill areas.

Hot Spot areas greater than 2' deep were backfilled in 12" layers from the bottom of excavation to 2' below original surface grades. Once this grade was achieved, the surface soil was backfilled and compacted in 6" increments. Trenched areas where drainage was installed were backfilled and compacted in 12" lifts to the surface. A compaction rate of 90% maximum dry density was maintained in non-paved areas and 95% in paved areas.

The actual quantity of contaminated material of 11,800 cy, exceeded the specified quantity of 11,000 cy, so backfilling was revised such that the top 9" of backfilled material consisted of batched material while the bottom 15" consisted of "clean" material. This provided a subgrade section that was consistent throughout the entire Maintenance Yard area.

### 4.3 Soil Sampling

As specified in the WP, surface soils and Hot Spot soils throughout the Barnum Road Maintenance Yards were sampled at the frequency of one composite sample (consisting of 5 sub samples) per 100 cy of stockpiled soil. All stockpiled soils were analyzed for TPH and cPAH. Stockpiled soils exceeding the 7 ppm total cPAHs and/or the 500 ppm TPH levels were cold-mix asphalt batched on-site as set forth in the Record of Decision (ROD-ABB-ES,. March, 1995). Stockpiled soils below these target cleanup levels were backfilled as is as described in Section 4.2.3 Backfilling.

Soil samples were collected by OHM Co., Inc. (OHM) following excavation for the purpose of; classifying the surface soils as either clean or contaminated; to determine the extent of any possible additional excavation below the surface soils; or at Hot Spot areas. On-site screening of soil samples was performed using NDIR and GC/MS to determine when site cleanup goals for TPH and cPAHs were exceeded. In general, the following three types of soil samples were collected during this removal action:

Field Screening Discrete Sample - analyzed Hot Spot locations on-site to determine extent of excavation

Stockpile Composite Samples - analyzed on-site to segregate surface soils for asphalt batching or backfill

Confirmation Discrete Samples - analyzed Hot Spots soil off-site to verify that cleanup goals have been attained.

Verification Samples - analyzed to evaluate precision of on-site lab results

### 4.3.1 On-Site Analysis

An on-site lab was used to provide field screening of soil samples for TPH and cPAH. OHM performed sampling events on a daily basis or as required by excavation events. Samples were analyzed overnight for both TPH and cPAH and analytical data was faxed by 9:00 AM to the WESTON project office location the following day. This expedited excavation operations by minimizing down time between sequential excavations, thereby maintaining the critical project schedule. All Quality Control samples were shipped off-site to WESTON's lab and analyzed according to methods outlined in the CDAP. See Appendix H - On-site Analytical Summary Table for a complete summary of analytical results for each grid layer.

### 4.3.2 Sample Shipping and Handling

Off-site confirmation samples were packaged and shipped to an independent laboratory for screening verification results, duplicates, blanks, rinsate samples, and for any other Hot Spot location verification results. The samples were refrigerated prior to sample pickup then packaged in a cooler with ice packs to maintain holding temperature. Chain-of-Custody documents were completed by both the quality control manager and the lab courier and are contained in Appendix I - Chain of Custody Records. All preservation and handling procedures as referenced in the CDAP were followed according to ACOE ER 1110-1-263 regulations.

### 4.3.3 On-site and Off-site Analytical Summary

A total of 263 samples representing the top 24" of surface soils or in other words, one sample per layer of stockpiled material (100 cy) were analyzed on-site by OHM for cPAH and TPH contamination. A total of 102 samples analyzed for cPAH's were at or above the site cleanup level of 7 ppm leaving 161 samples below the cleanup criteria. A total of 33 out of the 263 samples for TPH were above the cleanup criteria of 500 ppm TPH with a balance of 230 samples below the cleanup criteria. The top 6" layer was contaminated with cPAH, TPH or both. The second layer showed reduced levels of TPH and cPAH contamination. Cell F7-4 was excavated to 30" due to elevated levels of cPAH at the 24" level. Analytical data from Cell F7-4 (24" - 30" depth) showed reduced levels of cPAH's and TPH's, both below site cleanup standards. A total of 18 samples were sent to WESTON's off-site laboratory for Hot Spot confirmation for TPH. None of the samples taken from the sidewalls of the UST area, or Mogas Spill trench areas showed levels of TPH above cleanup goals, therefore no additional excavation was performed. See Appendix J for a complete summary of Off-site Analytical Data.

Five types of QC samples were collected in accordance with the WP/CDAP during the remediation activities at the Barnum Road Maintenance Yards and Hot Spot areas. QC samples were sent to WESTON's off-site laboratory in Lionville, Pennsylvania. The five types of samples were:

1. Equipment blank/rinsate blanks
2. Matrix spikes/ matrix spike duplicate s
3. Duplicates
4. Trip blanks
5. QA samples

Rinsate blanks, MS/MSD's and duplicate samples were taken during each sampling event or for every 20 samples taken in the field for on-site analytical. Duplicate sample results and rinsate blank results are contained in Appendix H of this closure report. A total of 14 duplicate samples were taken from surface soils within the Maintenance Yards to satisfy collection events at the rate of five percent (5%) of the on-site sampling frequency. All 14 duplicate samples confirmed by on-site sampling results to be within the specified site cleanup standards for cPAH and TPH contaminated soils.

A comparison of the data is summarized as follows: 10 TPH samples were above the on-site testing facilities data with a range deviating from 33% to 279% over the on-site data result. 4 TPH samples were below the on-site testing facilities data with a range deviating from 1% to 394% below the on-site data result. Results for cPAH's were similar. Duplicate data did not positively identify any conflicting data relative to the site cleanup levels of 7 ppm for cPAH and 500 ppm for TPH contaminated soils.

5 percent of all on-site samples for a total of 17 samples were sent off-site as duplicates. Triplicate samples were sent to the Environmental Laboratory in Hubbardston, Massachusetts. Rinsate blanks were performed on every sample and sent to the off-site laboratory. TPH and cPAHs in soil were analyzed by EPA method 418.1 and EPA method 8270 respectively at the off-site laboratory.

### 4.3.4 CENED Analytical Summary

WESTON performed field screening and on-site laboratory analysis of cPAH and TPH soils as part of the Maintenance Yard site remediation. Samples were taken from the surface soils (top 2.0 ft), spill trench, and former UST area stockpiles to characterize and segregate soils for remediation and/or disposal in addition to side wall and bottom confirmation samples at Hot Spot excavation areas.

All field samples were collected on-site and analyzed at OHM's facility. Duplicate and confirmation samples were sent to WESTON's Lionville Laboratory for confirmation and triplicate samples were sent to the CENED facility in Hubbardston, Massachusetts for Quality Assurance Compliance and Data Validation.

WESTON's QA program involved submitting soil samples off-site for confirmation and validation. For every 20 samples submitted to WESTON's Lionville Laboratory, WESTON took 1 sample in duplicate. A triplicate sample was provided to the CENED laboratory at the rate of 1 per 10 off-site samples sent to Lionville. The triplicate samples were sent to CENED to meet both Level III DQO's and for Data Validation to determine overall agreement and qualitative agreement. A summary of the results is as follows:

A total of three QA triplicate split samples were delivered to the Hubbardston Laboratory on September 1, 1995 and September 14, 1995 and samples were analyzed by the facility. The QA samples were compared with the results from WESTON's Lionville Laboratory. A total of three sample determinations were made for TPH comparison. 2 minor discrepancies were noted out of the 3 TPH soil samples submitted for an overall qualitative agreement of 33%.

A total of 14 sample determinations were made for cPAH comparison, 7 of which were performed by Lionville analytical. No major or minor discrepancies were noted for 100% agreement. The overall agreement achieved through comparison of WESTON's Lionville Laboratory versus CENED's Hubbardston laboratory data yielded 88% agreement with an 78% qualitative agreement level.

A complete report of Lionville's sample data, Hubbardston's QA data, and associated comparison findings is contained in Appendices J and R of this Report.

**4.3.5 Miscellaneous Waste**

During the excavation of surface soils, any material not characterized as soil, batching material, or water was characterized and logged by site, location, type of waste and composition. Miscellaneous debris was found throughout the project during excavation activities. All debris found within the surface soils was removed, decontaminated, and staged on the containment pad for disposal. A total of 2 drums were encountered during the removal of the fourth layer in cell B6 from 18-24" depth. Both drums contained black liquid and were externally marked as "Gear Oil". Work in the area ceased until WESTON subcontracted Clean Harbors to perform the drum removal which was performed in Level B PPE. Clean Harbors mobilized to the site, sampled, overpacked, and removed the drums to the staging area on the decontamination pad. Analytical data showed elevated levels of TPH above site cleanup limits therefore the overpacked drums were disposed by Industrial Waste Management, Inc., at the Chem-Met Services, Inc. facility in Wyandotte, Michigan.

Both drums were located in separate cells , therefore confirmatory test pits were excavated in cells A6 and B6 to confirm that no additional drums or anomalies existed. The tests pits were excavated to the limits of 5' x 3.5' x 3.5' deep. Soil showed no appearance of staining, no odor was present, and the response to PID was the same as background. The area was then backfilled.

Water which accumulated during the project during decontamination of equipment was sampled and analyzed for BNA's, semivolatiles, metals, pesticides, and PCB's. All parameters were determined to be below cleanup levels and discharge parameters. The approximate 300 gallons of water was discharged to the existing oil/water separator within the Maintenance Yard facility.

## 4.4 Geotechnical Testing

Gradation tests were performed on every 2,500 cubic yards of excavated surface soils or when a change in material was observed by the geotechnical engineer in order to characterize differing soil properties. This data formed the basis for determining the Proctor value for calculating relative density tests performed on backfilled soil. The distribution of particle sizes larger than 75 micrometers (retained on the No. 200 sieve) were determined by sieving, while the distribution of particle sizes smaller than 75 micrometers were determined by a sedimentation process, using a hydrometer to obtain the necessary data. Gradation of backfill material was determined using methods ASTM D422 and ASTM D2240.

### 4.4.1 In-Place Densities

A nuclear density apparatus (Troxler) was used to perform in-place density tests on backfilled material. A minimum of one test per 20,000 square feet was performed for each lift of fill for areas compacted by heavy machinery. One test was performed for every 600 square feet of each lift for areas compacted by hand-operated machines, and at least one test per 400 linear feet of each lift of embankment. Density tests on the completed embankment at the detention pond and at the pond bottom were performed. The tests were performed directly following machine operated compaction in accordance with ASTM D 2922. Every fourth test performed by a nuclear densometer was checked using the sand cone method and was found to be within 98% accuracy of the Troxler nuclear density result. Method ASTM D2922 was used in order to provide rapid turnover of test results. One test per 2500 cy of backfill was taken for each type of source material used in order to determine the optimum moisture and maximum density values.

### 4.4.2 Compaction

A 90 percent maximum density was required at the Maintenance Yard subgrade layer (24" depth) as a preparatory layer for the 15 inches of sub-base material, 9 inches of asphalt batched material and the bituminous pavement. Subgrade tests were performed every 20,000 sf. at the 24" depth to verify a density of the subgrade of 90%. Following subgrade compaction, the uncontaminated sub-base material was removed from the stockpiles, placed in 6 inch lifts and spread to a uniform thickness over the entire cell area. Each 6" layer above the sub-base layer was compacted to a minimum of 95 % of maximum density by a vibratory roller and tested at the rate of 1 test per 6" layer per 5000 sf. Cells not achieving the density requirements were either re-rolled, wetted, or both in order to achieve the specified requirement. Trenched areas where drainage was installed were backfilled and compacted in 12" lifts. A compaction rate of 90% was maintained in non-paved areas and 95% in paved (structural) areas at the Maintenance Yard, the U.S. Army reserve center, and the Barnum Road crossing.

## 4.5 Asphalt Batching Contaminated Materials

Contaminated material was stockpiled and maintained during excavation of the surface soils. This material which tested above site cleanup levels, was hauled from the 100 cy grid piles to a central stockpile which was established in cells C4, D4, C5, and D5..

AmRec mobilized an office trailer and site equipment following approval of their batch mix design (included in Appendix K). Equipment mobilized by AmRec included 2 front end loaders, 1 excavator, 1 pugmill, a Read Screen-all, a 6000 gallon emulsion storage tank, a 2000 gallon water truck, a crusher, and 2-10 wheel dump trucks. AmRec maintained a production rate of approximately 600-800 ton of batched material per day. The first stage involved screening the contaminated material to remove objects larger than three inches in diameter. Material passing the three inch screen was stockpiled for asphalt batching. Oversized screen tailings were stockpiled in a central pile and crushed to three inch minus. The crushed pile and screened piles were fed to the pugmill via a second front end loader. The proper amounts of water and emulsifying agent were matched and added to the pugmill as material was placed in the hopper by the front end loader. The soil was mixed with water and emulsifying agent via 2-augers at the discharge end of the conveyer. The material was then dropped into 10-wheel dump trucks and was hauled to cells which were prepared to subgrade with clean sub-base material.

AmRec screened and crushed material 75% of the time during batching operations in order to meet backfill, compaction and pavement placement deadlines. The initial estimated quantity of soil to be asphalt batched was 11,000 cubic yards, however the final quantity was 11,800 cy. See Appendix K for AmRec's final report.

### 4.5.1 Subgrade/Sub-Base & Cold Mix

Spreading, grading, and compaction of asphalt batched site soils was performed using a CAT D8 Dozer and a vibratory drum roller. Areas close to the chain link fence were compacted with plate compactors. The asphalt batched soils were placed in lifts of 9 inches and compacted to meet final grade elevations. Each lift was allowed to cure for a minimum of 10 days before the next lift was placed. Asphalt batched material was compacted to 95% maximum density and tested following a 3-day setup period.

### 4.5.2 Sub-Base Preparation

MIWAY Co., Inc., a sub-tier subcontractor to P.J. Keating (the paving subcontractor), performed fine grading of the asphalt batched sub-base material within the Maintenance Yards prior to bituminous paving. Line and grade was established via surveyed grid locations by Bartlett Engineering throughout the project. Every 105' x 51' grid intersection point elevation was verified by the WESTON QC Engineer. Two areas having zero slopes as shown on the Contract Drawings were revised to a minimum slope by WESTON with the concurrence of USACE. Final elevations are shown on the as-built drawings.

## 4.6 Erosion Control

Erosion and sedimentation control was established prior to excavation activities and maintained throughout the duration of the project. Hay bales were situated along the perimeter of stockpiles as to prevent the migration of fines. In addition the contaminated stockpile was covered with 6 mil polyethylene during inclement weather or non-work hours. Silt fence and hay bales were installed at the locations shown on the drawings and maintained throughout the project. Upon the establishment of vegetative cover, the controls were inspected, cleaned and removed.

## 4.7 <u>Bituminous Surfacing</u>

P.J. Keating mobilized crews on 9 November 1995 to begin pavement binder course in the Maintenance Yards. A 2 inch binder course and a 2 inch wearing course were placed across the entire Maintenance Yards to provide the Maintenance Yard facilities with a permanent parking area. A mechanical spreader, and four rollers were utilized to apply paving. Following successful placement of a test strip in cells B1, B2, and B3, Keating began placement of the binder course in 10 foot wide continuous strips to achieve the desired smoothness. A sonic thickness gauge mounted on the spreader, along with WESTON QC monitoring, was used to verify pavement thickness during application. A tack coat was applied to prepare the surface prior to installing pavement.

Trucks were checked for mixture temperature by QC personnel both at the mix plant and on-site. Since ambient air temperatures ranged from 30 to 50 degrees Fahrenheit during the period of paving operations, some delays were encountered in order to meet specified minimum temperature requirements. Approximately 8,000 tons of binder and top wear course were installed in the Maintenance Yards as shown in Appendix L - Paving Quantity Summary Table. Rollers compacted paved areas immediately following placement in order to achieve density requirements. Samples for gradation and asphalt content were taken at the plant for every 250 tons mixed. Delivery tickets were signed by the geotechnical field technician and logged at the site upon arrival. The average from a total of 4 sublots of 250 ton each was used to verify specification requirements for each lot of 1000 tons. The average was compared to the range established in the specification to determine lot quality. Similarly, mat and joint core samples were taken in accordance with MIL-STD 620, Method 101 for every 250 tons of material placed and compared with values listed in the tables. A complete summary of quality control results for gradation, asphalt content, mat and joint samples is contained in the Pavement Testing Quality Control Table in Appendix M.

### 4.7.1 Curbs and Gutters

Approximately 2,500 lineal feet of 6"x 12" bituminous berm was installed at the perimeter of the Maintenance Yards. The berm was placed along the edge of the binder, approximately 2 feet inside the fence line. Curb was not installed at the gates which will be used for access by Maintenance Yard vehicles. A ramp was installed at one gate to allow access to the new parking area. The ramp was discussed with CENED and Maintenance Yard staff prior to installation to ensure that access and maintenance needs would be met.

## 4.8 <u>Water/Sewer/Electric Distribution</u>

Several utilities were encountered while performing excavation operations within the Maintenance Yards and while installing drainage at the U.S. Army Reserve Property. Existing services which were abandoned within the Maintenance Yard included an existing hydrant service and two discovered 1" copper service lines. The hydrant valve was shut off then the hydrant was removed at the flange. The two water services were shut off at the corporation and abandoned. A new hydrant was installed outside the Maintenance Yards along Barnum Road. An existing 6 inch gate valve was found along the existing 6 inch hydrant service and was utilized as a water shutoff. The existing 6 inch service was cut just after the gate valve, and 20' of pipe was installed from the gate valve to the new hydrant. The old hydrant removed from the Maintenance Yards was picked up by the Base Fire Department. See the Asbuilt Contract Drawings in Appendix T for all existing utility structure locations.

Two unknown electrical services below the pavement in the U.S. Army Reserve Center were broken during installation of drainage piping. The services, which controlled lighting to the existing parking lot, were repaired within two days of the break.

Existing manhole frames and covers within the Maintenance Yard were raised to grade and set in mortar. Existing oil/water separator lids, frames, and covers were replaced with new and set to grade. Sediment found within existing catch basins was removed and asphalt batched.

## 5.0 SURFACE WATER COLLECTION AND CONTROL

### 5.1 Storm Drains/Piping

Installation of the storm drainage system included excavation, installation of 18, 24, 27, and 36 inch reinforced concrete pipe and structures (catch basins, drain manholes and oil/water separator), backfilling, compaction and surface restoration. The storm drainage system consists of 560 LF of 18 inch, 470 LF of 24 inch, 540 LF of 27 inch, 930 LF of 36 inch RCP, 8-catch basins, 6-manholes, and an oil/water separator. Two 235 CAT excavators and crews were used to install drainage in order to expedite installation within the Maintenance Yards prior to paving operations.

Trench boxes and steel plates were used to shore the trench excavation. Pipe alignment and grade was maintained using a pipe laser. Invert elevations were established by survey at each manhole and piping was periodically checked to verify correct grades and slopes. Inside pipe joints, manhole inlet and outlet joints, riser joints, and oil/water separator sections were grouted and parged to provide a water tight seal.

A precast, 10,000 gallon oil/water separator was installed along the drain pipe at the point where the piping leaves the Maintenance Yard. The separator contains a manual and emergency by pass system for extended peak flows exceeding the design capacity. Manway openings provide access for inspection and removal of oil which bas been collected in the separator.

### 5.2 Detention Pond Earthwork

Prior to any sitework being performed at the Detention pond, silt fence and hay bales were installed along the perimeter of the work limits as shown on the drawings. The excavation at the Detention pond was performed with an excavator and two dump trucks. The pond was constructed and vegetated prior to drainage installation at the Maintenance Yards. D.H. Loam Co., Inc., removed the entire 6000 cubic yard excess excavated soil pile from the detention pond.

### 5.2.1 Pond Excavation

Excavation of the detention pond and shaping and grading the side slopes was performed using a CAT 235 excavator. The excess excavated material was hauled by 2-all wheel drive articulated dump trucks to a staging area where it was later removed off-site by D.H. Loam Co., Inc..

### 5.2.2 Embankment and Compaction

The pond embankment was compacted using plate compactors. A total of 5 density tests were performed both at the top of the embankment and at the toe of slope which verified that the specified 90% compaction requirement was achieved.

### 5.2.3 Installation of Geotextile

Approximately 150 sy of geotextile was installed along the emergency spillway to the outlet along the perimeter of the CMP riser pipe and at the base of the outlet area below the riprap as shown on the Contract Drawings.

### 5.2.4 Construction of Drainage Layer

A 24 inch RCP pipe was installed at the base of the embankment of the Detention pond to act as an outlet for accumulated water along the Detention pond bottom. Approximately 55 cy of 6 inch stone was installed along the perimeter of the riser pipe to allow for maximum drainage and to prevent the accumulation of fines

### 5.2.5 Slope Protection/Erosion Control

Riprap consisting of 9 inch nominal size stone was placed along the slope of the embankment on the outlet side of the Detention Basin. Erosion control was maintained throughout the work area to prevent migration of fines into the surrounding wetland areas. A combination of silt fence and hay bales were placed along the limits of work at the wetland perimeter, as shown on the drawings, and maintained throughout the project and through the growing season.

### 5.2.6 Headwall Structure

Concrete was placed for the headwall structure, anti-seep collar, and 36" CMP riser footing. Air entrainment tests were performed on the concrete and ranged from 5-7 %. 28-day cylinder break tests yielded results greater than the minimum 3000 psi required.

Walls, columns and beams were constructed per the contract drawings. All concrete was placed using chutes to convey the concrete from the redi-mix trucks. Concrete was allowed to cure for a minimum of 3 days prior to removing forms. Due to cold temperatures, thermal blankets were wrapped around new concrete to ensure proper curing.

A footing for the 36" CMP riser pipe was installed in the Detention pond. The riser pipe was installed to an embedded depth of 8" from the top of the footing. The riser pipe was capped with a 54" CMP trash rack. Holes were prefabricated in the CMP riser to provide an outlet for collected detention pond water.

## 6.0 SITE RESTORATION

The detention pond was hydroseeded following placement of 4 inches of screened topsoil along the bottom, embankments and top of slope. All trenched areas within the U.S. Army Reserve Center were paved with 4 inches of bituminous asphalt pavement. All curbs and sidewalks were replaced in kind. The trench across Barnum Road was temporarily paved with two inches of asphalt. Temporary pavement was removed and permanent pavement consisting of four inches of asphalt was installed. All erosion control barriers were inspected, cleaned and repaired as necessary prior to demobilizing. A list of Operation and Maintenance items is contained in Appendix Q.

A 6 foot high chain link fence with personnel pass gate and a 10 foot wide gate were installed at the top of the berm in the detention pond as shown on the Asbuilt Drawings.

## 7.0 DEMOBILIZATION

Demobilization of all temporary facilities was performed in mid December.

Two drums staged by Clean Harbors were transported and disposed of at an approved facility for TPH waste. Decontamination water has been tested and was determined to be below cleanup standards and was discharged to the existing Maintenance Yard facility containment pad sump. The sump area connects with the facility's containment area oil/water separator system which discharges to the storm sewer system.

## 8.0 CONCLUSION

This report summarizes the methods, techniques, and all the data collected during the Remediation of the Barnum Road Maintenance Yards in accordance with the Record of Decision for AOCs 44 and 52 for asphalt batching surface soils and Hot Spot areas for TPH and cPAH contaminated soils in order to meet the requirements set forth in the Scope of Services under Contract No. DACW-33-95-D-0004. WESTON has provided sufficient data as required by CENED DQO's that all surface soils within the top 24" and Hot Spot areas which contained levels of cPAH or TPH above the site cleanup levels of 7 ppm and 500 ppm respectively as determined through on-site analytical and off-site confirmatory analytical procedures have been asphalt batched and used as a subgrade for the paved parking area.

The remediation was completed in accordance with the required completion date of December 1995, and in accordance with the requirements established in the Specifications and Contract Drawings. Final grade summary tables are contained in Appendix O of this report. Final Drainage Testing records are included in Appendix P. Asbuilt Drawings are being submitted with this report in Appendix T, and site photos are attached in Appendix S.

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A

SITE LOCATION: Fort Devens Maintenance Yards
PROJECT MANAGER: Walter Marquis
SITE MANAGER: Chris Kane    Note: Reporting Level Tasks are Bold

| SUB CONTRACTOR | W.O.# | TASK | SUBTASK | ITEM | Weekly Qty | Unit of Meas | Cumul. Qty | Bid Qty | % Compl. | % of Bid |
|---|---|---|---|---|---|---|---|---|---|---|
| WESTON & WEBSTER | 03886-118-001 | 0101 | | **Mobilization of Construction Equipment and Facilities** | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0103 | | **Preconstruction Submittals/Implementation Plans** | | | | | | |
| | 03886-118-001 | 0103 | 01 | **Chemical Data Acquisition Plan** | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0103 | 08 | **Site-Safety and Health Plan** | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0103 | 13 | **Project Work Plan** | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0103 | 14 | **Contractor Quality Control Plan** | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0103 | 34 | **Monthly Status Reports** | 0.01 | L.S. | 0.92 | 1 | 92% | 92% |
| | 03886-118-001 | 0190 | | **Management and Meetings** | | | | | | |
| | 03886-118-001 | 0190 | 01 | **Procurement** | 0.01 | LS | 0.92 | 1 | 92% | 92% |
| | 03886-118-001 | 0190 | 02 | **Financial Analysis** | 0.01 | LS | 0.92 | 1 | 92% | 92% |
| | 03886-118-001 | 0190 | 03 | **Clerical** | 0.01 | LS | 0.92 | 1 | 92% | 92% |
| | 03886-118-001 | 0203 | | **Air Monitoring and Sampling** | | | | | | |
| | 03886-118-001 | 0203 | 00 | Air Monitoring | | | | | | |
| | 03886-118-001 | 0203 | 01 | Baseline Monitoring | 0.1 | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0203 | 02 | Confirmation Monitoring | 0.1 | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0203 | | Air Sampling | | | | | | |
| N.H. BORING | 03886-118-001 | 0204 | | **Monitoring Wells** | | | | | | |
| | 03886-118-001 | 0204 | | Mobilize | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0204 | 01 | Remove Soil Venting Wells | | EA. | 2 | 2 | 100% | 100% |
| | 03886-118-001 | 0204 | 11 | Change MW Casings to Flush-Mount | | EA. | 3 | 3 | 100% | 100% |
| | 03886-118-001 | 0204 | 20 | Abandon Soil Venting Wells | | EA. | 3 | 3 | 100% | 100% |
| OHM | 03886-118-001 | 0206 | | **Sampling Soil & Sediment** | | | | | | |
| | 03886-118-001 | 0206 | | Soil Stockpile Sampling | | | | | | |
| | 03886-118-001 | 0206 | | Mobilize | | L.S. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0206 | 01 | On-Site Field Sampling for TPH | | EA. | 263 | 303 | 100% | 87% |
| | 03886-118-001 | 0206 | 02 | On-Site Field Sampling for CPAH | | EA. | 263 | 251 | 100% | 105% |
| | 03886-118-001 | 0206 | 03 | Lab TPH Confirmation Sampling QC | | EA. | 0 | 20 | 100% | 0% |
| | 03886-118-001 | 0206 | 04 | Lab CPAH Confirmation Sampling QC | | EA. | 0 | 20 | 100% | 0% |
| | 03886-118-001 | 0206 | | Hot Spot Area Excavation Samples | | EA. | 0 | 17 | 100% | 0% |
| | 03886-118-001 | 0206 | 05 | UST Confirmation Sampling/NDIR Screening | | EA. | 10 | 10 | 100% | 100% |
| | 03886-118-001 | 0206 | 06 | Mogas Spill Trenches Sampling/NDIR Screening | | EA. | 19 | 24 | 100% | 79% |
| | 03886-118-001 | 0206 | 07 | Lab CPAH Confirmation Sampling | | EA. | 0 | 36 | 100% | 0% |
| | 03886-118-001 | 0206 | | On-Site Analysis | | | | | | |
| | 03886-118-001 | 0206 | 08 | On-Site Analysis of Soil Stockpiles for TPH | | EA. | 263 | 303 | 100% | 87% |
| | 03886-118-001 | 0206 | 09 | On-Site Analysis of Soil Stockpiles for CPAH | | EA. | 263 | 251 | 100% | 105% |
| | 03886-118-001 | 0206 | 10 | On-Site Analysis for UST Area | | EA. | 10 | 10 | 100% | 100% |
| | 03886-118-001 | 0206 | 11 | On-Site Analysis for Mogas Spill Area | | EA. | 19 | 24 | 100% | 79% |
| | 03886-118-001 | 0206 | | Sample Shipping and Handling | | | | | | |
| | 03886-118-001 | 0206 | | GC/MS (Minimum Daily Charge-$1,253) | | Day | 13.51 | 0 | 100% | N/A |
| | 03886-118-001 | 0206 | | Downtime (Daily Rate-$350) | | Day | 13 | 0 | 100% | N/A |
| WESTON LAB | 03886-118-001 | 0209 | | **Laboratory Chemical Analysis** | | | | | | |
| | 03886-118-001 | 0209 | | Miscellaneous Waste Analysis | | | | | | |
| | 03886-118-001 | 0209 | | Off-Site Lab Analysis | | | | | | |
| | 03886-118-001 | 0209 | 01 | Analysis of soil Stockpiles for TPH | | EA. | 17 | 18 | 100% | 100% |
| | 03886-118-001 | 0209 | 02 | Analysis of Soil Stockpiles for CPAH | | EA. | 17 | 15 | 100% | 113% |
| | 03886-118-001 | 0209 | 03 | TPH Analysis for Hot Spot Areas | | EA. | 33 | 33 | 100% | 100% |
| FAIRFIELD TESTING | 03886-118-001 | 0211 | | **Geotechnical Testing** | | | | | | |
| | 03886-118-001 | 0211 | | Gradation | | EA. | 20 | 52 | 100% | 38% |
| | 03886-118-001 | 0211 | | In-Place Densities | | | | | | |
| | 03886-118-001 | 0211 | 01 | Nuclear Method (Final quantity adjusted) | | EA. | 453 | 411 | 100% | 110% |
| | 03886-118-001 | 0211 | 02 | Sand Cone (Final quantity adjusted) | | EA. | 82 | 111 | 100% | 74% |
| | 03886-118-001 | 0211 | | Compaction | | | | | | |
| | 03886-118-001 | 0211 | 03 | Modified Proctor | | EA. | 11 | 14 | 100% | 79% |
| | 03886-118-001 | 0215 | | **Pavement Testing** | | | | | | |
| | 03886-118-001 | 0215 | 01 | Extract Cores | | EA. | 64 | 63 | 100% | 102% |
| | 03886-118-001 | 0215 | 02 | Density Testing on Cores | | EA. | 64 | 63 | 100% | 102% |
| | 03886-118-001 | 0215 | 03 | Samples From Trucks | | EA. | 32 | 32 | 100% | 100% |
| | 03886-118-001 | 0215 | 04 | Perform Gradation Test | | EA. | 16 | 16 | 100% | 100% |
| | 03886-118-001 | 0215 | 05 | Perform Asphalt Content Tests | | EA. | 16 | 16 | 100% | 100% |
| | 03886-118-001 | 0215 | 06 | Perform Lab Tests | | EA. | 64 | 60 | 100% | 107% |
| WEBSTER | 03886-118-001 | 0301 | | **Demolition** | | | | | | |
| | 03886-118-001 | 0301 | 01 | Remove Interior Fences at Maintenance Yard | | LF | 900 | 900 | 100% | 100% |
| | 03886-118-001 | 0301 | 02 | Remove Exterior Fences at Maintenance Yard | | LF | 0 | 1620 | 100% | 0% |
| | 03886-118-001 | 0302 | | **Clearing & Grubbing** | | | | | | |

# PROJECT TASK TRACKING LIST

Month Ending 12/31/95

SITE LOCATION: Fort Devens Maintenance Yards
PROJECT MANAGER: Walter Marquis
SITE MANAGER: Chris Kane    Note: Reporting Level Tasks are Bold

| SUB CONTRACTOR | W.O. # | TASK | SUBTASK | ITEM | Weekly Qty | Unit of Meas | Cumul. Qty | Bid Qty | % Compl. | % of Bid |
|---|---|---|---|---|---|---|---|---|---|---|
| | 03886-118-001 | 0302 | 01 | Clear Detention Pond Area | | SF | 87500 | 87500 | 100% | 100% |
| | 03886-118-001 | 0302 | 02 | Clear Along Pipe Excavation | | SF | 27500 | 27500 | 100% | 100% |
| | 03886-118-001 | 0302 | 03 | Clear Maintenance Area | | SF | 68000 | 68000 | 100% | 100% |
| WEBSTER | **03886-118-001** | **0303** | | **Maintenance Yards Earthwork** | | | | | | |
| | 03886-118-001 | 0303 | | Excavate | | | | | | |
| | 03886-118-001 | 0303 | 01 | Excavate and Stockpile Surface Soils (Swell adj) | | CY | 30100 | 30100 | 100% | 100% |
| | 03886-118-001 | 0303 | 02 | Exc and Stockpile Hot Spot Soils (Mogas adj) | | CY | 506 | 1100 | 100% | 46% |
| | 03886-118-001 | 0303 | | Backfill | | | | | | |
| | 03886-118-001 | 0303 | 03 | Backfill Uncontaminated Soil (w/ adj for batched material) | | CY | 18500 | 20000 | 100% | 93% |
| | 03886-118-001 | 0303 | 04 | Backfill Cold Mix Asphalt Batched Soil | | CY | 11600 | 11000 | 100% | 105% |
| AMREC | 03886-118-001 | 0303 | | Asphalt Batch Site Soils Exceeding Cleanup Levels | | CY | 11800 | 11000 | 100% | 107% |
| | 03886-118-001 | 0303 | | Mobilize | | LS | 1 | 1 | 100% | 100% |
| WEBSTER | 03886-118-001 | 0303 | | Spreading | | | | | | |
| | 03886-118-001 | 0303 | 05 | Spreading Sub-Base (w/ adj for regrade) | | CY | 18500 | 20000 | 100% | 93% |
| | 03886-118-001 | 0303 | 06 | Spreading Cold Mix Asphalt/Soil | | CY | 11600 | 11000 | 100% | 105% |
| | 03886-118-001 | 0303 | | Grading | | | | | | |
| | 03886-118-001 | 0303 | 07 | Grading Cold Mix Asphalt/Soil | | SY | 38000 | 38000 | 100% | 100% |
| | 03886-118-001 | 0303 | | Compaction | | | | | | |
| | 03886-118-001 | 0303 | 08 | Compact Existing Subgrade | | SY | 38000 | 38000 | 100% | 100% |
| | 03886-118-001 | 0303 | 09 | Compact Sub-Base (w/ adj for regrade) | | CY | 18500 | 20000 | 100% | 93% |
| | 03886-118-001 | 0303 | 10 | Compact Cold Mix Asphalt/Soil (Swell adj) | | CY | 11600 | 11000 | 100% | 105% |
| | 03886-118-001 | 0303 | | Erosion Control in Maintenance Yards | | | | | | |
| | 03886-118-001 | 0303 | 11 | Silt Fence | | LF | 0 | 6000 | 100% | 0% |
| | 03886-118-001 | 0303 | 12 | Hay Bales | | Ton | 6 75 | 30 | 100% | 23% |
| KEATING | **03886-118-001** | **0304** | | **Roads/Parking/Curbs/Walks** | | | | | | |
| | | | | Fine Grade | | SY | 38000 | 38000 | 100% | 100% |
| | 03886-118-001 | 0304 | | Bituminous Surfacing | | | | | | |
| | 03886-118-001 | 0304 | 01 | Binder Course(2") | | SY | 38000 | 38000 | 100% | 10 |
| | 03886-118-001 | 0304 | 02 | Top Course (2") | | SY | 38000 | 38000 | 100% | 100% |
| | 03886-118-001 | 0304 | 03 | Permanent Trench Pavement Repair | | LF | 520 | 520 | 100% | 100% |
| | 03886-118-001 | 0304 | | Curbs and Gutters | | | | | | |
| | 03886-118-001 | 0304 | 04 | 6"x6" Curbing Around Maintenance Yard | | LF | 2500 | 2500 | 100% | 100% |
| | | | | Bond | | LS | 1 | 1 | 100% | N/A |
| FENCING SUB | **03886-118-001** | **0305** | | **Fencing** | | | | | | |
| | 03886-118-001 | 0305 | 05 | Install New Fencing for Detention Pond | | LF | 0 | 600 | 0% | 0% |
| | 03886-118-001 | 0305 | 06 | Install New Gate for Detention Pond | 0 25 | EA | 0 25 | 1 | 25% | 25% |
| | 03886-118-001 | 0305 | 07 | Reuse Old Fencing for Security | | LF | 0 | 300 | 100% | 0% |
| | 03886-118-001 | 0305 | 08 | Reuse Old Gates for Security | | EA | 0 | 2 | 100% | 0% |
| | **03886-118-001** | **0308** | | **Water/Sewer/Gas Distribution** | | | | | | |
| | **03886-118-001** | **0308** | | Relocate Fire Hydrant from K-Yard | | LS | 1 | 1 | 100% | 100% |
| | **03886-118-001** | **0308** | | Shore existing water, sewer, storm drain gas & elec. | | LS | 1 | 1 | 100% | 100% |
| | **03886-118-001** | **0308** | | Replace grates of the existing oil/water separator | | LS | 1 | 1 | 100% | 100% |
| | **03886-118-001** | **0308** | | Remove and Asphalt Batch any sediment | | LS | 1 | 1 | 100% | 100% |
| WESTON | **03886-118-001** | **0390** | | **Site Construction Support** | 0.01 | LS | 0 92 | 1 | 92% | 92% |
| WEBSTER | **03886-118-001** | **0508** | | **Storm Drainage** | | | | | | |
| | 03886-118-001 | 0508 | | Storm Drainage | | | | | | |
| | 03886-118-001 | 0508 | | Piping | | | | | | |
| | 03886-118-001 | 0508 | | Install Piping | | | | | | |
| | 03886-118-001 | 0508 | 01 | 18" | | LF | 532 | 560 | 100% | 95% |
| | 03886-118-001 | 0508 | 02 | 24" | | LF | 623 | 470 | 100% | 133% |
| | 03886-118-001 | 0508 | 03 | 27" | | LF | 355 | 410 | 100% | 87% |
| | 03886-118-001 | 0508 | 04 | 30" (revised to 27") | | LF | 0 | 130 | 100% | 0% |
| | 03886-118-001 | 0508 | 05 | 36" | | LF | 930 | 930 | 100% | 100% |
| | 03886-118-001 | 0508 | 07 | Excavate Trench for Pipe | | LS | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0508 | 08 | Backfill and Compact Trench | | LS | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0508 | | Structures | | | | | | |
| | 03886-118-001 | 0508 | 09 | Install 12' C.B. | | CB | 8 | 8 | 100% | 100% |
| | 03886-118-001 | 0508 | 10 | Install 14' C.B. | | MH | 6 | 6 | 100% | 100% |
| | 03886-118-001 | 0508 | 11 | Install O/W Separator | | EA. | 1 | 1 | 100% | 10 |
| | | | | Hood (C.O.) | | LS | 1 | 1 | 100% | 100% |
| | **03886-118-001** | **0509** | | **Detention Pond Earthwork** | | | | | | |
| | 03886-118-001 | 0509 | 01 | Pond Excavation | | CY | 9000 | 9000 | 100% | 100% |
| | 03886-118-001 | 0509 | 02 | Berm Embankment and Compaction | | CY | 700 | 700 | 100% | 100% |
| | 03886-118-001 | 0509 | 03 | Installation of Geotextile | | SY | 150 | 150 | 100% | 100% |

# PROJECT TASK TRACKING LIST

Month Ending 12/31/95

| SUB CONTRACTOR | W.O. # | TASK | SUBTASK | ITEM | Weekly Qty | Unit of Meas | Cumul. Qty | Bid Qty | % Compl. | % of Bid |
|---|---|---|---|---|---|---|---|---|---|---|
| | SITE LOCATION: | | | Fort Devens Maintenance Yards | | | | | | |
| | PROJECT MANAGER: | | | Walter Marquis | | | | | | |
| | SITE MANAGER: | | | Chris Kane Note: Reporting Level Tasks are Bold | | | | | | |
| | 03886-118-001 | 0509 | 04 | Construction of Granular Drainage Layer | | CY | 55 | 55 | 100% | 100% |
| | 03886-118-001 | 0509 | 05 | Slope Protection | | LS | 0 | 1 | 100% | 0% |
| | 03886-118-001 | 0509 | 06 | Riprap/Stone/Rock | | CY | 55 | 55 | 100% | 100% |
| | 03886-118-001 | 0509 | 07 | Seeding/Mulch/Fertilizer/Topsoil @ 4" | | SY | 4000 | 4000 | 90% | 100% |
| | 03886-118-001 | 0509 | 08 | Erosion Control | | | | | | |
| | 03886-118-001 | 0509 | 09 | Silt Fence | | LF | 900 | 600 | 100% | 150% |
| | 03886-118-001 | 0509 | 10 | Hay Bales | | TON | 3.75 | 6 | 100% | 63% |
| | 03886-118-001 | 0509 | 11 | Headwall Structure | | EA. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0509 | 12 | Riser Pipe Construction | | EA. | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 0509 | 13 | Spillway Construction | | EA. | 1 | 1 | 100% | 100% |
| WESTON LAB | **03886-118-001** | **1803** | | **Water Disposal** | | | | | | |
| | 03886-118-001 | 1803 | 01 | Decon Water Disposal | | LS | 0 | 1 | 0% | 0% |
| WEBSTER | **03886-118-001** | **2003** | | **Site Restoration** | | | | | | |
| | 03886-118-001 | 2003 | 01 | Re-establish Roads | | LS | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 2003 | 02 | Re-establish Structures | | LS | 1 | 1 | 100% | 100% |
| | 03886-118-001 | 2003 | 03 | Re-establish Utilities | | LS | 1 | 1 | 100% | 100% |
| | **03886-118-001** | **2005** | | **Removal of Barriers** | | | | | | |
| | 03886-118-001 | 2005 | 01 | Silt Fence Removal | | SY | 0 | 38400 | 0% | 0% |
| | 03886-118-001 | 2005 | 02 | Hay Bale Removal | | TON | 6.75 | 36 | 64% | 19% |
| | 03886-118-001 | 2005 | 03 | Barrier Removal | 0.14 | LS | 0.64 | 1 | 64% | 64% |
| WESTON | **03886-118-001** | **2106** | | **Post-Construction Submittals** | | | | | | |
| | 03886-118-001 | 2106 | 01 | Final Project Report | 0.1 | LS | 0.25 | 1 | 25% | 25% |
| WEBSTER | **03886-118-001** | **2190** | | **Demob Personnel/Equipment** | 0.2 | LS | 1 | 1 | 100% | 100% |

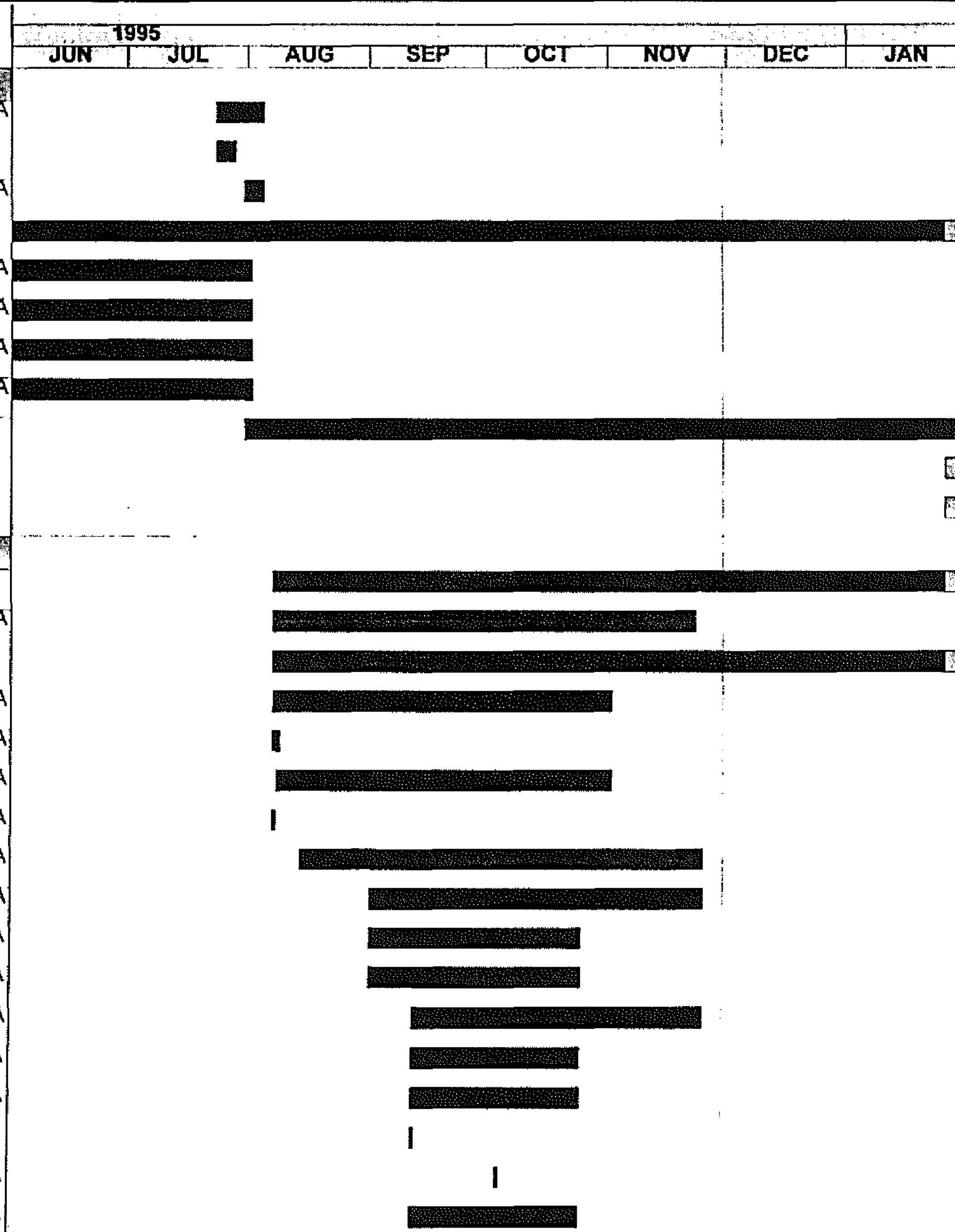
NOTE: C.O. represents a change order

Cumulative quantities which do not meet bid quantities show 100% in the % complete column.

| DISTRIBUTION | NAME | SIGNATURE |
|---|---|---|
| R... with Webster Daily Report | C. Kane | |
| Reviewed by PM | W. Marquis | |
| Review by COR (weekly) | S. Umbrell | |
| Updated "P3" Cost Control | N. Mattioni | |

B

| WBS Number | Activity Description | Early start | Early finish |
|---|---|---|---|
| **MOBILIZATION / PREP / CONSTRUCTION SUPPORT** | | | |
| 2.01.01. . . | MOBILIZE CONSTRUCTION EQUIPMENT & | 24JUL95A | 04AUG95A |
| 2.01.01.01. . | o WESTON Mobilize | 24JUL95A | 28JUL95A |
| 2.01.01.02. . | o Contractors Mobilize | 31JUL95A | 04AUG95A |
| 2.01.03. . . | PRECONSTRUCTION SUBMITTALS/PLANS | 01JUN95A | 28JUN96 |
| 2.01.03.01. . | o Chemical Data Acquisition Plan | 01JUN95A | 01AUG95A |
| 2.01.03.08. . | o Site Health & Safety Plan | 01JUN95A | 01AUG95A |
| 2.01.03.13. . | o Work Plan | 01JUN95A | 01AUG95A |
| 2.01.03.14. . | o Contractors Quality Control Plan | 01JUN95A | 01AUG95A |
| 2.01.03.34. . | o Monthly Status Reports | 31JUL95A | 28JUN96 |
| 2.01.90. . . | MANAGEMENT & MEETINGS | 26JAN96 | 23JUL96 |
| 2.01.90.01. . | o Construction Management | 26JAN96 | 28JUN96 |
| **MONITORING, SAMPLING, & TESTING** | | | |
| 2.02.03. . . | AIR MONITORING & SAMPLING | 07AUG95A | 23FEB96 |
| 2.02.03.01. . | o Air Monitoring | 07AUG95A | 22NOV95A |
| 2.02.03.02. . | o Air Sampling (Deleted) | 07AUG95A | 23FEB96 |
| 2.02.04. . . | MONITORING WELLS | 07AUG95A | 01NOV95A |
| 2.02.04.01. . | o Remove Soil Venting Wells/UST Excavation | 07AUG95A | 08AUG95A |
| 2.02.04.02. . | o Change Monitor Well Casings to Flush Mount | 08AUG95A | 01NOV95A |
| 2.02.04.03. . | o Abandon Soil Venting Wells | 07AUG95A | 07AUG95A |
| 2.02.06. . . | SOIL & SEDIMENT SAMPLING | 14AUG95A | 24NOV95A |
| 2.02.06.01. . | o Soil Stockpile Sampling | 01SEP95A | 24NOV95A |
| 2.02.06.01.1. | ...On-Site Field Sampling for TPH | 01SEP95A | 24OCT95A |
| 2.02.06.01.2. | ...On-Site Field Sampling for CPAH | 01SEP95A | 24OCT95A |
| 2.02.06.01.3. | ...Lab TPH Confirmation Sampling | 12SEP95A | 24NOV95A |
| 2.02.06.01.4. | ...Lab CPAH Confirmation Sampling | 12SEP95A | 24OCT95A |
| 2.02.06.02. . | o Hot Spot Area Excavation Samples | 12SEP95A | 24OCT95A |
| 2.02.06.02.1. | ...UST Confirmation Sampling/Screening | 12SEP95A | 12SEP95A |
| 2.02.06.02.2. | ...Mogas Spill Trenches Sampling/Screening | 04OCT95A | 04OCT95A |
| 2.02.06.02.3. | ...Lab CPAH Confirmation Sampling | 12SEP95A | 24OCT95A |




Project Start 01JUN95
Project Finish 23JUL96
Data Date 30NOV95
Plot Date 24JUN96

Early Bar
Target Bar
Progress Bar



HW19

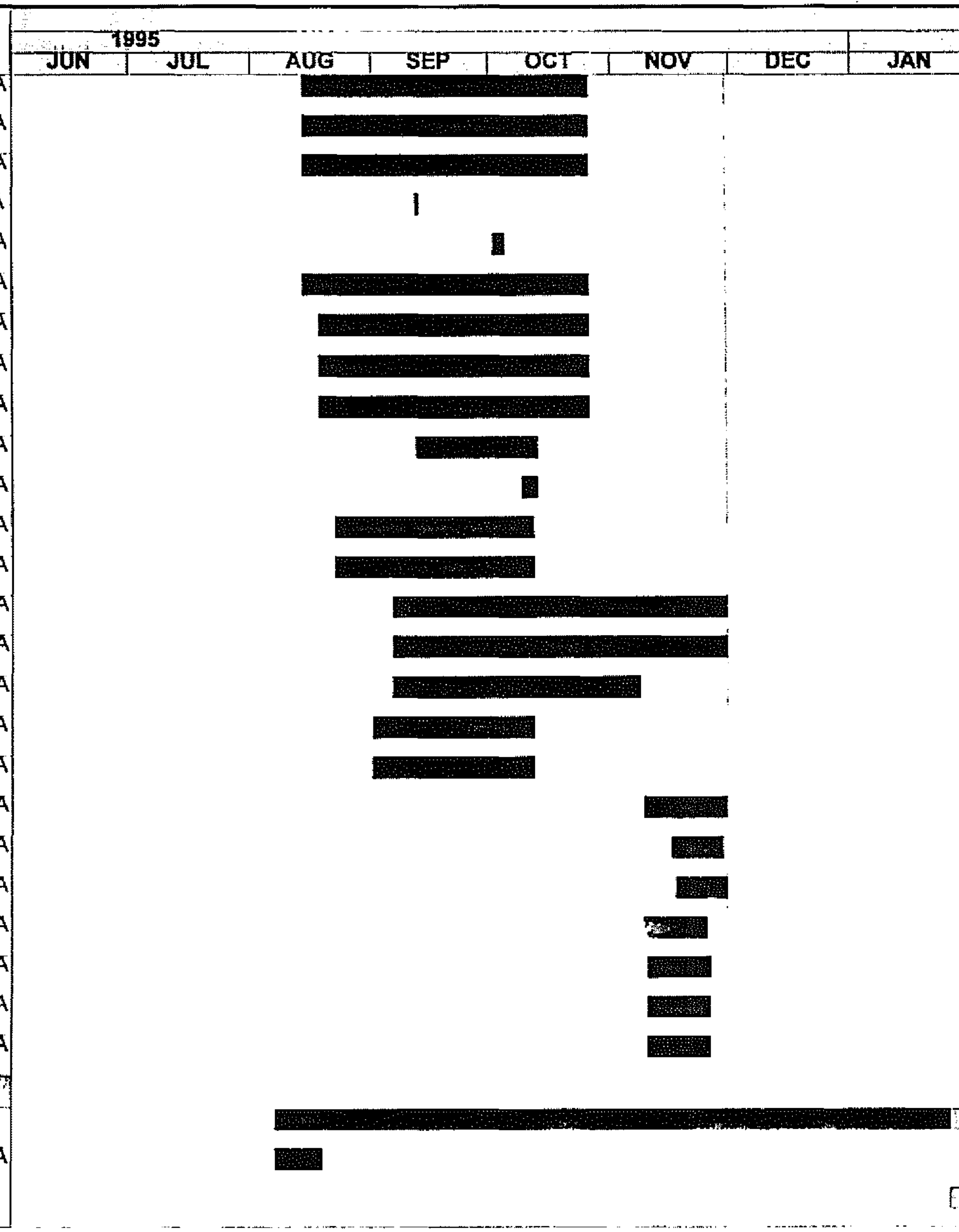
Sheet 1 of 6

Roy F. Weston, Inc.
Ft. Devens - Maint Yards Remediation
CENED No. DACW33-95-D-0004/0001

Draft Project Schedule

| Date | Revision | Checked | Approved |
|---|---|---|---|

| WBS Number | Activity Description | Early start | Early finish |
|---|---|---|---|
| 2.02.06.03. . | o On-Site Analysis | 14AUG95A | 25OCT95A |
| 2.02.06.03.1. | ...On-Site Analysis of Soil Stockpiles for TPH | 14AUG95A | 25OCT95A |
| 2.02.06.03.2. | On-Site Analysis for CPAH | 14AUG95A | 25OCT95A |
| 2.02.06.03.3. | ...On-Site Analysis for UST Area | 12SEP95A | 12SEP95A |
| 2.02.06.03.4. | ...On-Site Analysis for Mogas Spill Area | 02OCT95A | 04OCT95A |
| 2.02.06.04. . | o Sample Shipping and Handling | 14AUG95A | 25OCT95A |
| 2.02.09. . . | LABORATORY CHEMICAL ANALYSIS | 18AUG95A | 25OCT95A |
| 2.02.09.06. . | o Miscellaneous Waste Analysis | 18AUG95A | 25OCT95A |
| 2.02.09.06.1. | ...Analysis of Soil Stockpiles for TPH | 18AUG95A | 25OCT95A |
| 2.02.09.06.2. | ...Analysis of Soil Stockpiles for CPAH | 12SEP95A | 12OCT95A |
| 2.02.09.06.3. | ...TPH Analysis for Hot Spot Areas | 09OCT95A | 12OCT95A |
| 2.02.11. . . | GEOTECHNICAL TESTING | 22AUG95A | 11OCT95A |
| 2.02.11.01. . | o Gradation (ASTM C136, D422, D1160) | 22AUG95A | 11OCT95A |
| 2.02.11.02. . | o In-Place Densities | 06SEP95A | 29NOV95A |
| 2.02.11.02.1. | ...Nuclear Method | 06SEP95A | 29NOV95A |
| 2.02.11.02.2. | ...Sand Cone | 06SEP95A | 07NOV95A |
| 2.02.11.03. . | o Compaction | 01SEP95A | 11OCT95A |
| 2.02.11.03.1. | ...Modified Proctor | 01SEP95A | 11OCT95A |
| 2.02.15. . . | PAVEMENT TESTING | 09NOV95A | 29NOV95A |
| 2.02.15.01. . | o Extract Cores | 16NOV95A | 28NOV95A |
| 2.02.15.02. . | o Density Testing on Cores | 17NOV95A | 29NOV95A |
| 2.02.15.03. . | o Samples from Trucks | 09NOV95A | 24NOV95A |
| 2.02.15.04. . | o Perform Gradation Tests | 10NOV95A | 25NOV95A |
| 2.02.15.05. . | o Perform Asphalt Content Tests | 10NOV95A | 25NOV95A |
| 2.02.15.06. . | o Perform Lab Test | 10NOV95A | 25NOV95A |
| ***SITE WORK*** | | | |
| 2.03.01. . . | DEMOLITION | 07AUG95A | 01FEB96 |
| 2.03.01.01. . | o Remove Interior Fences at Maintenance Area | 07AUG95A | 18AUG95A |
| 2.03.01.02. . | o Remove Exterior Fences at Maintenance Area | 26JAN96 | 01FEB96 |




Project Start 01JUN95
Project Finish 23JUL96
Data Date 30NOV95
Plot Date 24JUN96

Early Bar
Target Bar
Progress Bar



HW19

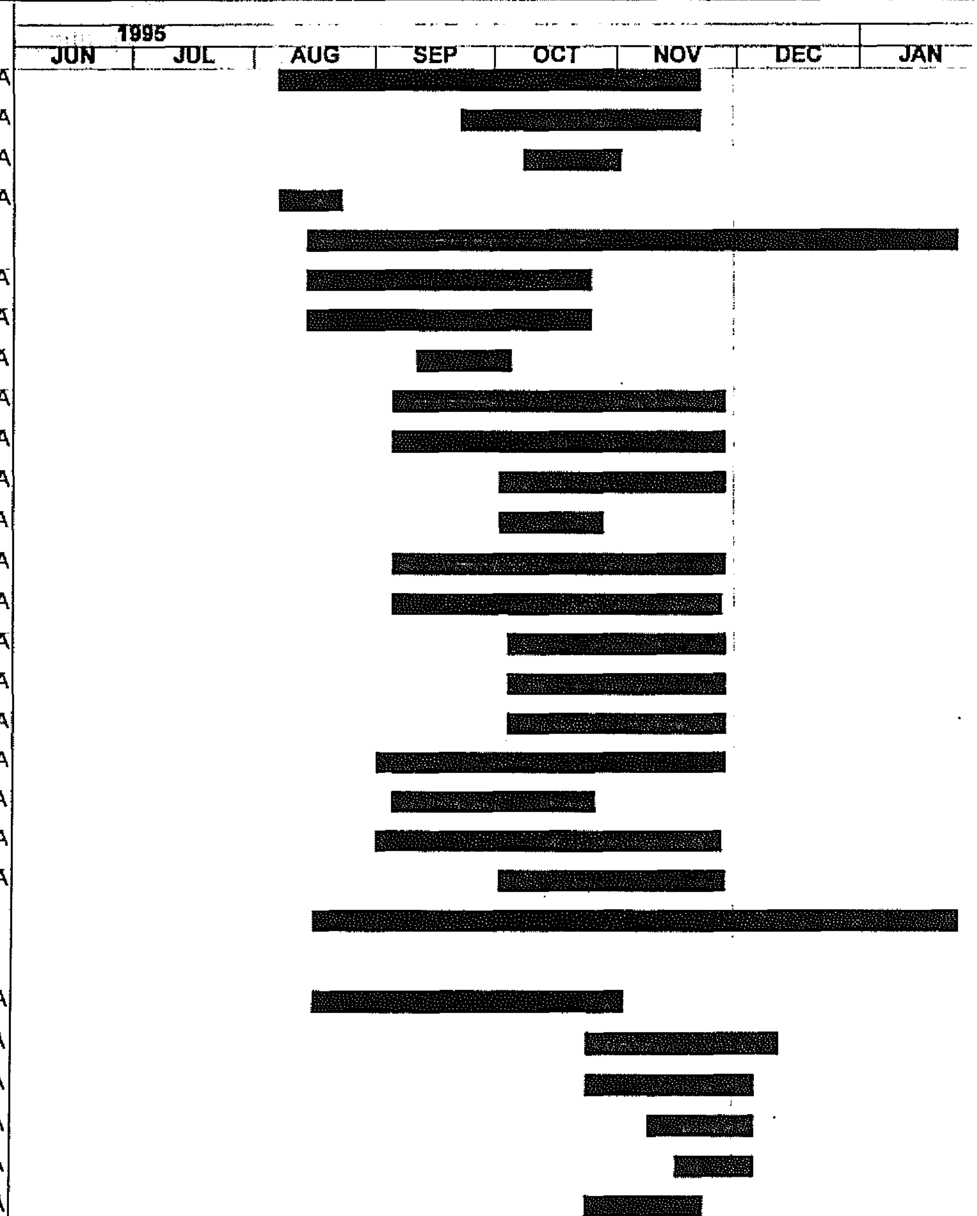


Roy F. Weston, Inc.
Ft. Devens - Maint Yards Remediation
CENED No. DACW33-95-D-0004/0001

Draft Project Schedule

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |

| WBS Number | Activity Description | Early start | Early finish |
|---|---|---|---|
| 2.03.02. . . | CLEARING & GRUBBING | 07AUG95A | 21NOV95A |
| 2.03.02.01. . | o Clear Detention Pond Area | 22SEP95A | 21NOV95A |
| 2.03.02.02. . | o Clear along Pipe Excavation | 08OCT95A | 01NOV95A |
| 2.03.02.03. . | o Clear Maintenance Area | 07AUG95A | 22AUG95A |
| 2.03.03. . . | MAINTENANCE YARDS EARTHWORK | 14AUG95A | |
| 2.03.03.02. . | o Excavate | 14AUG95A | 24OCT95A |
| 2.03.03.02.1. | ...Excavate & Stockpile Surface Soils | 14AUG95A | 24OCT95A |
| 2.03.03.02.2. | ...Excavate & Stockpile Hot Spot Area Soils | 11SEP95A | 04OCT95A |
| 2.03.03.03. . | o Backfill | 05SEP95A | 27NOV95A |
| 2.03.03.03.1. | ...Backfill Uncontaminated Soil | 05SEP95A | 27NOV95A |
| 2.03.03.03.2. | ...Backfill Cold Mix Asphalt Batch Soil | 02OCT95A | 27NOV95A |
| 2.03.03.05. . | o Asphalt Batch Site Soils > Clean-up | 02OCT95A | 27OCT95A |
| 2.03.03.06. . | o Spreading | 05SEP95A | 27NOV95A |
| 2.03.03.06.1. | ...Spreading of Sub-Base | 05SEP95A | 26NOV95A |
| 2.03.03.06.2. | ...Spreading Cold Mix Asphalt Soil | 04OCT95A | 27NOV95A |
| 2.03.03.07. . | o Grading | 04OCT95A | 27NOV95A |
| 2.03.03.07.1. | ...Grading Cold Mix Asphalt/Soil | 04OCT95A | 27NOV95A |
| 2.03.03.08. . | o Compaction | 01SEP95A | 27NOV95A |
| 2.03.03.08.1. | ...Compact Existing Subgrade | 05SEP95A | 25OCT95A |
| 2.03.03.08.2. | ...Compact Sub-Base | 01SEP95A | 26NOV95A |
| 2.03.03.08.3. | ...Compact Cold Mix Asphalt/Soil (Swell adj) | 02OCT95A | 27NOV95A |
| 2.03.03.09. . | o Erosion Control in Maintenance Yards | 16AUG95A | |
| 2.03.03.09.1. | ...Silt Fence (Deleted) | | |
| 2.03.03.09.2. | ...Hay Bales | 16AUG95A | 02NOV95A |
| 2.03.04. . . | ROADS/PARKING/CURBS/WALKS | 24OCT95A | 11DEC95A |
| 2.03.04.01. . | o Bituminous Surfacing | 24OCT95A | 05DEC95A |
| 2.03.04.01.1. | ...Binder Course | 09NOV95A | 05DEC95A |
| 2.03.04.01.2. | ...Top Course | 16NOV95A | 05DEC95A |
| 2.03.04.01.3. | ...Permanent Trench Pavement Repair | 24OCT95A | 22NOV95A |




| | | | |
|---|---|---|---|
| Project Start | 01JUN95 | Early Bar | |
| Project Finish | 23JUL96 | Target Bar | |
| Data Date | 30NOV95 | Progress Bar | |
| Plot Date | 24JUN96 | | |

(c) Primavera Systems, Inc.

HW19

Sheet 3 of 6

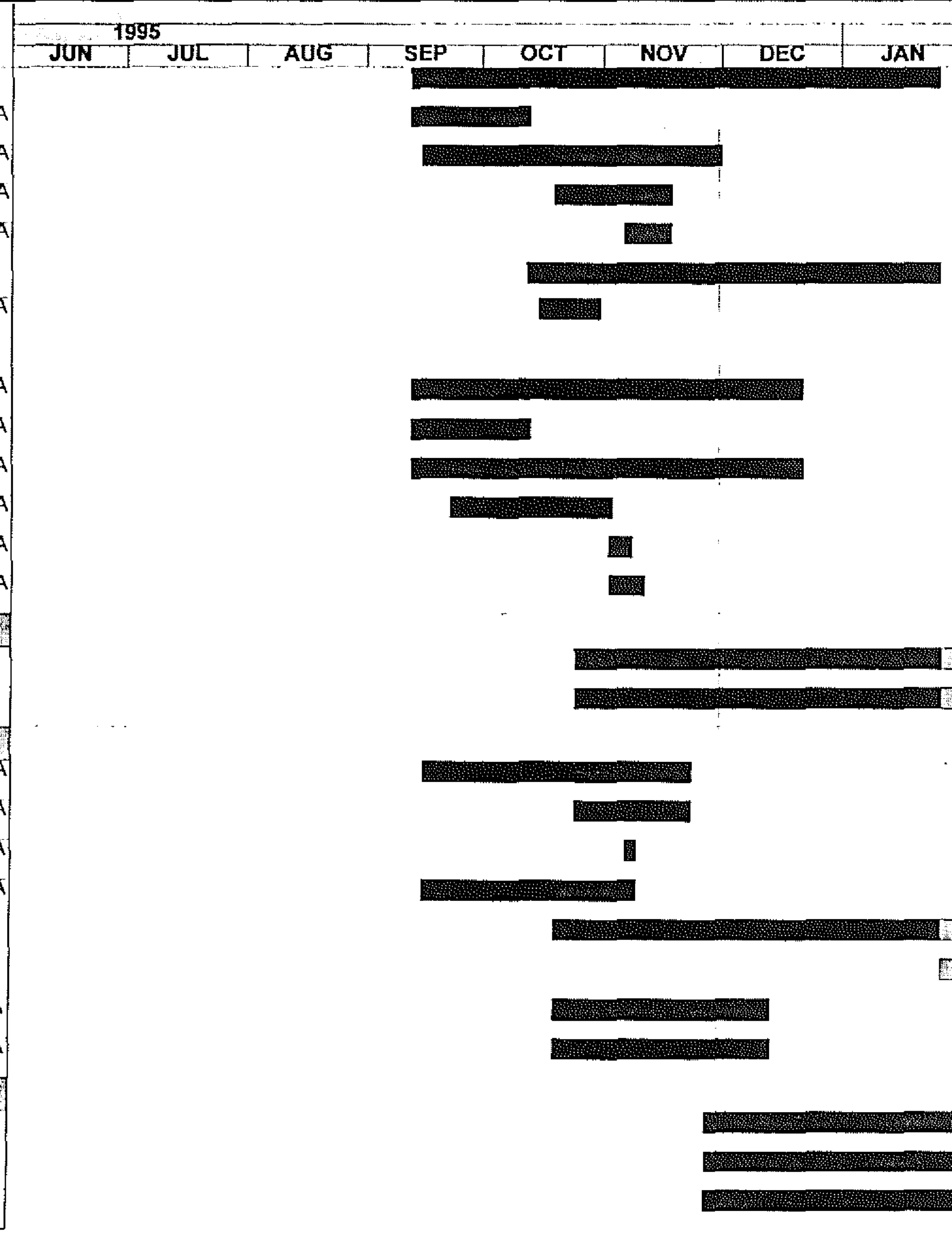
**Roy F. Weston, Inc.**
**Ft. Devens - Maint Yards Remediation**
**CENED No. DACW33-95-D-0004/0001**

Draft Project Schedule

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |

| WBS Number | Activity Description | Early start | Early finish |
|---|---|---|---|
| 2.03.04.08. . | o Curbs and Gutters | 20NOV95A | 11DEC95A |
| 2.03.04.08.1. | ...6" x 6" Curbing around Maintenance Yard | 20NOV95A | 11DEC95A |
| 2.03.05. . . | FENCING | 27NOV95A | 29JAN96 |
| 2.03.05.01. . | o Install New Fence for Detention | 27NOV95A | 30NOV95A |
| 2.03.05.02. . | o Install New Gate for Detention | 27NOV95A | 29JAN96 |
| 2.03.05.03. . | o Reuse Old Fence for Security | 26JAN96 | 26JAN96 |
| 2.03.05.04. . | o Reuse Old Gates for Security | | |
| 2.03.08. . . | WATER/SEWER/GAS DISTRIBUTION | 08OCT95A | 04DEC95A |
| 2.03.08.01. . | o Relocations/Modificiations | 08OCT95A | 04DEC95A |
| 2.03.08.01.1. | ...Relocate Fire Hydrant from K-Yard | 17NOV95A | 27NOV95A |
| 2.03.08.01.2. | ...Shore Existing Water, Sewer, Storm Drains | 08OCT95A | 27NOV95A |
| 2.03.08.01.3. | ...Replace Grates | 04DEC95A | 04DEC95A |
| 2.03.08.01.4. | ...Remove and Asphalt Batch | 31OCT95A | 31OCT95A |
| 2.03.90. . . | SITE CONSTRUCTION SUPPORT | 07AUG95A | 23JUL96 |
| 2.03.90.01. . | o Construction Management | 07AUG95A | 23JUL96 |
| ***SURFACE WATER COLLECTION & CONTROL*** | | | |
| 2.05.08. . . | STORM DRAINS | 26SEP95A | |
| 2.05.08.01. . | o Piping | 26SEP95A | |
| 2.05.08.01.1. | ...Install 16" Pipe | 10OCT95A | 18OCT95A |
| 2.05.08.01.2. | ...Install 24" Pipe | 09OCT95A | 17OCT95A |
| 2.05.08.01.3. | ...Install 27" Pipe | 10OCT95A | 18OCT95A |
| 2.05.08.01.4. | ...Install 30" Pipe (Deleted) | | |
| 2.05.08.01.5. | ...Install 36" Pipe | 26SEP95A | 26OCT95A |
| 2.05.08.01.6. | ...Excavate Trench for Pipe | 26SEP95A | 26OCT95A |
| 2.05.08.01.7. | ...Backfill and Compact Trench | 26SEP95A | 26OCT95A |
| 2.05.08.02. . | o Structures | 02OCT95A | 14NOV95A |
| 2.05.08.02.1. | ...Install 12' Catch Basins | 04OCT95A | 20OCT95A |
| 2.05.08.02.2. | ...Install 14' Manholes | 02OCT95A | 26OCT95A |
| 2.05.08.02.3. | ...Install O/W Separator | 10NOV95A | 14NOV95A |

| WBS Number | Activity Description | Early start | Early finish |
|---|---|---|---|
| 2.05.09. . . | DETENTION POND EARTHWORKS | 12SEP95A | |
| 2.05.09.01. . | o Pond Excavation | 12SEP95A | 12OCT95A |
| 2.05.09.02. . | o Berm Embankment and Compaction | 15SEP95A | 30NOV95A |
| 2.05.09.06. . | o Installation of Geotextile | 19OCT95A | 17NOV95A |
| 2.05.09.09. . | o Construction of Granular Drain Layer | 06NOV95A | 17NOV95A |
| 2.05.09.10. . | o Slope Protection | 12OCT95A | |
| 2.05.09.10.1. | ...RipRap/Stone/Rock | 15OCT95A | 30OCT95A |
| 2.05.09.10.2. | ...Seeding/Mulch/Fertilizer/Topsoil @ 4" | 12OCT95A | |
| 2.05.09.11. . | o Erosion Control | 12SEP95A | 21DEC95A |
| 2.05.09.11.1. | ...Silt Fence | 12SEP95A | 12OCT95A |
| 2.05.09.11.2. | ...Hay Bales | 12SEP95A | 21DEC95A |
| 2.05.09.12. . | o Headwall Structure | 22SEP95A | 02NOV95A |
| 2.05.09.13. . | o Riser Pipe Construction | 02NOV95A | 07NOV95A |
| 2.05.09.14. . | o Spillway Construction | 02NOV95A | 10NOV95A |
| ***DISPOSAL*** | | | |
| 2.18.03. . . | WATER DISPOSAL | 24OCT95A | 21FEB96 |
| 2.18.03.02. . | o Decon Water | 24OCT95A | 21FEB96 |
| ***SITE RESTORATION*** | | | |
| 2.20.03. . . | RESTORATION | 15SEP95A | 22NOV95A |
| 2.20.03.01. . | o Re-Establish Roads | 24OCT95A | 22NOV95A |
| 2.20.03.02. . | o Re-Establish Structures | 06NOV95A | 08NOV95A |
| 2.20.03.03. . | o Re-Establish Utilities | 15SEP95A | 08NOV95A |
| 2.20.05. . . | REMOVAL OF BARRIERS | 19OCT95A | 01FEB96 |
| 2.20.05.01. . | o Silt Fence Removal | 26JAN96 | 01FEB96 |
| 2.20.05.02. . | o Straw Bale Removal | 19OCT95A | 13DEC95A |
| 2.20.05.03. . | o Barrier Removal | 19OCT95A | 13DEC95A |
| ***DEMOBILIZATION*** | | | |
| 2.21.06. . . | POST CONSTRUCTION SUBMITTALS | 27NOV95A | 27FEB96 |
| 2 21 06.08 | o Final Project Report | 27NOV95A | 27FEB96 |
| 2.21.90. . . | DEMOBILIZE CONSTRUCTION EQUIPMENT | 27NOV95A | 12FEB96 |




Project Start 01JUN95
Project Finish 23JUL96
Data Date 30NOV95
Plot Date 24JUN96

Early Bar
Target Bar
Progress Bar



HW19

Sheet 5 of 6

**Roy F. Weston, Inc.**
**Ft. Devens - Maint Yards Remediation**
**CENED No. DACW33-95-D-0004/0001**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | Draft Project Schedule | | |

| WBS Number | Activity Description | Early start | Early finish | 1995 JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.21.90.01. . | o WESTON Demobilize | 02FEB96 | 12FEB96 | | | | | | | | |
| 2.21.90.02. . | o Subcontractors Demobilize | 27NOV95A | 27DEC95A | | | | | | | | |

| | | |
|---|---|---|
| Project Start | 01JUN95 | Early Bar |
| Project Finish | 23JUL96 | Target Bar |
| Data Date | 30NOV95 | Progress Bar |
| Plot Date | 24JUN96 | |

(c) Primavera Systems, Inc.

HW19

Sheet 6 of 6

Roy F. Weston, Inc.
Ft. Devens - Maint Yards Remediation
CENED No. DACW33-95-D-0004/0001

Draft Project Schedule

| Date | Revision | Checked | Approved |
|---|---|---|---|

C

# PROJECT CONTACT LIST

| AGENCY / ORGANIZATION | POINTS OF CONTACT | FOR: | TELEPHONE: | FAX: |
|---|---|---|---|---|
| AMREC<br>100 West Main Street<br>Northboro, MA 01532 | John Glynn<br>George Camougis<br>Neil Thurber | Asphalt Batching | (508) 393-6333 | (508) 393-4511 |
| Boston Fence<br>128 Newbury Street<br>Peabody, MA 01960 | Tom Costello, Office Manager | Fencing-Decon Pad Gate | (508) 535-7753 | (508) 535-1100 |
| U.S. Army Corp of Engineers<br>424 Trapelo Road<br>Waltham, MA 02254 | Sheila Winston<br>Contracting Specialist<br><br>Darrell Deleppo<br>Project Manager<br><br>Mark R. Applebee<br>Project Engineer | | (617) 647-8159<br><br><br>(617) 647-8712<br><br><br>(617) 647-8227 | <br><br><br><br><br><br>(617) 647-8614 |
| CENED<br>Ft. Devens Resident Office<br>Bldg. T3701<br>Fort Devens, MA 01433-5900 | James A. Morocco<br>Resident Engineer<br><br>Steve Umbrell<br>Project Engineer | Client | (508) 772-0148 | (508) 772-3104 |
| Clean Harbors<br>238A Cherry Street<br>Shrewsbury, MA 01545 | Peter Joseph<br>Manager Field Services | Drum Sampling/Characterizing | (617) 269-5830 | (617) 269-5216 |

| | | | | |
|---|---|---|---|---|
| Health & Safety (WESTON'S Corporate Office) | George Crawford<br>Ted Blackburn | H&S Issues<br>Training | (610) 701-3159<br>(603) 228-1334 | (610) 701-3401<br>(603) 228-3440 |
| (MADEP)<br>Commonwealth of Massachusetts<br>Department of Environmental Protection<br>Bureau of Waste Site Cleanup<br>Central Region<br>75 Grove Street<br>Worcester, MA 01605 | John Regan<br>Project Engineer | Regulatory Agency | (617) 556-1049 | (617) 556-1184 |
| N.H. Boring<br>3 Liberty Drive<br>Londonderry, NH 03053 | Tom Garside, Office Manager | Well Modifications/Development | (603) 437-1610 | (603) 437-0034 |
| OHM<br>88C Elm Street<br>Hopkinton, MA 01748 | Mike Quinlan | On site Analytical | (508) 435-9561<br>(Hopkinton) | (508) 435-9641 |
| P.J. KEATING<br>998 Reservoir Road<br>Lunenburg, MA 01462 | Mark Nikitas<br>Sales Representative | Asphalt Paving/Binder & Topcoat | (508) 582-9931 | (508) 582-7130 |
| United Fence<br>630 Corporate Park<br>Pembroke, MA 02359 | Ed Dimersky<br>Office Manager | Fencing-Detention Pond | (617) 826-9655 | (617) 826-9654 |
| Webster Engineering Co., Inc.<br>P.O. Box 275<br>Dorchester, MA 02121<br>-or-<br>161 Granite Ave.<br>Dorchester, MA 02124 | Ted Webster, Pres.<br><br>Hal Kane, Manager<br><br>Steve Brown, Chief Estimator<br>Edmond Williams, Estimator | SUBCONTRACTOR (SDB)<br>Excavation, demo, site work, general construction | (617) 265-5500 | (617) 265-3054 |

D

TO

Steve Umbrell
U.S. Army Corp of Engineers
Antietam Rd., Bldg 1629
Fort Devens, MA 01433-5860

FROM Christopher Kane

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN # ARMY-111495-AAIF

SUBJECT: Regrading

DATE: 11-13-95

FOLD ↑

Per our discussion on 11-8-95, cell numbers F1-5 and G1-5 have been regraded by P.J. Keating in order to prevent ponding due to proposed grades shown on the contract drawings. The grades within these 10 grids at (7) locations were elevated from .1 - .4 ft. Material placed at elevated points came from excess batched material. All grade changes were recorded on asbuilt drawings.

PLEASE REPLY TO →

SIGNED Christopher G. Kane

REPLY We concur with these actions.

DATE: 11/14/95

SIGNED James A. Moore



THIS COPY FOR PERSON ADDRESSED

C. Kane



Fold At ▲ To Fit Gravarc Window Envelope #EW10P

TO U.S. Corps of Engineers
Attn: Steve Umbrell
1629 Antietam St.
Fort Devens, MA.

FROM

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

GRAY-111195-AAIM

SUBJECT: Barnum Rd. Maintenance Yards
Contract No: DACW 33-95-D-0004

DATE: 16 Nov. 1995

FOLD ▲ Re: Modification No's. 01 and 02

Please indicate your approval, with any comments, of Mod Nos. 01 and 02, for Drum Removal and Hydrant installation, by signing below. WESTON will proceed with the drum removal and installation of the insertion valve which are scheduled to be performed ~~tomorrow~~, 17 November. Also, please indicate your acceptance of the insertion valve shop drawing submitted as discussed

PLEASE REPLY TO → SIGNED [signature]

REPLY

DATE: SIGNED



THIS COPY FOR PERSON ADDRESSED

DETACH THIS COPY—RETAIN FOR ANSWER. SEND WHITE AND PINK COPIES WITH CARBONS INTACT.

C. Kane

CALL TOLL FREE 1 800 243 ...

TO U.S. Corps of Engineers
Attn: Steve Umbrell
1629 Antietam St.
Fort Devens, MA.

FROM

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Barnum Rd. Maintenance Yards
Contract No: DACW33-95-D-0004

DATE: 16 Nov. 1995

FOLD ↑ Re: Modification No's. 01 and 02

Please indicate your approval, with any comments, of Mod Nos. 01 and 02, for Drum Removal and Hydrant installation, by signing below. WESTON will proceed with the drum removal and installation of the insertion valve which are scheduled to be performed ~~tomorrow~~, 17 November. Also, please indicate your acceptance of the insertion valve shop drawings submitted as discussed.

PLEASE REPLY TO ⟶ SIGNED

REPLY Your proposals for both the drum removal and hydrant installation have been reviewed and are acceptable. Modifications are being processed. The insertion valve, as submitted, is acceptable for use.

DATE: SIGNED



THIS COPY FOR PERSON ADDRESSED

DETACH THIS COPY—RETAIN FOR ANSWER. SEND WHITE AND PINK COPIES WITH CARBONS INTACT.

THIS COPY FOR PERSON ADDRESSED

FROM U.S. Army Corps of Engineers
Attn: Steve Umbrell
Bldg 1629 Antietam Road
Fort Devens, MA.

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCWH BRMY-111795-AHTO

SUBJECT: Barnum Road Maintenance Yards
Contract DACW33-95-D-0004/001
Re: Drum Removal and Hydrant Relocation

DATE: 17 Nov. 1995

FOLD

(1) Please replace the Draft SSHP for Drum Removal, cover page, with attached page.
(2) As discussed WESTON will subcontract the Drum Removal to Clean Harbors, the second bidder, as the low bidder, Franklin Environ. cannot perform the work in time to complete the paving. Work is scheduled for Monday, 20 Nov., for Drum Removal.
(3) OHM will provide sampling and TPH analysis of soils surrounding the Drums. Costs and criteria for additional soil removal will be per WESTON's Contract with this Delivery Order (i.e. greater than 500 ppm TPH will be removed from Drum excavation)
(4) Due to Vendor commitments, the insertion valve cannot be installed until 22 NOV 1995. As discussed today, WESTON will remove the Hydrant at the Flange approx. 16" below grade and install blind flange, or grout the remaining riser.

RETURN TO

SIGNED

REPLY (1) Receipt Acknowledged
(2)+(3) Please proceed with the drum removal utilizing Clean Harbors. The completion of this work item is critical to the project
(4) Nov. 22 will be satisfactory for this item

DATE: 11/21/95

SIGNED

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944
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Grayarc®
P.O. Box 2944
Hartford, CT 06104-2944
CALL TOLL FREE: 1-800 243 5250

REPLY MESSAGE
Fold At (↑) To Fit Grayarc Window Envelope #EW10P

REORDER ITEM # F270

TO
U.S. Army Corps of Engineers
Attn: Steve Umbrell
Bldg 1629 Antietam Road
Fort Devens, MA.

FROM
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN# 13RMY-111795-AAIO

SUBJECT: Barnum Road Maintenance Yards
Contract DACW33-95-D-0004/001
Re: Drum Removal and Hydrant Relocation

DATE: 17 Nov. 1995

FOLD ↑

(1) Please replace the Draft SSHP for Drum Removal, cover page, with attached page.

(2) As discussed WESTON will subcontract the Drum Removal to Clean Harbors, the second bidder, as the low bidder, Franklin Environ. cannot perform the work in time to complete the paving. Work is scheduled for Monday, 20 Nov., for Drum Removal.

(3) OHM will provide sampling and TPH analysis of soils surrounding the Drums. Costs and criteria for additional soil removal will be per WESTON's Contract under this Delivery Order (i.e. greater than 500 ppm TPH will be removed from Drum excavation)

(4) Due to Vendor commitments, the insertion valve cannot be installed until 22 Nov 1995. As discussed today, WESTON will remove the Hydrant at the Flange approx. 16" below grade and install blind flange, or grout the remaining riser.

PLEASE REPLY TO ⟶ SIGNED

REPLY (1) Receipt Acknowledged

(2) + (3) Please proceed with the drum removal utilizing Clean Harbors. The completion of this work item is critical to the project

(4) Nov. 22 will be satisfactory for this item

DATE: 11/21/95 SIGNED James A. Moore

## 13.0 SITE SPECIFIC INFORMATION

**Site Name:** U.S. Army Corps of Engineers

**Site Location:** Barnum Road Maintenance Yard
AOC'S 44 + 52
Fort Devens, MA.

**Plan Date:** 11/16/95

**Revision Date:**

This plan addresses those activities and operations proposed for the Buried Drum Removal project to be conducted for U.S. Army Corps of Engineers by Clean Harbors Env. Services, Inc. These activities are proposed to include Sampling, Excavation, Overpacking, Staging and Lab Analysis, Transportation and Disposal of Buried Drums.

This Site Specific Information has been developed from the latest available information. Revisions and alterations to this plan may become necessary as further information, (i.e., environmental sampling results, changes in site conditions, changes in scope of work, etc.), is developed or becomes available. Any proposed changes must be approved by Clean Harbors' Manager of Occupational Health and Safety, prior to the on-site implementation.

All on-site personnel are required to review and comply with this Health and Safety Plan. It is the responsibility of the Project Manager to ensure this plan is implemented and enforced.

FROM Mr. Steve Ombrelli
U.S. Army Corp of Engineers
Antietam Rd, Bldg 1629
Fort Devens, MA

TO Christopher Kane
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN # BRMY-113095-AAJA

SUBJECT: Placement of Sand along Perimeter Berm DATE: 11-30-95

FOLD ↑ This memo serves as a notice to the Corp that a request for quote (lump sum) has been given to Webster for additional work not contained in the original contract for the Remediation of Barnum Road Maintenance Yards. The SOW as requested by the Corp includes all loading and hauling of clean overburden material from the Detention Pond Stockpile necessary to backfill and spread material along the site perimeter between the top of berm and bottom of fence.

RETURN TO ⟶ SIGNED Christopher G. Kane

REPLY Please obtain a price from your Subcontractor for this work. If the price is reasonable, and within current budget, please proceed with the work after acceptance by our office.

DATE: 12/4/95 SIGNED [illegible]

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944
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PERSON ADDRESSED RETURN THIS COPY TO SENDER

TO

Mr. Steve Ombrell
U.S. Army Corps of Engineers
Antietam Rd., Bldg. 1629
Fort Devens, MA 01433-1560

FROM

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN # BRMY-090795-AAEI

SUBJECT: Overburden Material - Detention Pond DATE: 9-7-95

FOLD ↑ Webster is planning to stockpile all overburden material excavated from Detention Pond at grading areas to facilitate embankment grading as discussed between Walter Marquis and Jim Morroco. The estimated overburden (≈ 6000 cy.) will be stockpiled next to gravel access road on East side at grassed in low point adjacent to parking lot.

PLEASE REPLY TO → SIGNED Christopher M. Kane 9-7-95

REPLY

DATE: SIGNED

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944


DETACH THIS COPY—RETAIN FOR ANSWER. SEND WHITE AND PINK COPIES WITH CARBONS INTACT.

TO

Mr. Steve Umbrell
U.S. Army Corps of Engineers
Antietam Street Bldg. 1629
Fort Devens, MA 01433-5860

FROM

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN# BRMY-090795-AAEH

SUBJECT: Geotechnical Testing DATE: 9-7-95

FOLD ↑ As discussed per our phone conversation at 1:30 on 9/7, WESTON will direct Fairfield Testing Services to take all course grained sand density tests of backfill operation/compaction with sand cone method ASTM D2922 due to accuracy of method ASTM D1556 when testing sand compaction. Proctor samples will be taken @ rate of 1/2500 c.y. or when a change in source material is present as per spec.

CC: R. Wilky (QC)

PLEASE REPLY TO ⟶ SIGNED Christopher G. Koe

REPLY

Submitted FIO - No response required

DATE: SIGNED



**DETACH THIS COPY—RETAIN FOR ANSWER. SEND WHITE AND PINK COPIES WITH CARBONS INTACT.**

FROM

Steve Umbrell
US Army Corps of Engineers
Antietam Rd., Bldg 1629
Fort Devens, MA 01433-5860

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN # BRMY-091895-AAEV

SUBJECT: Final Grade - Maintenance Yard DATE: 9-14-95

FOLD ↑

Please be advised that WESTON needs a decision re: final grade of site (minus 4" paving course) due to surplus fill as outlined in Websters quantity takeoff. WESTON's proposed alternatives:

1) Elevate perimeter grades for overburden (6-8")
2) Elevate entire site including rims + CB
3) Remove all overburden from Maint. Yard + Detention Pond to alternate area.

Note: Alternatives 1+2 would change proposed grades therefore, a revised grading plan would have to be developed.

RETURN TO → SIGNED Christopher M. [illegible]

REPLY Please keep the final grade elevations unchanged. We are searching for an area where you can dispose of the excess clean fill.
Also, you may delete the requirement to line the "hot-spot" excavations with polyethylene. Once the holes are clean, this will be unnecessary.

DATE: 9/18/95 SIGNED [illegible]

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944
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Mr. Jim Marroco/Steve Umbrell

~~FROM~~ U.S. Army Corps of Engineers

Antietam Road, Bldg 1629

Fort Devens, MA 01433-5860

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Drum Recovery

DATE: 9-15-95

FOLD ↑

Please be advised that at 4:05 PM on 9/14/95 at Grid location B6-4 a crushed drum was unearthed while pushing 4th cut with D8 CAT Dozer. The area + drum were monitored using OVM. Highest reading was 3.3 ppm. C. Kane instructed operator to stockpile stained area (5'x5') into pile. After 1 pass a second drum was recovered. The drum contents (Container: Ure Oil Co. Gear Oil) had baked into soil. OVM readings 78ppm. The area was flagged w/caution tape + staked off. Characterizing, sampling, excavation, removal and disposal to be determined pending Corp decision. (See Daily Construction Report for full details).

RETURN TO →

SIGNED Christopher B. Kane

REPLY (ASAP)

We obviously need to characterize, sample, and remove any contaminants. This is not currently in your scope of work, but needs to be accomplished. Please provide a rough scope of work as well as impacts to cost and schedule ASAP. We need to proceed with the work. I have coordinated this response with Michelle Keuer in our Contracting Office.

DATE: 9/15/95

SIGNED James A. Marroco

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944
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DETACH THIS COPY—RETAIN FOR ANSWER. SEND WHITE AND PINK COPIES WITH CARBONS INTACT.

FROM: Mr. Steve Umbrell
U.S. Army Corps of Engineers
Antietam Rd. Bldg. 1679
Fort Devens, MA 01433-5860

TO: Christopher Kane

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Overburden Material - Detention Pond DATE: 9-20-95

FOLD ↑

Please authorize the release of overburden material at the Detention Pond soil staging area from WESTON's responsibility to OHM. OHM will provide the equipment necessary to move the material from the Detention Pond area to OHM site on Fort Devens Base. Webster has released the material for site use (See memo)

RETURN TO → SIGNED Christopher G Kane

REPLY

You are authorized to release as much of the excess material to OHM, as they can use.

DATE: 9/20 SIGNED James C Moore

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FROM Mr. Steve Umbrell
U.S. Army Corps of Engineers
Antietam Rd. Bldg 1629
Fort Devens, MA 01433-5860

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Additional "Hot Spot" Excavation DATE: 9-20-95

FOLD ↑

Please be advised that cell F7-4 within the Maintenance Yard is above the action levels for cPAH contamination. Excavation below the 24" level in this grid is out of the orignal scope of work and needs to be addressed ASAP in order to expedite backfilling.

RETURN TO → SIGNED Christopher [illegible]

REPLY

Please excavate another 6" layer in grid F7. We can pay for this using the unit prices for excavation and sampling which are already in your subcontract agreements.

DATE: 9/20/95 SIGNED Thomas A Marcus



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FROM Mr. Steve Ombrell
U.S. Army Corps of Engineers
Antieton Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Submittal Approval status + Drainage Conflict DATE:

FOLD

The following items brought to Corps attention on 9/13 still need to be resolved ASAP inorder to prevent schedule delays.

- Manholes (sizes cannot be ordered until decision is made)
- Hoods (Cannot fabricate to Corps specs - Corp to provide alternative)
- Oil/water Separator Approval (status)
- Anti-Vortex (status)
- Flared End (status)

RETURN TO

SIGNED

NOTE: Weston has already assigned (2) work crews to work independently on drainage starting on 10/2 inorder to begin paving on 10/30 (20 days)

Reply: • A revision to the piping/manhole layout is pending.
• Your pre-cast manufacturer is sending revised info on the oil/water separator
• The flared end has been approved • The anti Vortex is under review • The hoods may be deleted.

DATE: 9/..

SIGNED



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FROM

Mr. Steve Umbrell
U.S. Army Corps of Engineers
Antietam Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN# BRMY-092295-AAEW

SUBJECT: Personnel Change

DATE: 9-21-95

FOLD ↑

Please be advised that Kurt Markorian has replaced Audrey Carter as site Health & Safety Officer for the Barnum Road Remediation Project as per specification. The effective starting date ~~was~~ is 9-21-95. Please call if you have any questions

RETURN TO ⟶

SIGNED [signature]

REPLY Please be sure the Mr Markorian meets all of the requirements in paragraph 3.6.2.1 in specification section 01110, Safety Health and Emergency Response.

DATE: 9/22

SIGNED James A Monaco

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FROM US Army Corps of Engineers
Antietam Road Bldg. 1629
Fort Devens, MA 01433-5860

**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301
(603) 228-1334

[illegible]

SUBJECT: M.W. G3M-92-04X DATE: 9-26-95

FOLD ↑

Monitoring Well # G3M-92-04x was struck by Bomag Roller @ 11:30 A.M on 9/25. The 6" PVC casing was knocked off coupling which exposed existing 6" PVC opening causing sediment + small pebbles to enter well. Upon review of incident, the existing PVC pipe + coupling are intact w/o causing any damage. Basically, the riser pipe was lifted up by rear of roller.

Available Options: NH Boring can drop 4" PVC casing down hole + jet water into hole to lift any entrapped sediment out of screen (all wash fluid contained in drum) or
Redrill + set monitoring well

RETURN TO →

SIGNED Christopher D. Kane

REPLY
As discussed on 28 September between Chris Kane and Stephen Dubiell of NE, please have your well subcontractor clean out the material when he is on-site. Then Reinstall the riser pipe.

DATE: 9/29/95 SIGNED [illegible] Moran

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FROM U.S. Army Corps of Engineers
Antietam Rd. Bldg 1659
Fort Devens, MA 01433-5860

TO Christopher Kane
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301
(603) 228-1334

SUBJECT: Drainage Trench Excavation Sampling DATE: 9-26-95

FOLD ↑

Please clarify spec section 02212 subpart 3.3.3.4 Utility Trench Excavations. ① The spec states that utility trenches within exclusion zone shall be treated as hot spot area soils. Comment: The 4th 6 in. cut in all grid cells has been analyzed for cPAH & TPH contamination and are below cleanup levels at proposed drainage locations. These areas are not shown on plan as hot spot areas. ② The section references procedures for soil + sampling from 01410 but this section does not address trenching areas, it only addresses surface (soils < 2') and (Hot Spot Areas) Comment: I don't agree with reference statement. ③ We can perform headspace analysis but trenching areas for proposed drainage areas should not have to be stockpiled + tested prior to placing as backfill

RETURN TO ⟶ SIGNED Christopher G. Kane

REPLY

I agree with your comment #3. [illegible] clean to the 2.5 ft depth. [illegible] deeper elevation. [illegible] headspace analyses [illegible] excavation soils.

DATE: 9/29/95 SIGNED [illegible]



[illegible]SON ADDRESSED [illegible] THIS COPY TO SENDER

FROM: Steve Umbrell
U.S. Army Corps of Engineers
Antietam Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO Christopher Kane
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301
(603) 228-1334

SUBJECT: Trench Backfill Density Testing Requirements DATE: 9-28-95

FOLD

Please clarify item # 3.12.2 b in Specification Section 02225 page 9. Spec requires 1 test per 150 square feet of trench. Websters trenching is 10 ft. wide at detention pond which requires 1 test per 15 L.F. for every 6" lift above first foot of backfill above pipe. This rate would require WESTON to check density tests at the rate of ≈ 10 tests/15 L.F. WESTON believes this to be excessive and above bid quantity. Please respond ASAP

RETURN TO → SIGNED Christopher G. Kane

REPLY

4 Tests performed every 75' per 2 ft. lift per spec as agreed w/Corp on 10-27

DATE: SIGNED Christopher G. Kane

Item # F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944


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FROM Mr. Steve Ombrell
U.S. Army Corps of Engineers
Antietam Rd Bldg 1629
Fort Devens, MA 01433-5860

TO Christopher Kane
ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301
(603) 228-1334
DCN# CRMV-101095-IHCE

SUBJECT: Drum Status / Investigative Effort DATE: 10-10-95

FOLD ↑

Please be advised that ~~Webster~~ WESTON is in the process of planning the characterizing, sampling, overpacking and (2) drums found on 9/14. Weston plans to have Webster perform excavation of soils following the removal of the (2) drums. Weston is planning on taking confirmation samples of the perimeter soils following extrication of drums for TPH analysis. If material is < 500 ppm it will be backfilled, if > 500 ppm it will be batched. During the excavation efforts WESTON will observe the operation carefully but we are not planning on performing a magnetometer study of the area. If needed test pits may be excavated
- Please Advise -

RETURN TO ⟶ SIGNED Christopher A. Kane

REPLY

Please proceed with your plan as outlined above. I recommend that you do dig some test pits. The magnetometer search will not be necessary.

DATE: 10/11/95 SIGNED James A. Morocco

Item #F274 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944


PERSON ADDRESSED RETURN THIS COPY TO SENDER

Mr. Steve Umbrell

FROM U.S. Army Corps of Engineers
Antietam Rd. Bldg 629
Fort Devens, MA 01433-5060

ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301
(603) 228-1334

[illegible]-101095-[illegible]

SUBJECT: Hydrant Relocation DATE: 10-10-95

FOLD

The contract drawings dated March 15 1995 state that the existing hydrant inside the Maintenance Yard Excavation area is to be removed and relocated as directed by the contracting officer. WESTON needs the Corps to state the relocation area. Currently a 6" gate exists inside the Maintenance Yard. In reviewing the Water Main Master Plans there is no gate between the 6" gate in Maintenance Area + 10" C.I. Main in ~~Main~~ Parking Lot at site trailer location. Shut offs are ≈ 2200 L.F. away from 6" hydrant gate.

RETURN TO →

SIGNED Christopher [illegible]

REPLY

Please relocate the hydrant to ~~the~~ a convenient location on the water line so that it is just outside the maintenance yard. (i.e. near the trailers) Also, please add a valve as necessary to allow the hydrant to be shut off locally.

DATE: 10/11/95 SIGNED James A. Moore



[illegible] ADDRESSED RETURN THIS COPY TO SENDER

FROM Mr. Steve Umbrell / Jim Morocco
U.S. Army Corp of Engineers
Antietam Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO Christopher G. Kane
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440
DCN# ARMY-101195-AAGH

SUBJECT: Oil Water Separator Status DATE: 10-11-95

FOLD ↑ Webster has contacted their vendor (Rolando) regarding the delivery of the oil/water separator. The earliest delivery date based on a tentative approval on 10-11-95 will be 11-14-95.

Rolando needs shop fabrication time in order to meet this date. Any delay in approval time may mean additional delays for separator delivery. Any assistance in expediting the submittal would be appreciated.

RETURN TO → SIGNED Christopher G. Kane

REPLY My project Engineer, Stephen Umbrell, is in contact with our design branch who are reviewing the submittal. As soon as he gets an approval, he will verbally pass the information to you.

DATE: 10/12/95 SIGNED James A. Morocco

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FROM Mr. Steve Umbrell / Jim Moracco
U.S. Army Corp of Engineers
Antietam Rd, Bldg 1629
Fort Devens, MA 01433-5860

TO Christopher Kane
**ROY F. WESTON, INC.**
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN: BRMY-101195 AAGT

SUBJECT: Looming + Seeding - Detention Pond DATE: 10-11-95

FOLD ↑

Due to the pending looming + seeding submittals for the Detention Pond, WESTON has not been able to begin turfing operations and would like an authorization in order to complete the project as proposed in our schedule per specification. Webster is available to start the operations on Friday 10-13 if submittals are issued.

RETURN TO → SIGNED Christopher Kane

REPLY

The loam submittal has been approved. I will give you verbal approval on the seed once you submit a seed mix that meets the spec.

DATE: [illegible] SIGNED [illegible]

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TO U.S. Army Corps of Engineers
Antietam, Rd. Bldg. 1629
Fort Devens, MA 01433-5860

FROM Christopher G. Kane
ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

DCN# BRKY 101895 AAGQ

SUBJECT: Bituminous curbing along perimeter of Maint. Yard DATE: 10-6-95

FOLD

Please be advised that the Contract Detail for perimeter curbing has been modified to show a typical detail for the proposed grades within the Maintenance Yards. The proposed detail would consist of a 1:1 slope from top of curb to bottom of fence. The existing sow does not include placing fill or topsoil in this area. Location of curbing at gates + modification to gates to meet pavement requirements to be discussed with Bob Schwartz.

PLEASE REPLY TO SIGNED Christopher G. Kane

REPLY

DATE: SIGNED

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WESTON
MANAGERS DESIGNERS CONSULTANTS

SHEET 1 of 1

CLIENT/SUBJECT CENED W.O. NO. 03886-118-001

TASK DESCRIPTION Fort Devens Barnum Rd. Site - Maintenance Yard TASK NO.

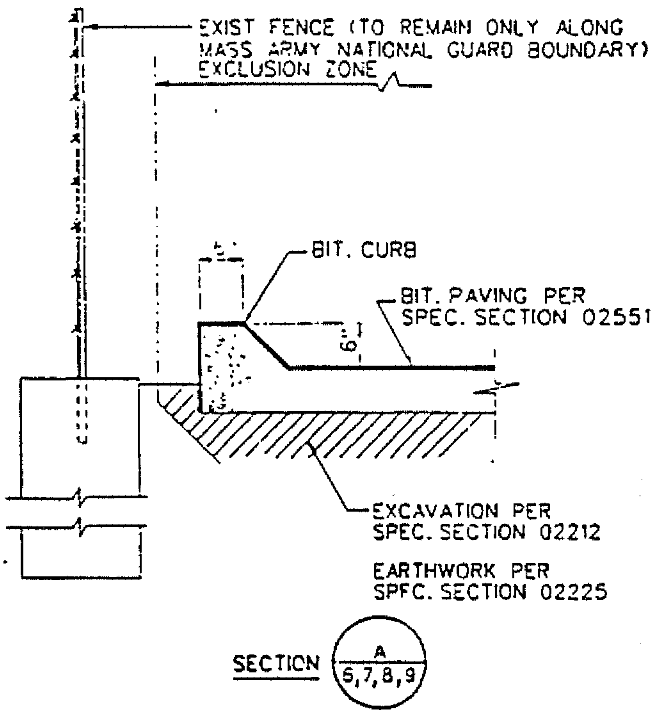
PREPARED BY C. Kane DEPT CRD DATE 10-12

MATH CHECK BY DEPT DATE

METHOD REV. BY DEPT DATE

APPROVED BY

DEPT DATE




MAINTENANCE YARD

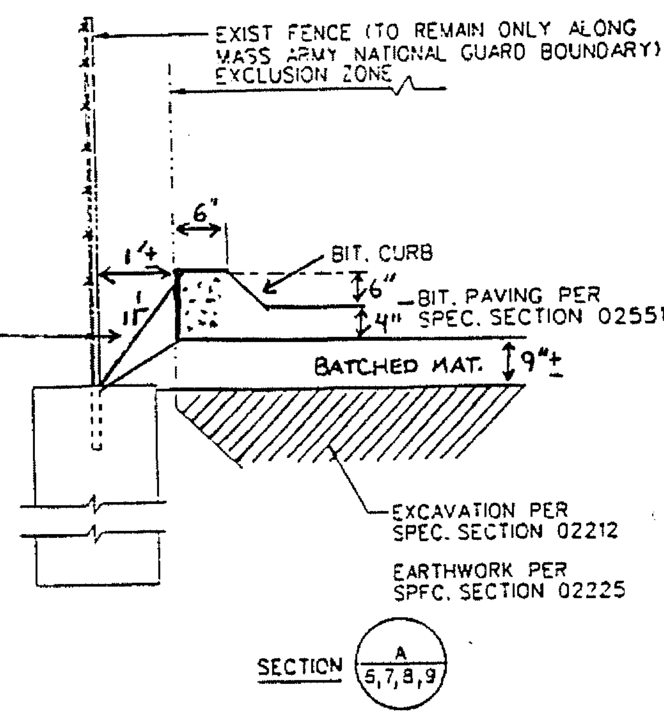
"CURBING"
CONTRACT DWG. DETAIL

DWG. NTS

"CURBING"
PROPOSED DETAIL

DWG. NTS

CLEAN OVERBURDEN
(Placing not in scope)



FROM U.S. Army Corps of Engineers
Antietam Rd, Bldg 1629
Fort Devens, MA 01433-5860

TO Christopher Kane
ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440
DCN #: [illegible]

SUBJECT: Hydrant Relocation + Berming Proposal DATE: 10-26-95

FOLD ↑ Relocation of the hydrant w/in the Maintenance Yards was authorized on 10/11 by Jim Morocco per memo from WESTON. Attached is a proposed drawing showing location of hydrant. Note the hydrant was installed in 1942 and is in poor condition. A new hydrant is highly recommended since the existing hydrant shows signs of leakage when turned on. In addition, a Cape Cod Berm is recommended for curbing to aid in plowing during winter months

RETURN TO → SIGNED Christopher D. Kane

REPLY The hydrant relocation drawing looks good, and is acceptable. Please purchase a new hydrant as per your note. I also concur with your recommendation on the "Cape Cod" berm for the asphalt curbing. Please proceed according to your sketches

DATE: 10/27/95 SIGNED James P. Morocco



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SHEET 1 of 1

CLIENT/SUBJECT CENED W.O. NO.

TASK DESCRIPTION Hydrant Relocation Plan TASK NO.

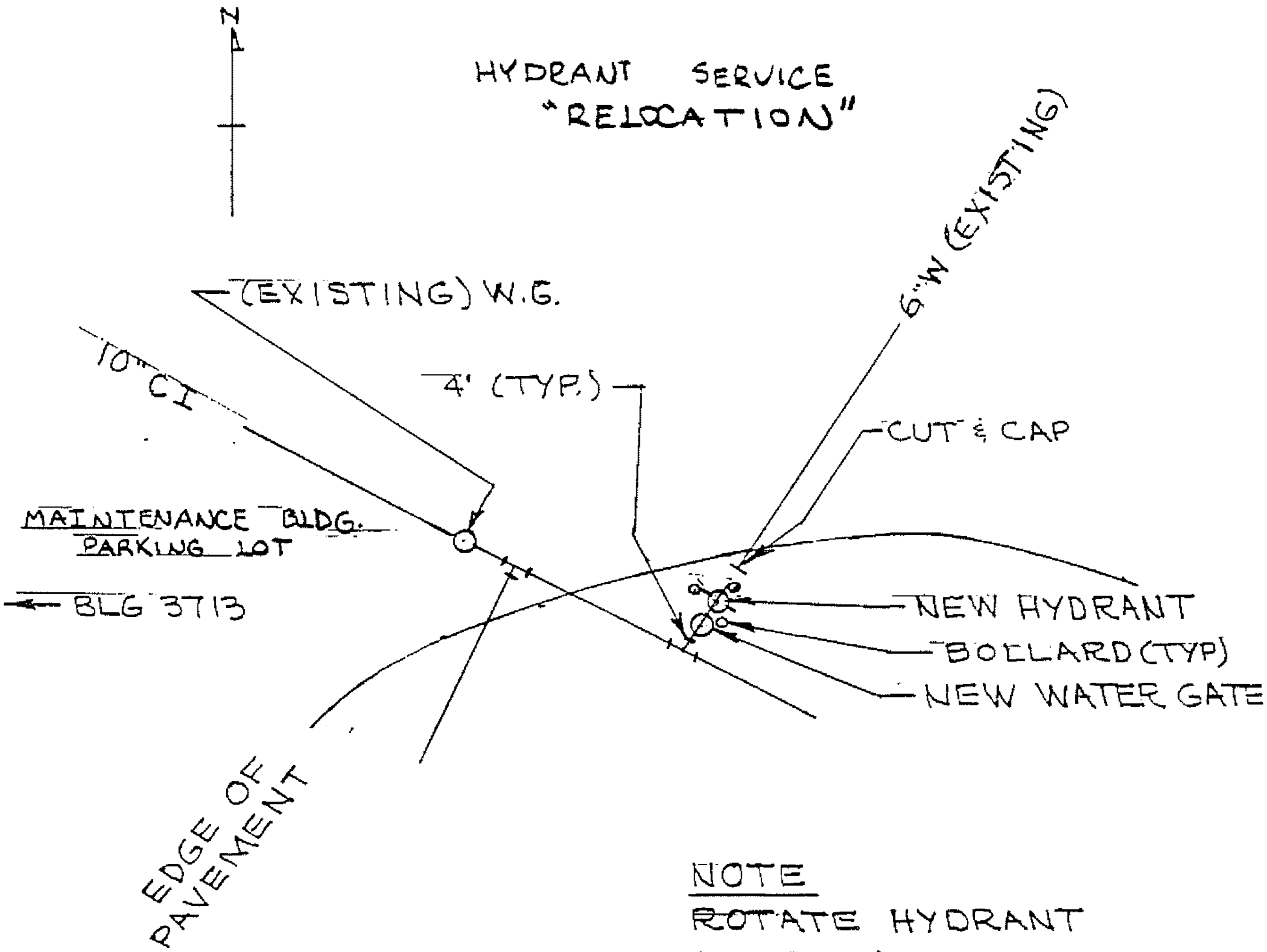
PREPARED BY R. Wilby DEPT CRD DATE 10-26

MATH CHECK BY DEPT DATE

METHOD REV. BY DEPT DATE

APPROVED BY

DEPT DATE




NOTE

ROTATE HYDRANT AS REQ'D

DATE - 10/17/95
SCALE - 1" = 30'

WESTON
MANAGERS DESIGNERS CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT CENED W.O. NO. ____

TASK DESCRIPTION Curbing Detail TASK NO. ____

PREPARED BY C. Kane DEPT CRD DATE 10-26

MATH CHECK BY ____ DEPT ____ DATE ____

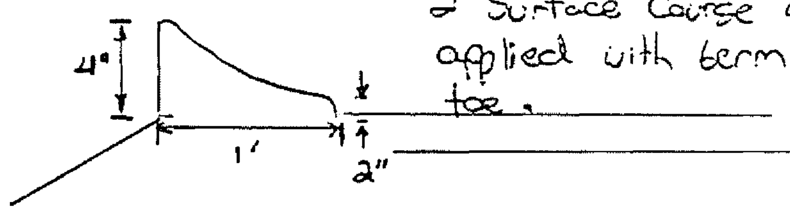
METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY ____

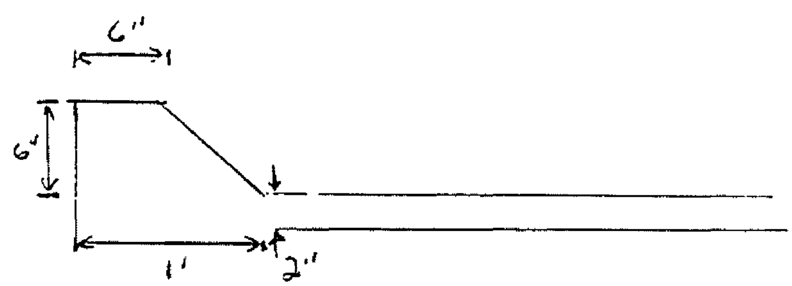
DEPT ____ DATE ____

CAPE COD BERM - PROPOSED

2" Surface Course will be applied with berm to key in toe.




CONTRACT DWG. BERM (DWG. 12 of 13)



FROM Steve Umbrell
U.S. Army Corp of Engineers
Antietam Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO Christopher Kane
**ROY F. WESTON, INC.**
**7 Eagle Sq.**
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440
W.O.# RFMV-102.195-AHHM

SUBJECT: Proposed Fencing Location at Detention Pond DATE: 10-27-95

FOLD

The existing contract dwg., sheet 12 of 13 shows the proposed 6' high chain link fence to be located on the slope of the Detention Pond along the perimeter of the embankment. Installation at this location will be difficult to implement due to the 2:1 slope therefore WESTON recommends moving the fence in approximately 2 ft from proposed location along flat area of embankment.

RETURN TO SIGNED Christopher Kane

REPLY

Please install the fence posts on the flat top surface of the embankment, but as close as possible ~~the~~ to the transition point.

DATE: 10/30/95 SIGNED [illegible]

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FROM Mr. Steve Umbrell
U.S. Army Corp of Engineers
Antietam Rd., Bldg. 1629
Fort Devens, MA 01433-5860

TO Christopher G. Kane
ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440
DCN: BRMY-102795AAHP

SUBJECT: Finegrading Excess "Clean" Fill

DATE: 10-27-95

FOLD ↑

As discussed per our meeting on 10-27, WESTON recommends blending in excess "clean" material during fine grading of batched material over the entire Maintenance Yards. This quantity will not exceed 500 c.y. and will be performed by R.J. Keating from 10/30 - 11/3.

RETURN TO ⟶

SIGNED Christopher G. Kane

REPLY Your above recommendation is acceptable. However, please let us know if ~~any~~ there are any adverse effects ~~are~~ on the site's drainage.

DATE: 10/30/95

SIGNED James C. Umbrell

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944


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FROM: Mr. Steve Umbrell
U.S. Army Corp of Engineers
Antietam Rd, Bldg. 1629
Fort Devens, MA 01433-5860

TO: Christopher Kane
ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301-4891
(603) 228-1334 • Fax (603) 228-3440

DCN # BRMY-103095-AAHQ

SUBJECT: Asphalt Access Ramp at Maintenance Yard Gate DATE: 10-30-95

FOLD

A sketch of the proposed asphalt access ramp for the Maintenance Yard area at the chain link fence is included with this memo per discussion between the Corp (Steve Umbrell), Maintenance Yard Chief (Bob Schwartz) and myself. Webster will submit a quote to perform the services for grading the batched material.

RETURN TO →

SIGNED [signature]

REPLY The above proposal and sketch are acceptable. Please be aware that any material beneath the new batched material is thoroughly compacted.

DATE: 11/3/95 SIGNED [signature]



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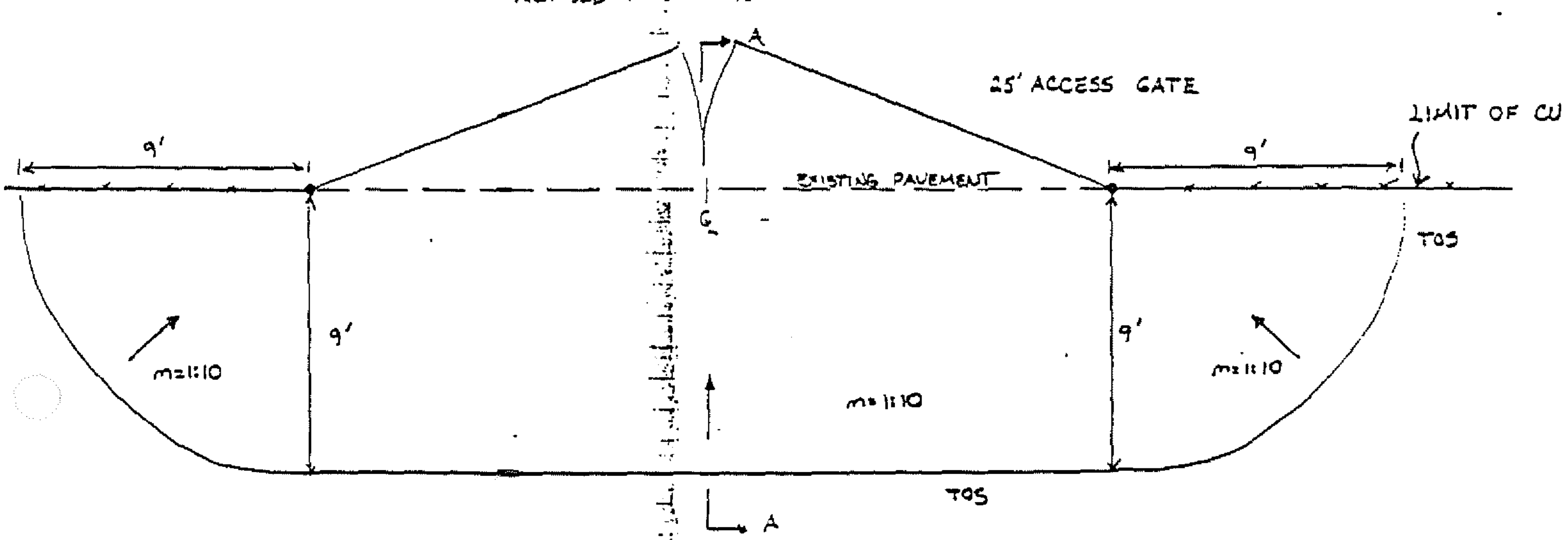
WESTON

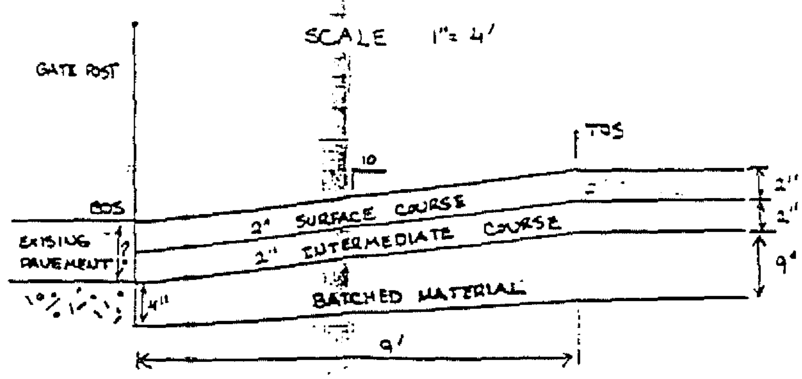
| | |
|---|---|
| CEWED | SHEET 1 |
| PROPOSED ACCESS RAMP | W.O. NO. 0399 |
| Kanc DEPT C2D DATE 10-30-95 • Proposed Maintenance Yard Access Gate | TASK NO. |
| DEPT DATE • | APPROV |
| DEPT DATE • | DEPT |

PROPOSED ACCESS RAMP




RAMP DETAIL A-A

SCALE 1"= 4'




NTS

FROM
Steve Umbrell
U.S. Corps of Engineers
Fort Devens, MA
Re: Barnum Rd. Maint Yards

TO

ROY F. WESTON, INC.
7 Eagle Sq.
CONCORD, NH 03301-4991
(603) 228-1334 • Fax (603) 228-3440

SUBJECT: Cold Weather Paving

DATE: 11/9/95

FOLD ↑

Specifications require a minimum temperature of 40°F for placing asphalt paving. Per our conversation on this date, WESTON is proceeding with placement of asphalt paving when the temperature is at least 35°F and rising, in order to meet the schedule for pavement completion this year. (DEC. 1995) Please indicate your concurrence with any comments below.

RETURN TO →

SIGNED [signature]

REPLY Stephen Umbrell spoke with John Hart of our Geotechnical Branch on this subject. Asphalt can be placed when the temperature is down to 35°F, but there some precautions which need to be taken. Please refer to the attached sheet.

DATE: 11/14/95

SIGNED Ammon A. Marco

Reorder Item #F270 Grayarc, P.O. Box 2944, Hartford, CT 06104-2944



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Asphalt placement and temperature Restrictions
(per conversation w/ John Hart, Geotechnical Branch)

- All information comes from section 460 of the Mass. State Highway spec. for class I bitumenous pavement.

1. If the surface to be paved is at 35°F, the asphalt must be at least 295°F for a 2" layer

2. compaction must be done immediately, and not if temperature of asphalt falls below 170°F.

3. Minumum density must be 95% of optimal

4. The joints must be 200°F; if not they should be treated with a hot rubberized asphalt joint sealant. (see state spec.)

Steve Umhall
US Army Corps
11-14-95

E

## Summary of Exposure Monitoring and Air Monitoring

Personnel Zone Monitoring was conducted in accordance with the Site Safety and Health Plan. Monitoring was conducted down wind of all activities being performed. The areas monitored included the exclusion zone, contamination reduction zone and the support zone. Parameters of concern within the Maintenance Yards were cPAHs and TPHs.

Confined Space Entry (i.e., trench-box excavations) Air monitoring was conducted in accordance with the SSHP which included monitoring for oxygen, Lower Explosive Limit (LEL), and organics (TPHs and benzene). The monitoring was done at various levels of the excavation prior to entry by personnel.

Perimeter monitoring was conducted in accordance with the SSHP. Real time air monitoring for dust, TPHs and dust surrogates for cPAHs around the perimeter of the exclusion zone for the purpose of controlling on-site operations with respect to off-site receptors. Parameters of concern were TPHs and cPAHs.

Personnel/zone and Perimeter monitoring were conducted three times a day, while Confined Space Entry monitoring was conducted as needed. All monitoring events are recorded in a daily log book.

Instruments used during monitoring are shown in Table 1. The PID used was an OVM 58B with a response factor set for benzene detection. The Combustible Gas Indicator was a CG1 Mode 260, capable of oxygen detection. Action levels used for the site are also presented in Table 1.

Monitoring was also conducted when drums were discovered in grid B6. Debris was discovered in a number of other grids. Each time debris was found air monitoring was performed to ensure that workers were not being exposed to harmful contaminants. All instrument readings were observed to be non-detect.

No accidents/incidents or near misses occurred on the project. Drums were discovered in grid B6 on the fourth and final cut. The drums were left in place and air monitoring was performed to ensure the safety of the personnel working around this area. The drums were later removed by a subcontractor without incident. The drums were placed in overpack containers at the location where found. The work was performed in level B PPE. Test pits were excavated in the area surrounding the drums. No additional drums were found. Overpacked drums were then moved to a staging area on the decon pad.

Unexploded Ordnances (UXO) were also discovered during the performance of work. The first occurrence took place on 16 October 1995. An employee of AmRec brought the object to the attention of the SSHO and the QC personnel of Roy F. Weston (WESTON). The site was then evacuated. The Army Corps of Engineers were informed of the finding. WESTON contacted Human Factor Applications, Inc. (HFA). The safety officer for HFA came out and identified the UXO to be a WWI 3" Stokes mortar round. Military

Police evacuated an 800 foot radius around the UXO. Once all was secure, HFA personnel safely cleared the mortar which turned out to be a practice round.

WESTON Management set up an awareness training with HFA for all personnel involved with field activities. Training took place on 18 October 1995 and provided managers and field workers information on UXO recognition, evacuation, and response procedures.

Subsequently, three additional UXO events took place. A practice rifle grenade was found in grid E6 on 20 October 1995 after the final excavation cut had been made. All safety precautions were taken to ensure the safety of personnel. HFA removed the UXO and work resumed.

The remaining UXO events occurred at the detention pond. On 1 November 1995, while excavating for the detention pond overflow, another UXO was discovered. All safety procedures were followed and HFA identified it as a British type 3" mortar round. It was also a practice round and removed from the site. On 2 November 1995 a second practice British type mortar was discovered and cleared by HFA as done with the previous UXO's.

Demobilization of equipment:

| | |
|---|---|
| 10/26/95 | Webster equipment demobed off site |
| 10/30/95 | Crusher Excel 1500 demobed |
| | Kamatsu 420 Loader demobed |
| | 6000 gal. tanker demobed |
| | Pugmill T-3000 demobed |
| 11/7/95 | D4H Dozer demobed |
| | 980 Loader demobed |

Decontamination Procedures for Equipment:

1. Gross decon of equipment in the contaminated area before moving to decon pad.

2. Once on the decon pad, complete decon of the equipment took place.

   a. Tires or tracks were scrubbed and rinsed with alconox and water.
   b. The bucket or blade is was washed and rinsed.
   c. All sides of the equipment where in contact with excavated materials, were washed and rinsed.
   d. The equipment was then inspected visually and with monitoring instruments to verify that the decon job was successful.
   e. All decon water was stored in a holding tank, analyzed, and properly disposed.

3. Equipment was demobed from the site.

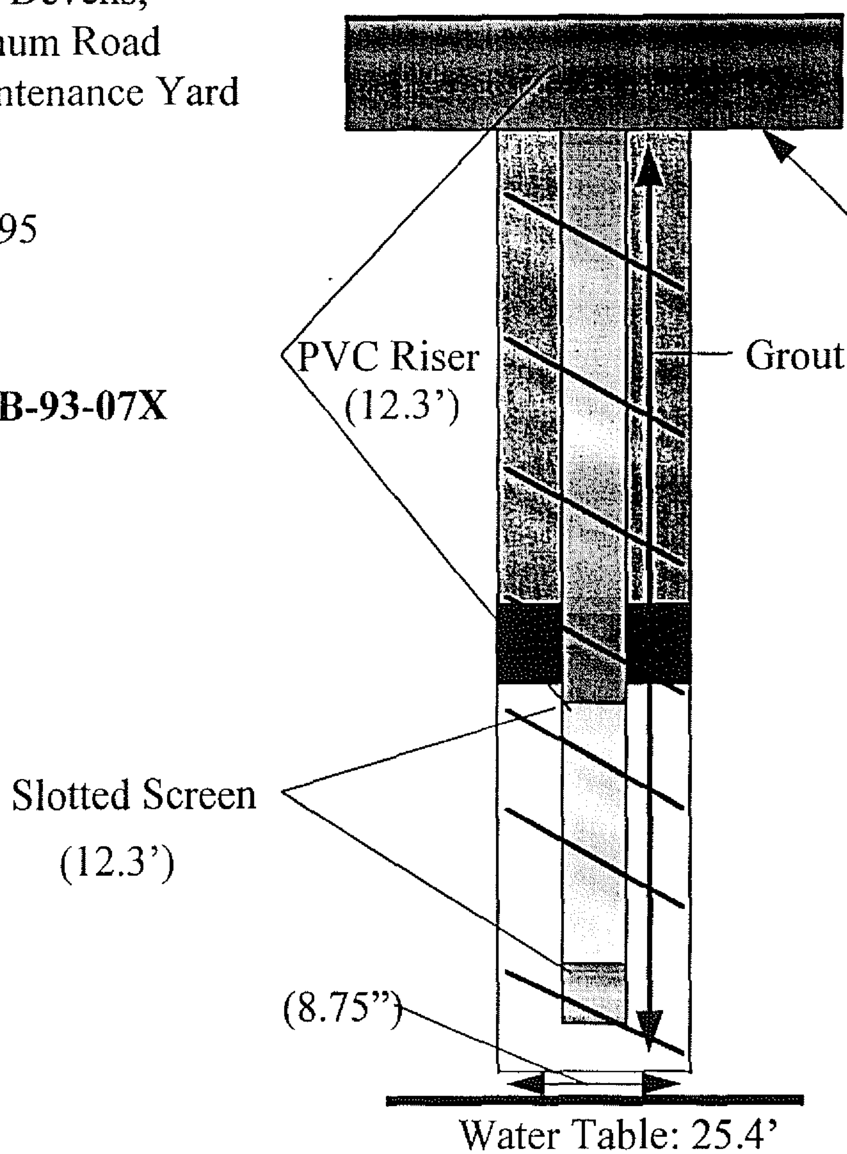
F

## New Hampshire Boring
## Monitoring Well Removal Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 08/08/95

**Well ID: 44B-93-07X**




Soil Venting Well # 44B-93-07X was removed due to a UST hot spot excavation to 14' below O.G.

Removed Road Box and excavated 2 feet below original ground surface. 4" PVC was removed via over drilling with Auger (83/4 inch O.D., 4 inch I.D.)

Schedule 40 - 4 inch riser pipe removed

Backfill (4" of Pavement, 9" of Asphalt Batch Material, 11" of Backfill)

Overdrilled with 83/4 inch Augers to a depth of 25'

Removed scedule 40 - 4 inch 0.020 slot screen removed

Tremie Grouted from 25 feet to 2 feet gelow ground surface following the removal of the 4 inch casing.

Approximately 147 gallons of cement bentonite grout was used.

No settlement ocurred, therefore replacement grout was not necessary.

Note: Water Table was obtained from original soil boring log performed by NH Boring as shown in Appendix I in the USACE Specifications from O.G.

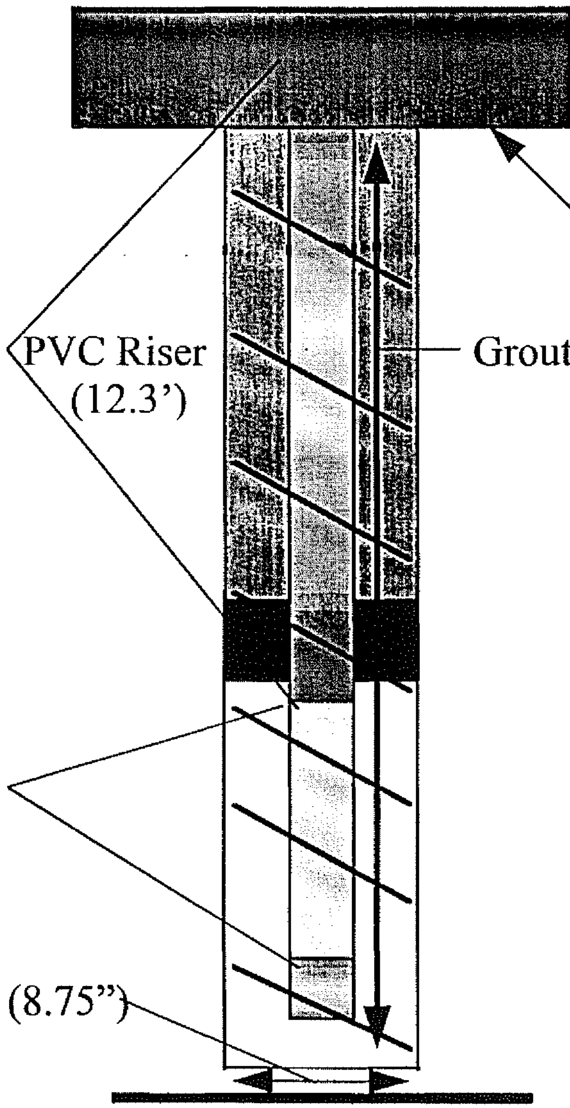
Total depth: 25'

# New Hampshire Boring
# Monitoring Well Removal Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 08/08/95

**Well ID: 44B-93-08X**




Total depth: 24.5'

Soil Venting Well # 44B-93-07X was removed due to a UST hot spot excavation to 14' below O.G.

Removed Road Box and excavated 2 feet below original ground surface. 4" PVC was removed via over drilling with Auger (83/4 inch O.D., 4 inch I.D.)

Schedule 40 - 4 inch riser pipe removed

Backfill (4" of Pavement, 9" of Asphalt Batch Material, 11" of Backfill)

Overdrilled with 83/4 inch Augers to a depth of 25'

Removed scedule 40 - 4 inch 0.020 slot screen removed

Tremie Grouted from 25 feet to 2 feet gelow ground surface following the removal of the 4 inch casing.

Approximately 150 gallons of cement bentonite grout was used.

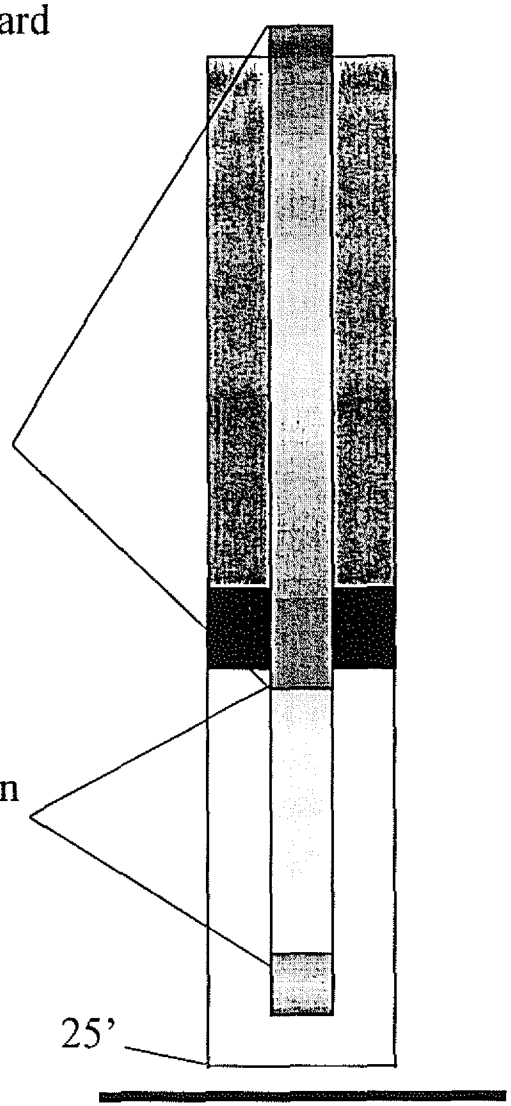
Settled 3' after grouted, approximately 10 gallons of cement bentonite grout was added.

## New Hampshire Boring
## Monitoring Well Decommissioning Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 08/07/95

**Well ID: 44B-93-09X**




Soil venting well #44B-93-09X was abandoned due to Maintenance Yard excavation to 2' below grade.

Removed road Box and excavated 2' below original ground surface. Removedtop 2' of 4" PVC Riser.

PVC left in ground. Tremie grouted from 25' to 2' below original ground surface.

Approximately 50 gallons of cement bentonite grout.

The well settled 3' after grouting. The hole was refilledto existing grade with grout. Approximately 6 gallons of cement bentonite grout.

Materials left in place:
Type of Cover: Pavement
Diameter of Borehole: 10 1/4"
Riser Pipe ID: 4"
Type of Riser Pipe: Schedule 40 PVC
Type of Backfill: Cement
Type of Seal: Bentonite Chips
Type of Screen: Schedule 40 PVC
Slot Size: 0.020"x22.3
ID of Screen: 4"
Type of Sand Pack: Silica Sand

# New Hampshire Boring

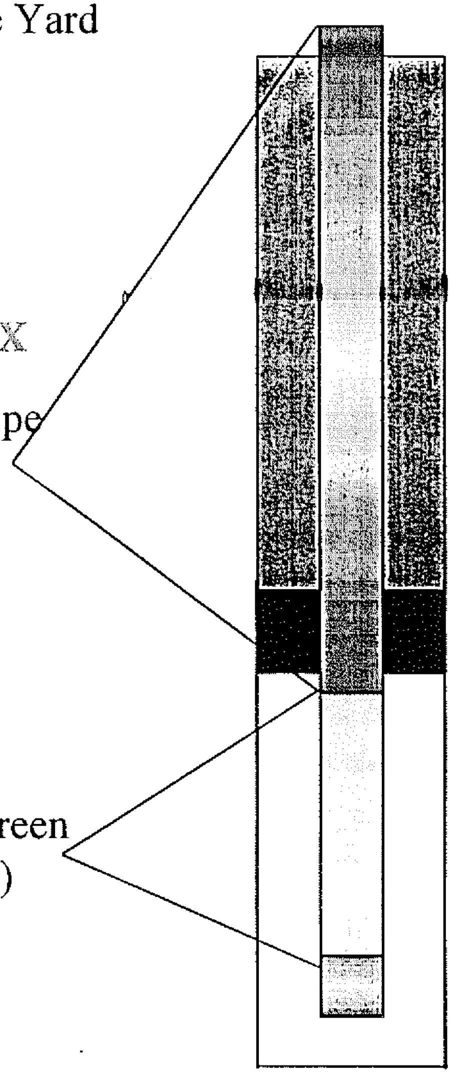
# Monitoring Well Decommissioning Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 08/07/95

**Well ID: 44B-93-10X**

PVC Riser Pipe
(3.0')



Slotted Screen
(22.3')

Soil venting well #44B-93-10X was abandoned due to Mogas trench "hot Spot" excavation.

Removed road Box and excavated 3' below original ground surface. Removedtop 3' of 4" PVC Riser.

PVC left in ground. Tremie grouted from 25' to 2' below original ground surface.

Approximately 50 gallons of cement bentonite grout.

The well settled 3' after grouting. The hole was refilledto existing grade with grout. Approximately 8 gallons of cement bentonite grout.

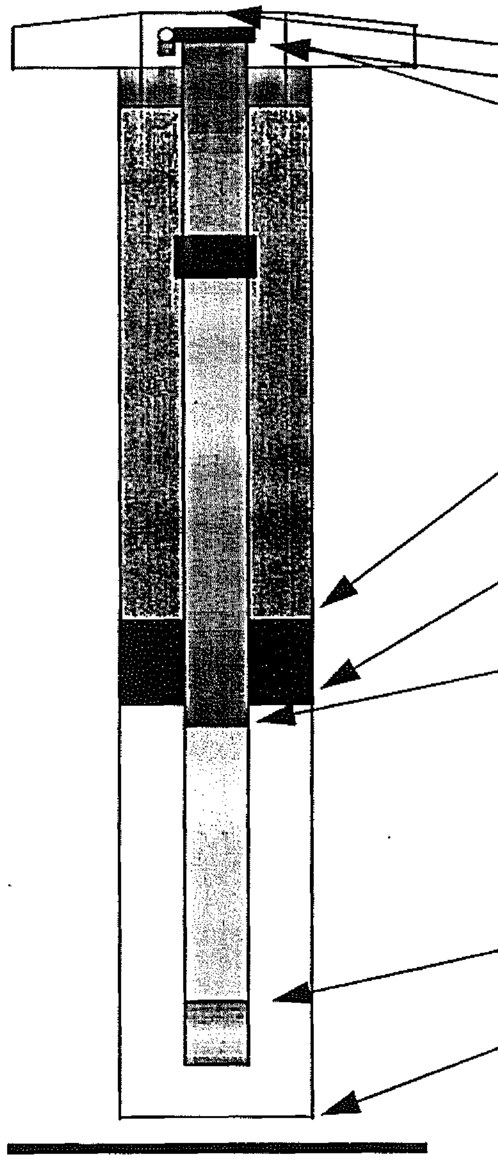
<u>Materials left in place:</u>
Type of Cover:<u>Pavement</u>
Diameter of Borehole:<u>      10 1/4"</u>
Riser Pipe ID:<u>    4"</u>
Type of Riser Pipe:<u>Schedule 40 PVC</u>
Type of Backfill:<u>Cement</u>
Type of Seal:<u>Bentonite Chips</u>
Type of Screen:<u>Schedule 40 PVC</u>
Slot Size:<u>0.020"x22.3</u>
ID of Screen:<u>4"</u>
Type of Sand Pack:<u> Silica Sand</u>

# New Hampshire Boring
# Monitoring Well Alteration Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 11/01/95

**Well ID: G3M-92-04X**



Elevation at Top of Road Box: 250.60 ft
Stick-up of Casing Above Ground Surface: 0 ft
Elevation of Top of RiserPipe: 248.2 ft
Type of Surface Seal: Concrete Pad 2' x 2' x 0.5' (see detail)
Type of Cover: Flush Mounted, Water - Tight, w/ 5 sided bolt
Type of Casing: *" Aluminum Road Box
Diameter of Road Box & Cover: 0.5'
Locking Device: Padlock/ Key on well cap

Coupling Type: 4" PVC
Diameter of Borehole: 10"
Riser Pipe ID: 4"
Type of Riser Pipe: Schedule 40 PVC
Type of Backfill: Grout

Elevation of Top of Seal: 238.6'
Depth of Top of Seal: 12.0'
Type of Seal: Bentonite Chips

Elevation of Top of Sand: 233.2'
Depth of Top of Sand: 17.4'

Elevation of Top of Screen: 227.6'
Depth of top of Screen: 23'

Type of Screen: Schedule 40 PVC
Slot Size: 0.010"
ID of Screen: 4"

Type of Sand Pack: Morie #0 Silica Sand

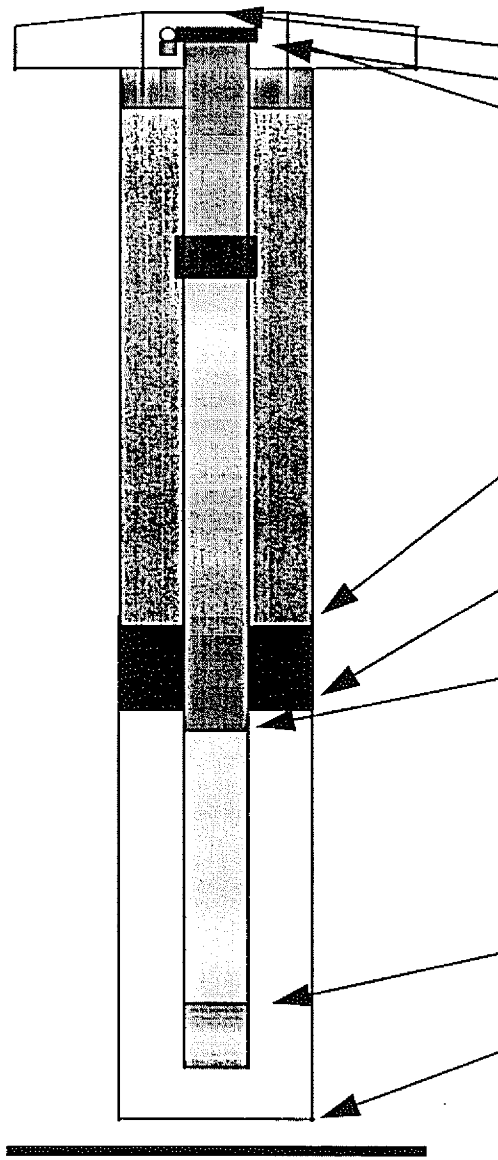
Elevation of Bottom of Screen: 218.0'
Depth of Bottom of Screen: 32.6'
Depth of Sediment Sump with Plug: 33'
Elevation of Bottom of Borehole: 217.6'
Depth of Bottom of Borehole: 33'

# New Hampshire Boring
# Monitoring Well Alteration Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 10/31/95

**Well ID: G3M-93-10X**



Elevation at Top of Road Box: 250.60 ft
Stick-up of Casing Above Ground Surface: 0 ft
Elevation of Top of RiserPipe: 248.12 ft
Type of Surface Seal: Concrete Pad 2' x 2' x 0.5' (see detail)
Type of Cover: Flush Mounted, Water - Tight, w/ 5 sided bolt
Type of Casing: Aluminum Road Box
Diameter of Road Box and Cover: 0.5'
Locking Device: Padlock/ Key on well cap

Coupling Type: 4" PVC
Diameter of Borehole: 10.25"
Riser Pipe ID: 4"
Type of Riser Pipe: Schedule 40 PVC
Type of Backfill: C-B Grout

Elevation of Top of Seal: 238.77'
Depth of Top of Seal: 12.0'
Type of Seal: Bentonite Chips

Elevation of Top of Sand: 233.77'
Depth of Top of Sand: 17.0'

Elevation of Top of Screen: 227.77'
Depth of top of Screen: 23'

Type of Screen: Schedule 40 PVC
Slot Size: 0.010"
ID of Screen: 4"

Type of Sand Pack: Morie #0 Silica Sand

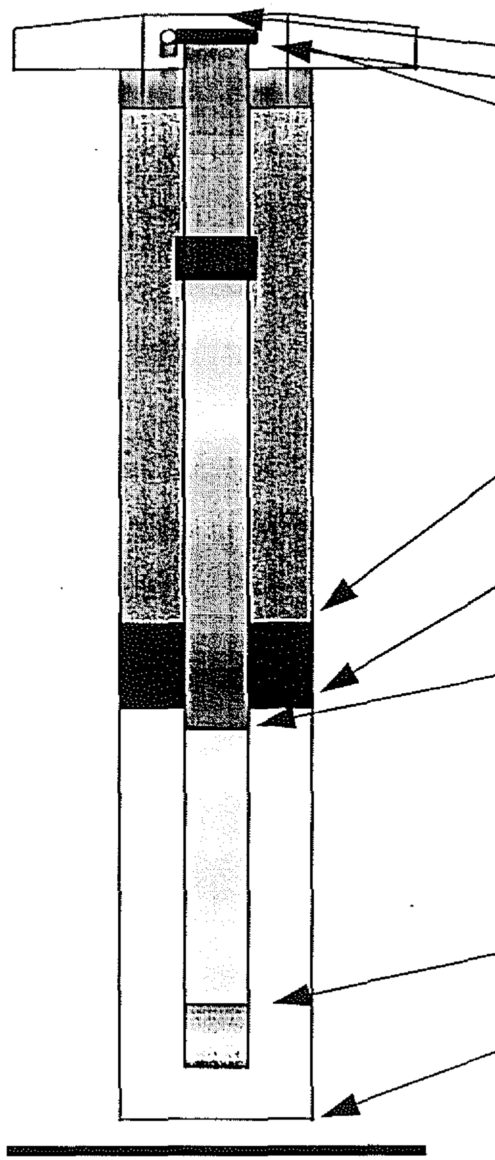
Elevation of Bottom of Screen: 217.77'
Depth of Bottom of Screen: 33.0'
Depth of Sediment Sump with Plug: 33.5'
Elevation of Bottom of Borehole: 217.27'
Depth of Bottom of Borehole: 34'

# New Hampshire Boring
# Monitoring Well Alteration Diagram

Project: Fort Devens,
Barnum Road
Maintenance Yard

Date: 10/31/95

**Well ID: G3M-93-11X**



Elevation at Top of Road Box: 250.69 ft
Stick-up of Casing Above Ground Surface: 0 ft
Elevation of Top of RiserPipe: 248.19 ft
Type of Surface Seal: Concrete Pad 2' x 2' x 0.5' (see detail)
Type of Cover: Flush Mounted, Water - Tight, w/ 5 sided bolt
Type of Casing: *" Aluminum Road Box
Diameter of Road Box and Cover: 0.5'
Locking Device: Padlock/ Key on well cap

Coupling Type: 4" PVC
Diameter of Borehole: 10"
Riser Pipe ID: 4"
Type of Riser Pipe: Schedule 40 PVC
Type of Backfill: Grout

Elevation of Top of Seal: 239.69'
Depth of Top of Seal: 11.0'
Type of Seal: Bentonite Chips

Elevation of Top of Sand: 233.19'
Depth of Top of Sand: 17.5'

Elevation of Top of Screen: 227.69'
Depth of top of Screen: 23'

Type of Screen: Schedule 40 PVC
Slot Size: 0.010"
ID of Screen: 4"

Type of Sand Pack: Silica, Pool Filter Sand

Elevation of Bottom of Screen: 217.69'
Depth of Bottom of Screen: 33.0'
Depth of Sediment Sump with Plug: 33.5'
Elevation of Bottom of Borehole: 217.19'
Depth of Bottom of Borehole: 34'

G

# Fort Devens-Barnum Road Site
## Maintenance Yards Excavation/Stockpile Summary

Month Ending 8/31/95

| DATE | EXCAVATION Qty (c.y.) | Swell (c.y.) | Cumulative Qty (c.y.) | Percent Complete | STOCKPILE Clean Qty (c.y.) | Contaminated Qty (c.y.) | Cumulative Qty (c.y.) | Percent Complete |
|---|---|---|---|---|---|---|---|---|
| 8/16/95 | 411.00 | 82.20 | 493.20 | 1.64 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/17/95 | 480.00 | 96.00 | 1,069.20 | 3.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/18/95 | 1,190.00 | 238.00 | 2,497.20 | 8.30 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8/21/95 | 706.00 | 141.20 | 3,344.40 | 11.11 | 0.00 | 627.10 | 627.10 | 2.08 |
| 8/22/95 | 471.00 | 94.20 | 3,909.60 | 12.99 | 0.00 | 581.20 | 1,208.30 | 4.01 |
| 8/23/95 | 605.00 | 121.00 | 4,635.60 | 15.40 | 0.00 | 472.10 | 1,680.40 | 5.58 |
| 8/24/95 | 595.00 | 119.00 | 5,349.60 | 17.77 | 290.90 | 132.00 | 2,103.30 | 6.99 |
| 8/25/95 | 774.20 | 154.84 | 6,278.64 | 20.86 | 0.00 | 320.70 | 2,424.00 | 8.05 |
| 8/28/95 | 1,188.40 | 237.68 | 7,704.72 | 25.60 | 0.00 | 610.00 | 3,034.00 | 10.08 |
| 8/29/95 | 1,388.80 | 277.76 | 9,371.28 | 31.13 | 0.00 | 1,309.50 | 4,343.50 | 14.43 |
| 8/30/95 | 919.40 | 183.88 | 10,474.56 | 34.80 | 1,287.30 | 0.00 | 5,630.80 | 18.71 |
| 8/31/95 | 1,239.50 | 247.90 | 11,961.96 | 39.74 | 198.40 | 972.60 | 6,801.80 | 22.60 |
| **Average** | 830.69 | 166.14 | | | | | | |
| **Total** | 9,968.30 | 1,993.66 | 11,961.96 | 39.74 | 1,776.60 | 5,025.20 | 6,801.80 | 22.60 |
| **Bid Qty (c.y.)** | **25,100.00** | **5,000.00** | **30,100.00** | | **20,000.00** | **11,000.00** | **30,100.00** | |

**Formula Assumptions:**

Swell: Excavation Qty * .20 per Specifications

Excavated Cumulative Qty: Excavated Qty + Swell

Excavated Percent Complete: Cumulative Qty / 30,100 (Not including Hot Spot Areas-1100 c.y.)

Stockpile Percent Complete: Cumulative Qty / 30,100 (Not including Hot Spot Areas-1100 c.y.)

**NOTE:** Stockpiled quantities include a 20% swell factor.

c:\ftdv\excstsum.xls

H

Roy F. Weston, Inc.
Ft. Devens-Maintenance Yard Remediation
No. DACW33-95-D-0004

12/26/95

## Analytical Summary Table

| Grid Location | Excavation No. (6 In.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Analytical Results Time | Results (ppm) cPAH 7 | Results (ppm) TPH 500 |
|---|---|---|---|---|---|---|---|---|
| A6 | 1 | 9/1/95 | 9/1/95 | A-6,A-7 | 9/5/95 | 10:15 | 52.18 | 410 |
| | 2 | 9/6/95 | 9/6/95 | A-7 | 9/7/95 | 8:21 | 17.57 | 364 |
| | 3 | 9/11/95 | 9/11/95 | A-7 | 9/12/95 | 7:51 | ND | 142 |
| | 4 | 9/14/95 | 9/14/95 | A-7 | 9/15/95 | 8:00 | ND | 8 |
| A7 | 1 | 9/1/95 | 9/1/95 | A-6,A-7 | 9/5/95 | 10:15 | 52.18 | 410 |
| | 2 | 9/6/95 | 9/6/95 | A-7 | 9/6/95 | 8:21 | 17.57 | 364 |
| | 3 | 9/11/95 | 9/11/95 | A-7 | 9/12/95 | 7:51 | ND | 142 |
| | 4 | 9/14/95 | 9/14/95 | A-7 | 9/15/95 | 8:00 | ND | 8 |
| A8 | 1 | 9/1/95 | 9/1/95 | A-8 | 9/5/95 | 10:15 | 87.16 | 179 |
| | 2 | 9/6/95 | 9/6/95 | A-8 | 9/6/95 | 8:21 | 5.12 | 39 |
| | 3 | 9/14/95 | 9/14/95 | A-8 | 9/15/95 | 8:00 | 0.98 | ND |
| | 4 | 9/15/95 | 9/15/95 | A-8 | 9/18/95 | 8:21 | ND | ND |
| A9 | 1 | 9/1/95 | 9/1/95 | A-10 | 9/5/95 | 10:15 | 45.00 | 319 |
| | 2 | 9/5/95 | 9/5/95 | A-10 | 9/6/95 | 8:39 | 2.18 | 110 |
| | 3 | 9/6/95 | 9/6/95 | A-10 | 9/7/95 | 8:21 | 1.75 | 174 |
| | 4 | 9/7/95 | 9/7/95 | A-10 | 9/8/95 | 10:45 | 0.13 | 29 |
| A10 | 1 | 9/1/95 | 9/1/95 | A-10 | 9/5/95 | 10:15 | 45.00 | 319 |
| | 2 | 9/5/95 | 9/5/95 | A-10 | 9/6/95 | 8:39 | 2.18 | 110 |
| | 3 | 9/6/95 | 9/6/95 | A-10 | 9/7/95 | 8:21 | 1.75 | 174 |
| | 4 | 9/7/95 | 9/7/95 | A-10 | 9/8/95 | 7:45 | 0.13 | 29 |
| B1 | 1 | 8/18/95 | 8/18/95 | B-1 | 8/21/95 | 10:54 | 30.70 | 1371 |
| | 2 | 8/25/95 | 8/25/95 | B-1 | 8/28/95 | 7:45 | 17.14 | 108 |
| | 3 | 8/31/95 | 8/31/95 | B-1 | 9/1/95 | 8:19 | 1.50 | 40 |
| | 4 | 9/6/95 | 9/6/95 | B-1 | 9/7/95 | 8:21 | ND | 8 |
| B2 | 1 | 8/18/95 | 8/18/95 | B-2 | 8/21/95 | 10:54 | 78.18 | 841 |
| | 2 | 8/29/95 | 8/29/95 | B-2 | 8/30/95 | 11:14 | 8.12 | 150 |
| | 3 | 9/5/95 | 9/5/95 | B-2 | 9/6/95 | 8:39 | 0.68 | 11 |
| | 4 | 9/11/95 | 9/11/95 | B-2 | 9/12/95 | 7:51 | ND | 28 |
| B3 | 1 | 8/21/95 | 8/21/95 | B-3 | 8/22/95 | 19:23 | 20.28 | 771 |
| | 2 | 8/29/95 | 8/29/95 | B-3 | 8/30/95 | 11:14 | 3.35 | 193 |
| | 3 | 9/7/95 | 9/7/95 | B-3 | 9/8/95 | 10:45 | 2.98 | 60 |
| | 4 | 9/12/95 | 9/12/95 | B-3 | 9/13/95 | 10:31 | ND | 7 |
| B4 | 1 | 8/29/95 | 8/29/95 | B-4 | 8/30/95 | 11:14 | 68.45 | 449 |
| | 2 | 9/5/95 | 9/5/95 | B-4 | 9/6/95 | 8:39 | 5.34 | 195 |
| | 3 | 9/7/95 | 9/7/95 | B-4 | 9/8/95 | 10:45 | ND | 35 |
| | 4 | 9/13/95 | 9/13/95 | B-4 | 9/14/95 | 10:35 | ND | 13 |
| B5 | 1 | 8/29/95 | 8/29/95 | B-5 | 8/30/95 | 11:14 | 22.21 | 354 |
| | 2 | 9/5/95 | 9/5/95 | B-5 | 9/6/95 | 8:39 | 2.94 | 127 |
| | 3 | 9/14/95 | 9/14/95 | B-5 | 9/15/95 | 8:00 | 1.04 | 20 |
| | 4 | 9/15/95 | 9/15/95 | B-5 | 9/18/95 | 8:21 | ND | ND |
| B6 | 1 | 8/29/95 | 8/29/95 | B-6 | 8/30/95 | 11:14 | 33.99 | 441 |
| | 2 | 9/5/95 | 9/5/95 | B-6 | 9/6/95 | 8:39 | 8.69 | 222 |
| | 3 | 9/13/95 | 9/13/95 | B-6 | 9/14/95 | 10:35 | 1.15 | 86 |
| | 4 | 9/14/95 | 9/14/95 | B-6 | 9/15/95 | 8:00 | ND | ND |
| B7 | 1 | 9/6/95 | 9/6/95 | B-7 | 9/7/95 | 8:21 | 87.19 | 442 |
| | 2 | 9/7/95 | 9/7/95 | B-7 | 9/8/95 | 10:45 | 31.17 | 221 |
| | 3 | 9/11/95 | 9/11/95 | B-7 | 9/12/95 | 7:51 | 1.45 | 16 |
| | 4 | 9/14/95 | 9/14/95 | B-7 | 9/15/95 | 8:00 | ND | 17 |
| B8 | 1 | 9/6/95 | 9/6/95 | B-8 | 9/7/95 | 8:21 | 29.60 | 681 |
| | 2 | 9/7/95 | 9/7/95 | B-8 | 9/8/95 | 10:45 | 9.78 | 149 |
| | 3 | 9/11/95 | 9/11/95 | B-8 | 9/12/95 | 7:51 | 0.14 | 720 |
| | 4 | 9/15/95 | 9/15/95 | B-8 | 9/18/95 | 8:21 | ND | 54 |
| B9 | 1 | 9/1/95 | 9/1/95 | B-9 | 9/5/95 | 10:15 | 30.02 | 384 |
| | 2 | 9/6/95 | 9/6/95 | B-9 | 9/7/95 | 8:21 | 3.19 | 475 |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

## Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Time | Results (ppm) cPAH 7 | TPH 500 |
|---|---|---|---|---|---|---|---|---|
| | 3 | 9/21/95 | 9/21/95 | B-9 | 9/22/95 | 7:37 | 0.53 | 79 |
| | 4 | 9/22/95 | 9/22/95 | B-9 | 9/25/95 | 6:51 | ND | 9 |
| B10 | 1 | 9/1/95 | 9/1/95 | B-10 | 9/5/95 | 10:15 | 20.68 | 377 |
| | 2 | 9/5/95 | 9/5/95 | B-10 | 9/6/95 | 8:39 | ND | 484 |
| | 3 | 9/6/95 | 9/6/95 | B-10 | 9/7/95 | 8:21 | ND | 151 |
| | 4 | 9/7/95 | 9/7/95 | B-10 | 9/8/95 | 10:45 | 0.13 | 179 |
| C1 | 1 | 8/18/95 | 8/18/95 | C-1 | 8/21/95 | 10:54 | 19.78 | 696 |
| | 2 | 8/25/95 | 8/25/95 | C-1 | 8/28/95 | 7:45 | 12.81 | 138 |
| | 3 | 8/31/95 | 8/31/95 | C-1 | 9/1/95 | 8:19 | 2.96 | 41 |
| | 4 | 9/5/95 | 9/5/95 | C-1 | 9/6/95 | 8:39 | ND | 81 |
| C2 | 1 | 8/18/95 | 8/18/95 | C-2 | 8/21/95 | 10:54 | 33.97 | 1706 |
| | 2 | 8/29/95 | 8/29/95 | C-2 | 8/30/95 | 11:14 | 0.67 | 60 |
| | 3 | 9/7/95 | 9/7/95 | C-2 | 9/8/95 | 10:45 | ND | 13 |
| | 4 | 9/11/95 | 9/11/95 | C-2 | 9/12/95 | 7:51 | ND | 8 |
| C3 | 1 | 8/21/95 | 8/21/95 | C-3 | 8/22/95 | 19:23 | 40.07 | 735 |
| | 2 | 8/29/95 | 8/29/95 | C-3 | 8/30/95 | 11:14 | 14.52 | 302 |
| | 3 | 9/7/95 | 9/7/95 | C-3 | 9/8/95 | 10:45 | ND | 63 |
| | 4 | 9/11/95 | 9/11/95 | C-3 | 9/12/95 | 7:51 | ND | 10 |
| C4 | 1 | 8/24/95 | 8/24/95 | C-4 | 8/25/95 | 8:45 | 78.45 | 1383 |
| | 2 | 9/7/95 | 9/7/95 | C-4 | 9/8/95 | 10:45 | 4.29 | 85 |
| | 3 | 9/12/95 | 9/12/95 | C-4 | 9/13/95 | 10:31 | ND | 10 |
| | 4 | 9/13/95 | 9/13/95 | C-4 | 9/14/95 | 10:35 | ND | 16 |
| C5 | 1 | 10/23/95 | 10/23/95 | D-5 | 10/24/95 | 8:10 | 7.89 | 512 |
| | 2 | 10/23/95 | 10/23/95 | B-5 | 10/24/95 | 8:10 | 7.91 | 1432 |
| | 3 | 10/23/95 | 10/23/95 | B-5 | 10/24/95 | 8:10 | ND | 101 |
| | 4 | 10/23/95 | 10/23/95 | C-5 | 10/24/95 | 8:10 | ND | 40 |
| C6 | 1 | 10/23/95 | 10/23/95 | D-6 | 10/24/95 | 8:10 | 59.04 | 1033 |
| | 2 | 10/23/95 | 10/23/95 | B-6 | 10/24/95 | 8:10 | 3.21 | 299 |
| | 3 | 10/23/95 | 10/23/95 | B-6 | 10/24/95 | 8:10 | 2.63 | 636 |
| | 4 | 10/23/95 | 10/23/95 | C-6 | 10/24/95 | 8:10 | ND | 30 |
| C7 | 1 | 8/28/95 | 8/28/95 | C-7 | 8/29/95 | 10:58 | 47.96 | 242 |
| | 2 | 9/6/95 | 9/6/95 | C-7 | 9/7/95 | 8:21 | 8.88 | 45 |
| | 3 | 9/8/95 | 9/8/95 | C-7 | 9/11/95 | 7:45 | ND | 35 |
| | 4 | 9/14/95 | 9/14/95 | C-7 | 9/15/95 | 8:00 | ND | 30 |
| C8 | 1 | 8/24/95 | 8/24/95 | C-8 | 8/25/95 | 8:45 | 56.52 | 358 |
| | 2 | 9/6/95 | 9/6/95 | C-8 | 9/7/95 | 8:21 | 7.53 | 50 |
| | 3 | 9/8/95 | 9/8/95 | C-8 | 9/11/95 | 7:45 | ND | 10 |
| | 4 | 9/13/95 | 9/13/95 | C-8 | 9/14/95 | 10:35 | 0.12 | ND |
| C9 | 1 | 8/25/95 | 8/25/95 | C-9 | 8/28/95 | 7:45 | 86.74 | 261 |
| | 2 | 9/5/95 | 9/5/95 | C-9 | 9/6/95 | 8:39 | 5.85 | 40 |
| | 3 | 9/8/95 | 9/8/95 | C-9 | 9/11/95 | 7:45 | 0.83 | 9 |
| | 4 | 9/11/95 | 9/11/95 | C-9 | 9/12/95 | 7:51 | ND | ND |
| C10 | 1 | 8/25/95 | 8/25/95 | C-10 | 8/28/95 | 7:45 | 49.64 | 360 |
| | 2 | 8/31/95 | 8/31/95 | C-10 | 9/1/95 | 8:19 | 6.73 | 92 |
| | 3 | 9/5/95 | 9/5/95 | C-10 | 9/6/95 | 8:39 | ND | 14 |
| | 4 | 9/6/95 | 9/6/95 | C-10 | 9/7/95 | 8:21 | ND | 10 |
| D1 | 1 | 8/18/95 | 8/18/95 | D-1 | 8/21/95 | 10:54 | 63.69 | 680 |
| | 2 | 8/23/95 | 8/23/95 | D-1 | 8/24/95 | 9:20 | 3.20 | 132 |
| | 3 | 8/28/95 | 8/28/95 | D-1 | 8/29/95 | 10:58 | ND | 18 |
| | 4 | 8/31/95 | 8/31/95 | D-1 | 9/1/95 | 8:19 | 0.23 | ND |
| D2 | 1 | 8/18/95 | 8/18/95 | D-2 | 8/21/95 | 10:54 | 37.60 | 890 |
| | 2 | 8/29/95 | 8/29/95 | D-2 | 8/30/95 | 11:14 | 0.69 | 29 |
| | 3 | 8/31/95 | 8/31/95 | D-2 | 9/1/95 | 8:19 | ND | ND |
| | 4 | 9/1/95 | 9/1/95 | D-2 | 9/5/95 | 10:15 | ND | ND |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

## Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Analytical Results Time | Results (ppm) cPAH 7 | Results (ppm) TPH 500 |
|---|---|---|---|---|---|---|---|---|
| D3 | 1 | 8/21/95 | 8/21/95 | D-3 | 8/22/95 | 19:23 | 62.50 | 607 |
| | 2 | 8/29/95 | 8/29/95 | D-3 | 8/30/95 | 11:14 | 12.72 | 208 |
| | 3 | 9/7/95 | 9/7/95 | D-3 | 9/8/95 | 10:45 | 1.89 | 82 |
| | 4 | 9/11/95 | 9/11/95 | D-3 | 9/12/95 | 7:51 | ND | 128 |
| D4 | 1 | 8/24/95 | 8/24/95 | D-4 | 8/25/95 | 8:45 | 88.80 | 661 |
| | 2 | 9/7/95 | 9/7/95 | D-4 | 9/8/95 | 10:45 | 6.89 | 120 |
| | 3 | 9/12/95 | 9/12/95 | D-4 | 9/13/95 | 10:31 | 1.39 | 89 |
| | 4 | 9/13/95 | 9/13/95 | D-4 | 9/14/95 | 10:35 | ND | ND |
| D5 | 1 | 10/24/95 | 10/24/95 | D-2 | 10/25/95 | 8:11 | 25.20 | 182 |
| | 2 | 10/24/95 | 10/24/95 | D-5 | 10/25/95 | 8:11 | 6.98 | 97 |
| | 3 | 10/24/95 | 10/24/95 | D-5 | 10/25/95 | 8:11 | ND | ND |
| | 4 | 10/24/95 | 10/24/95 | D-5 | 10/25/95 | 8:11 | 0.47 | ND |
| D6 | 1 | 10/24/95 | 10/24/95 | D-2 | 10/25/95 | 8:11 | 25.59 | 286 |
| | 2 | 10/24/95 | 10/24/95 | D-6 | 10/25/95 | 8:11 | 1.13 | 139 |
| | 3 | 10/24/95 | 10/24/95 | D-6 | 10/25/95 | 8:11 | 3.95 | 9 |
| | 4 | 10/24/95 | 10/24/95 | D-6 | 10/25/95 | 8:11 | 1.26 | ND |
| D7 | 1 | 8/28/95 | 8/28/95 | D-7 | 8/29/95 | 10:58 | 71.26 | 359 |
| | 2 | 9/6/95 | 9/6/95 | D-7 | 9/7/95 | 8:21 | 8.54 | 148 |
| | 3 | 9/8/95 | 9/8/95 | D-7 | 9/11/95 | 7:45 | 0.75 | 35 |
| | 4 | 9/13/95 | 9/13/95 | D-7 | 9/14/95 | 10:35 | ND | ND |
| D8 | 1 | 8/24/95 | 8/24/95 | D-8 | 8/25/95 | 8:45 | 50.46 | 616 |
| | 2 | 9/6/95 | 9/6/95 | D-8 | 9/7/95 | 8:21 | 24.00 | 330 |
| | 3 | 9/8/95 | 9/8/95 | D-8 | 9/11/95 | 7:45 | ND | 7 |
| | 4 | 9/13/95 | 9/13/95 | D-8 | 9/14/95 | 10:35 | ND | 50 |
| D9 | 1 | 8/25/95 | 8/25/95 | D-9 | 8/28/95 | 7:45 | 67.37 | 313 |
| | 2 | 9/5/95 | 9/5/95 | D-9 | 9/6/95 | 8:39 | 4.62 | 26 |
| | 3 | 9/8/95 | 9/8/95 | D-9 | 9/11/95 | 7:45 | 0.36 | 278 |
| | 4 | 9/11/95 | 9/11/95 | D-9 | 9/12/95 | 7:51 | ND | 9 |
| D10 | 1 | 8/25/95 | 8/25/95 | D-10 | 8/28/95 | 7:45 | 50.93 | 397 |
| | 2 | 9/1/95 | 9/1/95 | D-10 | 9/5/95 | 10:15 | 18.75 | 196 |
| | 3 | 9/5/95 | 9/5/95 | D-10 | 9/6/95 | 8:39 | 0.78 | 26 |
| | 4 | 9/6/95 | 9/6/95 | D-10 | 9/7/95 | 8:21 | ND | ND |
| E1 | 1 | 8/18/95 | 8/18/95 | E-1 | 8/21/95 | 10:54 | 34.31 | 1303 |
| | 2 | 8/23/95 | 8/23/95 | E-1 | 8/24/95 | 9:20 | 3.19 | 124 |
| | 3 | 8/31/95 | 8/31/95 | E-1 | 9/1/95 | 8:19 | 1.02 | 17 |
| | 4 | 9/1/95 | 9/1/95 | E-1 | 9/5/95 | 10:15 | ND | ND |
| E2 | 1 | 8/18/95 | 8/18/95 | E-2 | 8/21/95 | 10:54 | 4.25 | 844 |
| | 2 | 8/29/95 | 8/29/95 | E-2 | 8/30/95 | 11:14 | 0.69 | 19 |
| | 3 | 8/31/95 | 8/31/95 | E-2 | 9/1/95 | 8:19 | ND | ND |
| | 4 | 9/1/95 | 9/1/95 | E-2 | 9/5/95 | 10:15 | ND | ND |
| E3 | 1 | 8/21/95 | 8/21/95 | E-3 | 8/22/95 | 19:23 | 16.56 | 532 |
| | 2 | 8/29/95 | 8/29/95 | E-3 | 8/30/95 | 11:14 | ND | 8 |
| | 3 | 9/11/95 | 9/11/95 | E-3 | 9/12/95 | 7:51 | ND | ND |
| | 4 | 9/12/95 | 9/12/95 | E-3 | 9/13/95 | 10:31 | ND | 11 |
| E4 | 1 | 8/24/95 | 8/24/95 | E-4 | 8/25/95 | 8:45 | 30.32 | 436 |
| | 2 | 8/30/95 | 8/30/95 | E-4 | 8/31/95 | 7:54 | 7.15 | 122 |
| | 3 | 9/12/95 | 9/12/95 | E-4 | 9/13/95 | 10:31 | 0.83 | 26 |
| | 4 | 9/13/95 | 9/13/95 | E-4 | 9/14/95 | 10:35 | ND | ND |
| E5 | 1 | 10/19/95 | 10/19/95 | D-5 | 10/20/95 | 8:13 | 15.95 | 2169 |
| | 2 | 10/19/95 | 10/19/95 | E-4 | 10/20/95 | 8:13 | 1.44 | 92 |
| | 3 | 10/19/95 | 10/19/95 | E-4 | 10/20/95 | 8:13 | ND | 7 |
| | 4 | 10/19/95 | 10/19/95 | E-5 | 10/20/95 | 8:13 | ND | 19 |
| E6 | 1 | 10/19/95 | 10/19/95 | D-6 | 10/20/95 | 8:13 | 24.60 | 414 |
| | 2 | 10/19/95 | 10/19/95 | E-7 | 10/20/95 | 8:13 | 5.31 | 82 |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

## Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Time | Results (ppm) cPAH 7 | TPH 500 |
|---|---|---|---|---|---|---|---|---|
| | 3 | 10/19/95 | 10/19/95 | E-7 | 10/20/95 | 8:13 | 0.13 | 10 |
| | 4 | 10/19/95 | 10/19/95 | E-6 | 10/20/95 | 8:13 | ND | 7 |
| E7 | 1 | 9/14/95 | 9/14/95 | E-7 | 9/15/95 | 8:00 | 57.04 | 577 |
| | 2 | 9/15/95 | 9/15/95 | E-7 | 9/18/95 | 8:21 | 2.95 | 491 |
| | 3 | 9/18/95 | 9/18/95 | E-7 | 9/19/95 | 7:33 | 0.97 | 9 |
| | 4 | 9/19/95 | 9/19/95 | E-7 | 9/20/95 | 7:33 | 0.97 | 14 |
| E8 | 1 | 8/25/95 | 8/25/95 | E-8 | 8/28/95 | 7:45 | 22.09 | 410 |
| | 2 | 9/5/95 | 9/5/95 | E-8 | 9/6/95 | 8:39 | 9.86 | 165 |
| | 3 | 9/8/95 | 9/8/95 | E-8 | 9/11/95 | 7:45 | 0.25 | 72 |
| | 4 | 9/12/95 | 9/12/95 | E-8 | 9/13/95 | 10:31 | ND | 13 |
| E9 | 1 | 8/25/95 | 8/25/95 | E-9 | 8/28/95 | 7:45 | 40.86 | 544 |
| | 2 | 9/5/95 | 9/5/95 | E-9 | 9/6/95 | 8:39 | 2.37 | 64 |
| | 3 | 9/8/95 | 9/8/95 | E-9 | 9/11/95 | 7:45 | ND | 12 |
| | 4 | 9/11/95 | 9/11/95 | E-9 | 9/12/95 | 7:51 | ND | 16 |
| E10 | 1 | 8/25/95 | 8/25/95 | E-10 | 8/28/95 | 7:45 | 34.41 | 304 |
| | 2 | 9/1/95 | 9/1/95 | E-10 | 9/5/95 | 10:15 | 4.70 | 107 |
| | 3 | 9/5/95 | 9/5/95 | E-10 | 9/6/95 | 8:39 | ND | 45 |
| | 4 | 9/6/95 | 9/6/95 | E-10 | 9/7/95 | 8:21 | ND | 8 |
| F1 | 1 | 8/18/95 | 8/18/95 | F-1 | 8/21/95 | 10:54 | 44.84 | 1203 |
| | 2 | 8/23/95 | 8/23/95 | F-1 | 8/24/95 | 9:20 | 1.38 | 59 |
| | 3 | 8/31/95 | 8/31/95 | F-1 | 9/1/95 | 8:19 | 1.89 | 16 |
| | 4 | 9/1/95 | 9/1/95 | F-1 | 9/5/95 | 10:15 | ND | ND |
| F2 | 1 | 8/18/95 | 8/18/95 | F-2 | 8/21/95 | 10:54 | 17.07 | 924 |
| | 2 | 8/29/95 | 8/29/95 | F-2 | 8/30/95 | 11:14 | 2.16 | 53 |
| | 3 | 8/31/95 | 8/31/95 | F-2 | 9/1/95 | 8:19 | ND | 29 |
| | 4 | 9/7/95 | 9/7/95 | F-2 | 9/8/95 | 10:45 | ND | 9 |
| F3 | 1 | 8/21/95 | 8/21/95 | F-3 | 8/22/95 | 19:23 | 35.94 | 655 |
| | 2 | 8/29/95 | 8/29/95 | F-3 | 8/30/95 | 11:14 | 1.44 | 36 |
| | 3 | 9/11/95 | 9/11/95 | F-3 | 9/12/95 | 7:51 | 1.23 | 59 |
| | 4 | 9/12/95 | 9/12/95 | F-3 | 9/13/95 | 10:31 | 0.25 | 26 |
| F4 | 1 | 8/24/95 | 8/24/95 | F-4 | 8/25/95 | 8:45 | 38.95 | 419 |
| | 2 | 8/30/95 | 8/30/95 | F-4 | 8/31/95 | 7:54 | 4.65 | 132 |
| | 3 | 9/13/95 | 9/13/95 | F-4 | 9/14/95 | 10:35 | 1.73 | 56 |
| | 4 | 9/14/95 | 9/14/95 | F-4 | 9/15/95 | 8:00 | 0.11 | ND |
| F5 | 1 | 10/12/95 | 10/23/95 | F-4 | 10/24/95 | 8:10 | 42.73 | 447 |
| | 2 | 10/12/95 | 10/19/95 | F-4 | 10/20/95 | 8:13 | 9.22 | 96 |
| | 3 | 10/19/95 | 10/19/95 | F-5 | 10/20/95 | 8:13 | 1.42 | 43 |
| | 4 | 10/19/95 | 10/19/95 | F-5 | 10/20/95 | 8:13 | ND | 10 |
| F6 | 1 | 10/12/95 | 10/12/95 | E-6 | 10/13/95 | 6:48 | 44.69 | 573 |
| | 2 | 10/12/95 | 10/12/95 | F-7 | 10/13/95 | 6:48 | 9.61 | 212 |
| | 3 | 10/12/95 | 10/12/95 | F-7 | 10/13/95 | 6:48 | 13.56 | 124 |
| | 4 | 10/12/95 | 10/12/95 | F-6 | 10/13/95 | 6:48 | 2.64 | 46 |
| F7 | 1 | 9/14/95 | 9/14/95 | F-7 | 9/15/95 | 8:00 | 50.63 | 351 |
| | 2 | 9/15/95 | 9/15/95 | F-7 | 9/18/95 | 8:21 | 34.97 | 512 |
| | 3 | 9/18/95 | 9/18/95 | F-7 | 9/19/95 | 7:33 | 37.37 | 218 |
| | 4 | 9/19/95 | 9/19/95 | F-7 | 9/20/95 | 7:33 | 11.53 | 44 |
| | 5 | 9/21/95 | 9/21/95 | F-7 | 9/22/95 | 7:37 | 1.72 | ND |
| F8 | 1 | 8/17/95 | 8/17/95 | F-8 | 8/18/95 | 9:06 | 63.81 | 496 |
| | 2 | 8/23/95 | 8/23/95 | F-8 | 8/24/95 | 9:20 | 8.70 | 169 |
| | 3 | 8/28/95 | 8/28/95 | F-8 | 8/29/95 | 10:58 | 3.79 | 55 |
| | 4 | 8/31/95 | 8/31/95 | F-8 | 9/1/95 | 8:19 | 0.70 | ND |
| F9 | 1 | 8/17/95 | 8/17/95 | F-10 | 8/17/95 | 9:06 | 45.55 | 481 |
| | 2 | 8/22/95 | 8/22/95 | F-9,F-10 | 8/23/95 | 6:55 | 1.82 | 96 |
| | 3 | 8/28/95 | 8/28/95 | F-10 | 8/29/95 | 10:58 | 1.44 | 31 |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

# Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Time | Results (ppm) cPAH 7 | TPH 500 |
|---|---|---|---|---|---|---|---|---|
| | 4 | 8/31/95 | 8/31/95 | F-10 | 9/1/95 | 8:19 | 0.57 | 15 |
| F10 | 1 | 8/17/95 | 8/17/95 | F-10 | 8/17/95 | 9:06 | 45.55 | 481 |
| | 2 | 8/22/95 | 8/22/95 | F-9,F-10 | 8/23/95 | 6:55 | 1.82 | 96 |
| | 3 | 8/28/95 | 8/28/95 | F-10 | 8/29/95 | 10:58 | 1.44 | 31 |
| | 4 | 8/31/95 | 8/31/95 | F-10 | 9/1/95 | 8:19 | 0.57 | 15 |
| G1 | 1 | 8/17/95 | 8/17/95 | G-1 | 8/18/95 | 9:06 | 152.64 | 456 |
| | 2 | 8/23/95 | 8/23/95 | G-1 | 8/24/95 | 9:20 | 5.22 | 42 |
| | 3 | 8/28/95 | 8/28/95 | G-1 | 8/29/95 | 10:58 | 0.18 | ND |
| | 4 | 8/31/95 | 8/31/95 | G-1 | 9/1/95 | 8:19 | ND | 7 |
| G2 | 1 | 8/18/95 | 8/18/95 | G-2 | 8/21/95 | 10:54 | 21.19 | 2107 |
| | 2 | 8/29/95 | 8/29/95 | G-2 | 8/30/95 | 11:14 | 11.14 | 49 |
| | 3 | 9/6/95 | 9/6/95 | G-2 | 9/7/95 | 8:21 | ND | 8 |
| | 4 | 9/7/95 | 9/7/95 | G-2 | 9/8/95 | 10:45 | ND | ND |
| G3 | 1 | 8/18/95 | 8/18/95 | G-3 | 8/21/95 | 10:54 | 68.62 | 232 |
| | 2 | 8/30/95 | 8/30/95 | G-3 | 8/31/95 | 7:54 | 3.65 | 26 |
| | 3 | 9/8/95 | 9/8/95 | G-3 | 9/11/95 | 7:45 | 1.40 | 49 |
| | 4 | 9/11/95 | 9/11/95 | G-3 | 9/12/95 | 7:51 | ND | ND |
| G4 | 1 | 8/21/95 | 8/21/95 | G-4 | 8/22/95 | 19:23 | 102.84 | 653 |
| | 2 | 8/30/95 | 8/30/95 | G-4 | 8/31/95 | 7:54 | 5.76 | 74 |
| | 3 | 9/11/95 | 9/11/95 | G-4 | 9/12/95 | 7:51 | 3.14 | 31 |
| | 4 | 9/12/95 | 9/12/95 | G-4 | 9/13/95 | 10:31 | 0.34 | 8 |
| G5 | 1 | 9/26/95 | 9/27/95 | G-5 | 9/28/95 | 7:16 | 64.16 | 343 |
| | 2 | 9/27/95 | 9/27/95 | G-5 | 9/28/95 | 7:16 | 8.64 | 52 |
| | 3 | 9/27/95 | 9/27/95 | G-5 | 9/28/95 | 7:16 | 1.70 | 36 |
| | 4 | 9/27/95 | 9/27/95 | G-5 | 9/28/95 | 7:16 | 1.56 | 7 |
| G6 | 1 | 9/19/95 | 9/19/95 | G-6 | 9/20/95 | 7:33 | 64.70 | 92 |
| | 2 | 9/21/95 | 9/21/95 | G-6 | 9/22/95 | 7:37 | 15.51 | 54 |
| | 3 | 9/22/95 | 9/22/95 | G-6 | 9/25/95 | 6:51 | 10.41 | 164 |
| | 4 | 9/25/95 | 9/27/95 | G-6 | 9/28/95 | 7:16 | 1.27 | 14 |
| G7 | 1 | 9/18/95 | 9/18/95 | G-7 | 9/19/95 | 7:33 | 68.46 | 411 |
| | 2 | 9/19/95 | 9/19/95 | G-7 | 9/20/95 | 7:33 | 4.28 | 17 |
| | 3 | 9/21/95 | 9/21/95 | G-7 | 9/22/95 | 7:37 | 1.06 | ND |
| | 4 | 9/22/95 | 9/22/95 | G-7 | 9/25/95 | 6:51 | ND | 23 |
| G8 | 1 | 8/17/95 | 8/17/95 | G-8 | 8/17/95 | 9:06 | 104.61 | 572 |
| | 2 | 8/23/95 | 8/23/95 | G-8 | 8/24/95 | 9:20 | 9.88 | 114 |
| | 3 | 8/28/95 | 8/28/95 | G-8 | 8/29/95 | 10:58 | 0.72 | 37 |
| | 4 | 8/31/95 | 8/31/95 | G-8 | 9/1/95 | 8:19 | 1.57 | 11 |
| G9 | 1 | 8/17/95 | 8/17/95 | G-9 | 8/17/95 | 9:06 | 60.62 | 408 |
| | 2 | 8/23/95 | 8/23/95 | G-9 | 8/24/95 | 9:20 | 4.22 | 11 |
| | 3 | 8/28/95 | 8/28/95 | G-9 | 8/29/95 | 10:58 | 2.04 | 44 |
| | 4 | 8/31/95 | 8/31/95 | G-9 | 9/1/95 | 8:19 | 1.05 | 15 |
| G10 | 1 | 8/17/95 | 8/17/95 | F-10 | 8/17/95 | 9:06 | 45.55 | 481 |
| | 2 | 8/22/95 | 8/22/95 | F-9,F-10 | 8/23/95 | 6:55 | 1.82 | 96 |
| | 3 | 8/28/95 | 8/28/95 | F-10 | 8/29/95 | 10:58 | 1.44 | 31 |
| | 4 | 8/31/95 | 8/31/95 | F-10 | 9/1/95 | 8:19 | 0.57 | 15 |
| H1 | 1 | 8/17/95 | 8/17/95 | H-1 | 8/18/95 | 9:06 | 163.19 | 614 |
| | 2 | 8/21/95 | 8/21/95 | H-1 | 8/22/95 | 19:23 | 11.35 | 20 |
| | 3 | 8/28/95 | 8/28/95 | H-1 | 8/29/95 | 10:58 | 4.08 | 19 |
| | 4 | 8/30/95 | 8/30/95 | H-1 | 8/31/95 | 7:54 | 1.94 | ND |
| H2 | 1 | 8/16/95 | 8/16/95 | H-3 | 8/17/95 | 8:50 | 40.05 | 357 |
| | 2 | 8/22/95 | 8/22/95 | H-1 | 8/23/95 | 6:55 | 2.31 | 578 |
| | 3 | 8/28/95 | 8/28/95 | H-2 | 8/29/95 | 10:58 | 1.88 | 173 |
| | 4 | 8/30/95 | 8/30/95 | H-2 | 8/31/95 | 7:54 | 0.39 | 33 |
| H3 | 1 | 8/16/95 | 8/16/95 | H-3 | 8/17/95 | 8:50 | 38.61 | 61 |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

## Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Analytical Results Time | Results (ppm) cPAH 7 | Results (ppm) TPH 500 |
|---|---|---|---|---|---|---|---|---|
| | 2 | 8/22/95 | 8/22/95 | H-3 | 8/23/95 | 6:55 | ND | 7 |
| | 3 | 8/28/95 | 8/28/95 | H-3 | 8/29/95 | 10:58 | ND | 18 |
| | 4 | 8/30/95 | 8/30/95 | H-3 | 8/31/95 | 7:54 | ND | ND |
| H4 | 1 | 8/16/95 | 8/16/95 | H-4 | 8/17/95 | 8:50 | 13.56 | 332 |
| | 2 | 8/22/95 | 8/22/95 | H-4 | 8/23/95 | 6:55 | 11.56 | 42 |
| | 3 | 8/28/95 | 8/28/95 | H-4 | 8/29/95 | 10:58 | 3.39 | 28 |
| | 4 | 8/30/95 | 8/30/95 | H-4 | 8/31/95 | 7:54 | 0.99 | ND |
| H5 | 1 | 8/16/95 | 8/16/95 | H-5 | 8/17/95 | 8:50 | 10.22 | 72 |
| | 2 | 8/22/95 | 8/22/95 | H-5 | 8/23/95 | 6:55 | 3.44 | ND |
| | 3 | 8/28/95 | 8/28/95 | H-5 | 8/29/95 | 10:58 | 0.64 | ND |
| | 4 | 8/30/95 | 8/30/95 | H-5 | 8/31/95 | 7:54 | 0.66 | ND |
| H6 | 1 | 8/16/95 | 8/16/95 | H-7 | 8/17/95 | 8:50 | 28.25 | 175 |
| | 2 | 8/22/95 | 8/22/95 | H-6,H-7 | 8/23/95 | 6:55 | 12.91 | 34 |
| | 3 | 8/28/95 | 8/28/95 | H-6 | 8/29/95 | 10:58 | 2.62 | 49 |
| | 4 | 8/30/95 | 8/30/95 | H-6,H-7 | 8/31/95 | 7:54 | 0.26 | ND |
| H7 | 1 | 8/16/95 | 8/16/95 | H-7 | 8/17/95 | 8:50 | 28.25 | 175 |
| | 2 | 8/22/95 | 8/22/95 | H-6,H-7 | 8/23/95 | 6:55 | 12.91 | 34 |
| | 3 | 8/28/95 | 8/28/95 | H-6 | 8/29/95 | 10:58 | 2.62 | 49 |
| | 4 | 8/30/95 | 8/30/95 | H-6,H-7 | 8/31/95 | 7:54 | 0.26 | ND |
| H8 | 1 | 8/15/95 | 8/16/95 | H-7 | 8/17/95 | 8:50 | 28.25 | 175 |
| | 2 | 8/22/95 | 8/22/95 | H-6,H-7 | 8/23/95 | 6:55 | 12.91 | 34 |
| | 3 | 8/28/95 | 8/28/95 | H-6 | 8/29/95 | 10:58 | 2.62 | 49 |
| | 4 | 8/30/95 | 8/30/95 | H-6,H-7 | 8/31/95 | 7:54 | 0.26 | ND |
| H9 | 1 | 8/15/95 | 8/16/95 | H-7 | 8/17/95 | 8:50 | 28.25 | 175 |
| | 2 | 8/22/95 | 8/22/95 | H-6,H-7 | 8/23/95 | 6:55 | 12.91 | 34 |
| | 3 | 8/28/95 | 8/28/95 | H-6 | 8/29/95 | 10:58 | 2.62 | 49 |
| | 4 | 8/30/95 | 8/30/95 | H-6,H-7 | 8/31/95 | 7:54 | 0.26 | ND |
| I1 | 1 | 8/17/95 | 8/17/95 | I-1 | 8/18/95 | 9:06 | 163.19 | 614 |
| | 2 | 8/21/95 | 8/21/95 | H-1 | 8/23/95 | 19:23 | 11.35 | 20 |
| | 3 | 8/28/95 | 8/28/95 | H-1 | 8/29/95 | 10:58 | 4.08 | 19 |
| | 4 | 8/30/95 | 8/30/95 | H-1 | 8/31/95 | 7:54 | 1.94 | ND |
| I2 | 1 | 8/17/95 | 8/17/95 | I-2 | 8/17/95 | 8:50 | 40.05 | 357 |
| | 2 | 8/22/95 | 8/22/95 | H-1 | 8/23/95 | 6:55 | 2.31 | 578 |
| | 3 | 8/28/95 | 8/28/95 | H-2 | 8/29/95 | 10:58 | 1.88 | 173 |
| | 4 | 8/30/95 | 8/30/95 | H-2 | 8/31/95 | 7:54 | 0.39 | 33 |
| B9 | 10XCB | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | 116 |
| | 10XCEW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | 8 |
| | 10XCWW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | 20 |
| | 10XEB | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | 10 |
| | 10XEW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XNEW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XNW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XNWW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XSEW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XSW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XSWW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XWB | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| | 10XWW | 10/4/95 | 10/4/95 | B-9 | 10/5/95 | 7:35 | N/A | ND |
| B8 | 6XN1 | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | 10 |
| | 6XN1DUP | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | ND |
| | 6XB1 | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | 14 |
| | 6XE1 | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | ND |
| | 6XS1 | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | 409 |
| | 6XW1 | 10/4/95 | 10/4/95 | B-8 | 10/5/95 | 7:35 | N/A | ND |

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

Roy F. Weston, Inc.
Ft. Devens-Maintenance Yard Remediation
No. DACW33-95-D-0004

12/26/95

## Analytical Summary Table

| Grid Location | Excavation No. (6 in.) | Date Excavation | Date Sampled | Sample Pile Location | Analytical Results Date | Analytical Results Time | Results (ppm) cPAH 7 | Results (ppm) TPH 500 |
|---|---|---|---|---|---|---|---|---|

cc: Project File- C. Kane
QC File- R. Willey
c:\ftdv\tkwe1229.xls

Cells: C-5, C-6, D-5, D-6 (Contaminated stockpile)
Cells: G-5, G-6 (Clean stockpile)

I

# Soil Sample Collection Log
Weston - Project #17936



Date: 10/24/95 Samplers: MJ/GG Weather: Sunny, 70°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| D6-2 | 1652 | C | 1'6"-2' | N/A | N/A | Rocky Brown Soil | 1x8oz |
| D6-3 | 1650 | C |  |  |  | Sandy Brown Soil w/ cobble |  |
| D5-4 | 1643 | C |  |  |  | Sandy Soil w/ cobble |  |
| D6-3DUP | 1650 | C |  |  |  | Sandy Brown Soil w/ cobble |  |
| D5-2 | 1640 | C |  |  |  | Sandy Brown Soil w/ cobble |  |
| D5-1 | 1636 | C |  |  |  | Rocky Brown Soil w/ cobble |  |
| D5-3 | 1645 | C |  |  |  | Sandy Brown Soil w/ cobble |  |
| D6-1 | 1635 | C |  |  |  | Rocky Brown Soil |  |
| D6-4 | 1647 | C |  |  |  | Sandy Brown Soil w/ Cobble |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

Relinquished by(dd/tt): Matthew Jones 10-24-95 1715 Received by (dd/tt): H. Hammond 10-24-95 1715

Weston

LAB COF

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Form
Field Technical Serv.
Rev. 6

158387

O H MATERIALS CORP. • P O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Ft. Devens

PROJECT LOCATION: Ayer, MA

PROJ NO: 17936

PROJECT CONTACT: Mike Quinlan

PROJECT TELEPHONE NO.: (508) 772-2019

CLIENT'S REPRESENTATIVE: USACE

PROJECT MANAGER/SUPERVISOR: Kevin Mack

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | cPAH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | C6-4DUP | ~~10/25~~ 10/23/95 | 1620 | X | | Brown Sandy Soil ~~w~~ | 1×8oz | X | X | | | | | | Seived w/ #20 seive |
| 2 | D6-3DUP | 10/24/95 | 1050 | X | | Brown Sandy Soil | 1×8oz | X | X | | | | | | Screened w/ #20 seive |
| 3 | ER1023 | 10/23/95 | 1430 | | | Equipt. Rinsate | 2×1l | X | X | | | | | | Preserved w/ HCl pH<2 |
| 4 | ER1024 | 10/24/95 | 1515 | | | Equipt. Rinsate | 2×1l | X | X | | | | | | Preserved w/ HCl pH<2 |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-4 | Matthew Jones | Fed Ex Airbill # 3168483184 | 10-25-95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
- Temp Blank included
- Samples preserved at 4°C

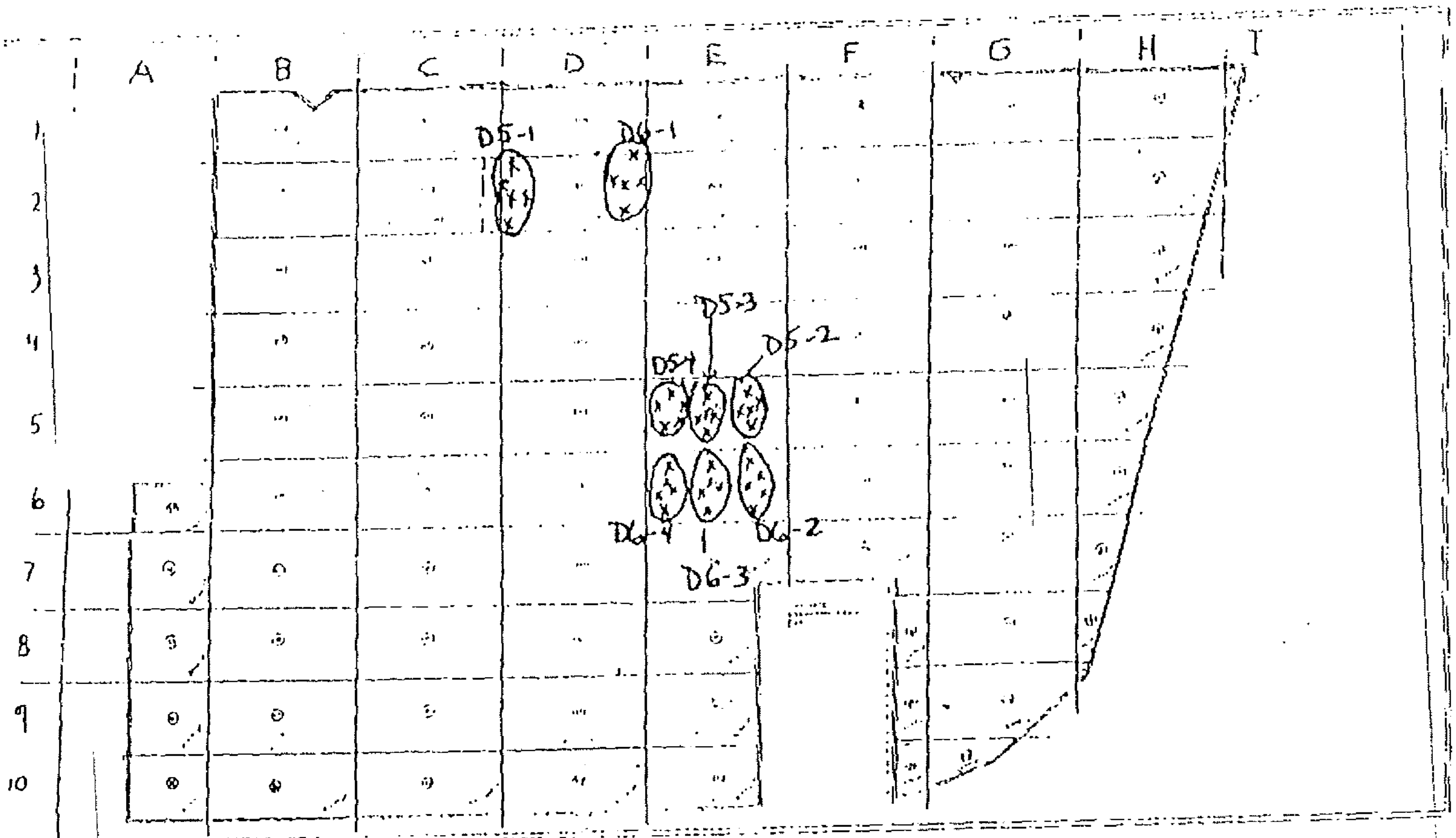
SAMPLER'S SIGNATURE

Sample Location Map
Weston - Project #17396



Date 10-24-95

Site Name: Weston Piles




Comments/Observations

Dup taken of D6-3

X - indicates specific sampling point (5 per composite)

Prepared by M. Jones

Soil Sample Collection Log
Weston - Project #17936



Date: 10-23-95 Samplers: MJ, GG Weather: Sunny, 70°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C5-2 | 1615 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ Cobble | 1x 8oz |
| C6-3 | 1626 | C | ↓ | ↓ | ↓ | Sandy Brown Soil w/cobble | ↓ |
| C6-1 | 1610 | C | | | | Rocky brown Soil | |
| C5-4 | 1610 | C | | | | Brown Sand w/ Cobble | |
| C6-2 | 1627 | C | | | | Brown Sandy soil w/ cobble | |
| F5-1 | 1630 | C | | | | Rocky Brown Soil | |
| C5-1 | 1616 | C | | | | Rocky Brown Soil | |
| C5-3 | 1620 | C | | | | Brown Sandy Soil w/ cobble | |
| C6-4 | 1620 | C | | | | Brown Sand w/ cobble | |
| C6-4DUP | 1620 | C | ↓ | ↓ | ↓ | ↓ | ↓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc #________

Requested Testing: TPH cPAH Other________

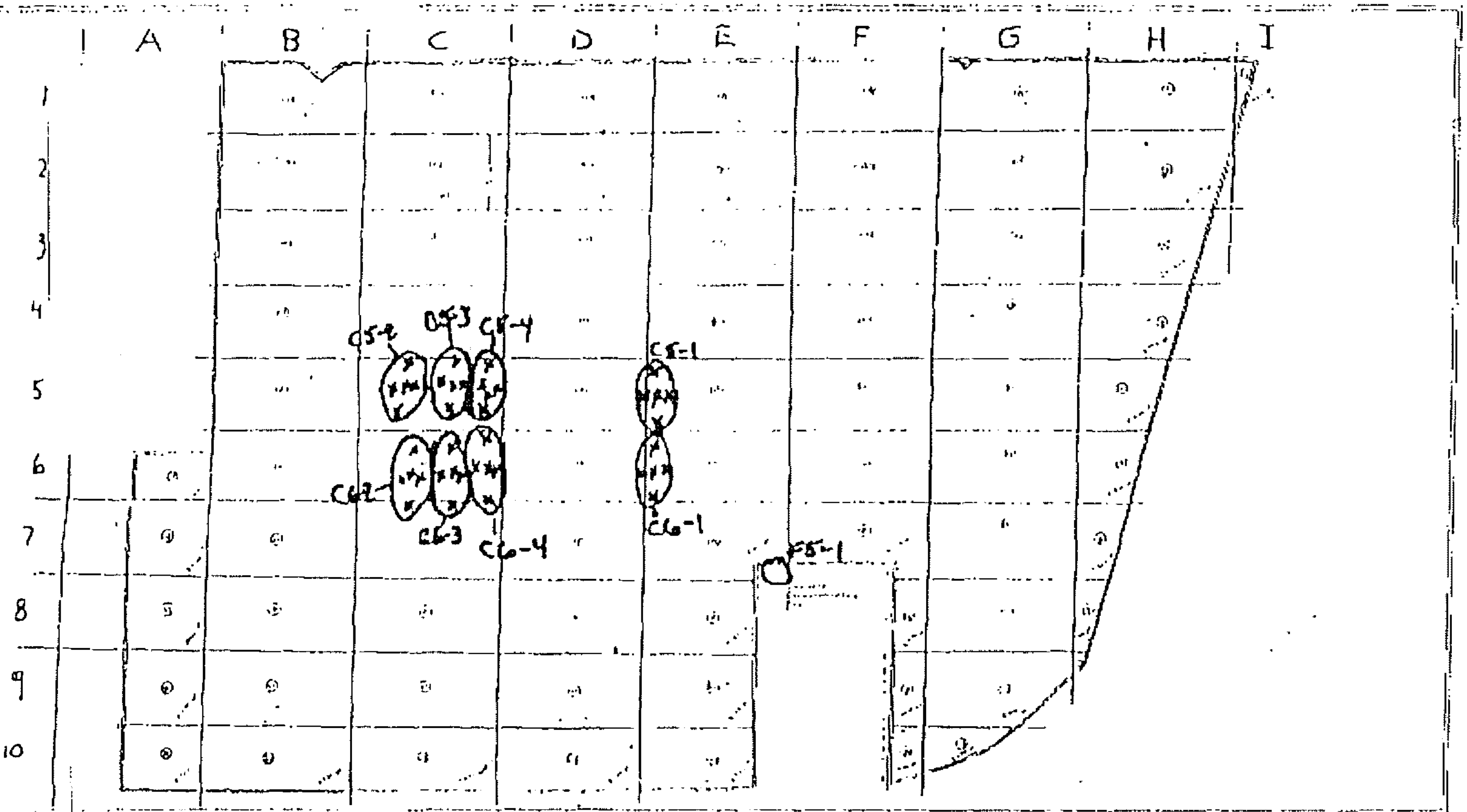
Relinquished by(dd/tt): Matthew H Jones 10-23-95 ~~1530~~ 1700 Received by (dd/tt):________

## Sample Location Map
## Weston - Project #17396



Date 10-23-95

Site Name: Weston Piles




Comments/Observations:

F5-1 taken from bucket - grid already asphalt batched

X - indicates specific sampling location for pile composite.

Prepared by: M. Jones

# Soil Sample Collection Log
Weston - Project #17936



Date: 10/19/95 Samplers: GG, MB, MJ Weather: Sunny, 70°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E5-2 | 1315 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| F5-2 | 1323 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| F5-3 | 1329 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| E5-1 | 1330 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ Cobble | 1×8oz |
| E6-1 | 1337 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| E6-2 | 1610 | C | 1'6"-2' | N/A | N/A | Brown Sand w/ cobble | 1×8oz |
| E6-3 | 1611 | C | 1'6"-2' | N/A | N/A | Brown Sand w/ cobble | 1×8oz |
| F5-4 | 1618 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ some cobble | 1×8oz |
| E5-4 | 1621 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ cobble | 1×8oz |
| E5-3 | 1623 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ Cobble | 1×8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt.__ N/A

Ref. Pt.__ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

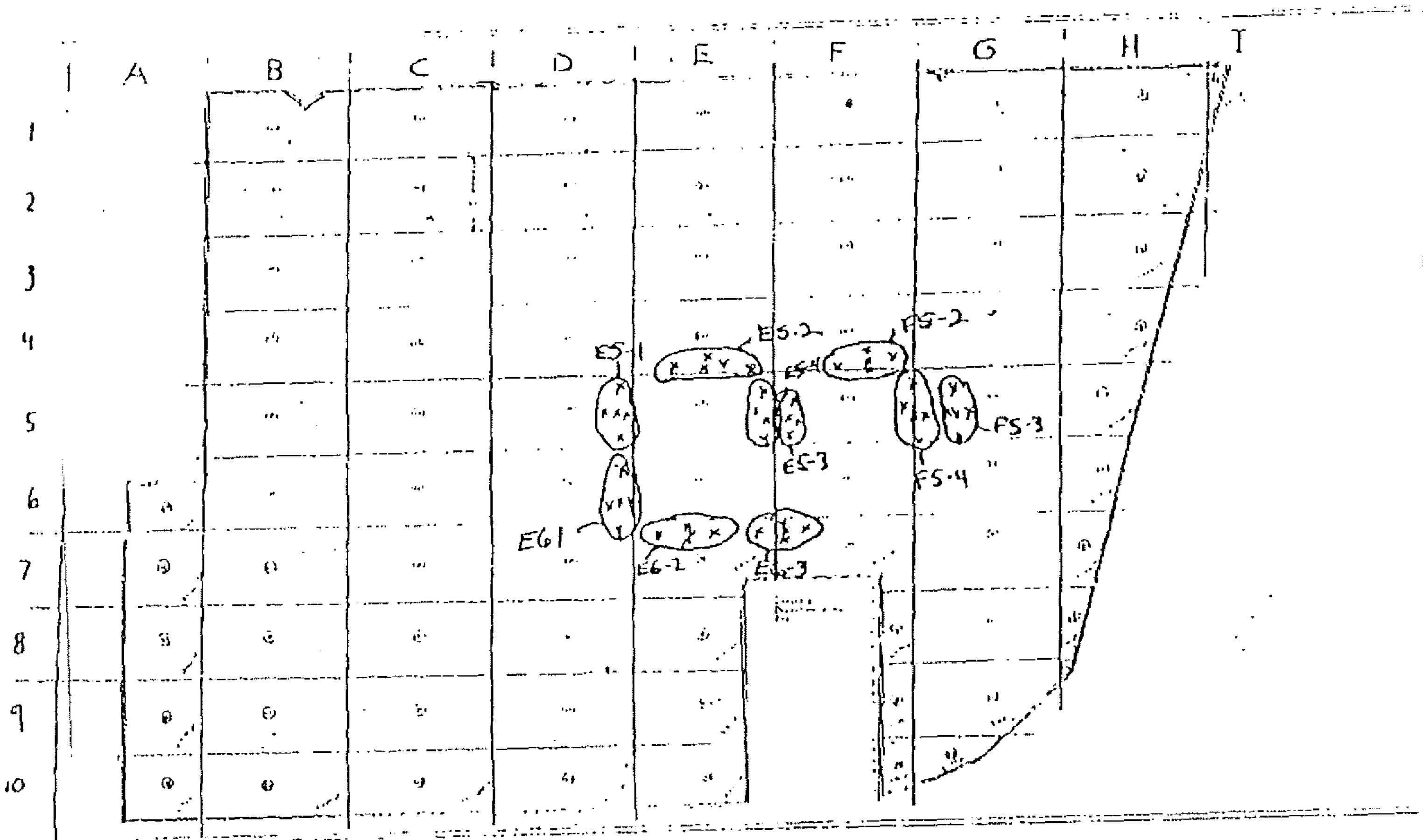
Relinquished by(dd/tt): Matthew Jones 1640 10-19-95 Received by (dd/tt): [signature] 1640 10-19

**Sample Location Map**
**Weston - Project #17396**



Site Name: Weston Piles

Date 10/19/95




Comments/Observations

x - indicates unique sampling location (5 per pile/composite)

Prepared by: M. Jones

6

# Soil Sample Collection Log
Fort Devens - Project # ~~[illegible]~~ 17936



Date: 10/12/95 Site Name: Weston soil [illegible]

Weather: Sunny 80° Samplers: BD, MJ

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F6-1 | 1337 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/heavy cobble | 1x8oz |
| F6-2 | 1300 | C | 1'6"-2'6" | ↓ | ↓ | Brown sandy soil w/ heavy cobble | 1x8oz |
| F6-3 | 1332 | C | 1'6"-2'6" | ↓ | ↓ | Brown sandy soil w/heavy cobble | 1x8oz |
| F6-4 | 1715 | C | 1'6-2' | ↓ | ↓ | Brown Sandy Soil w/ some cobble | 1x8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Screening Confirmation Disposal/Characterization

Laboratory Destination: Onsite Lab AEN - coc # ____________ USACE- coc # ____________

Duplicate Taken: Yes No Rinsate Taken: Yes No

**On-site Laboratory Chain of Custody/Request for Analysis**

Requested Testing: TPH BTEX Other cPAH

Relinquished by(dd/tt): [illegible signature] 10-12-95 Received by (dd/tt): ____________

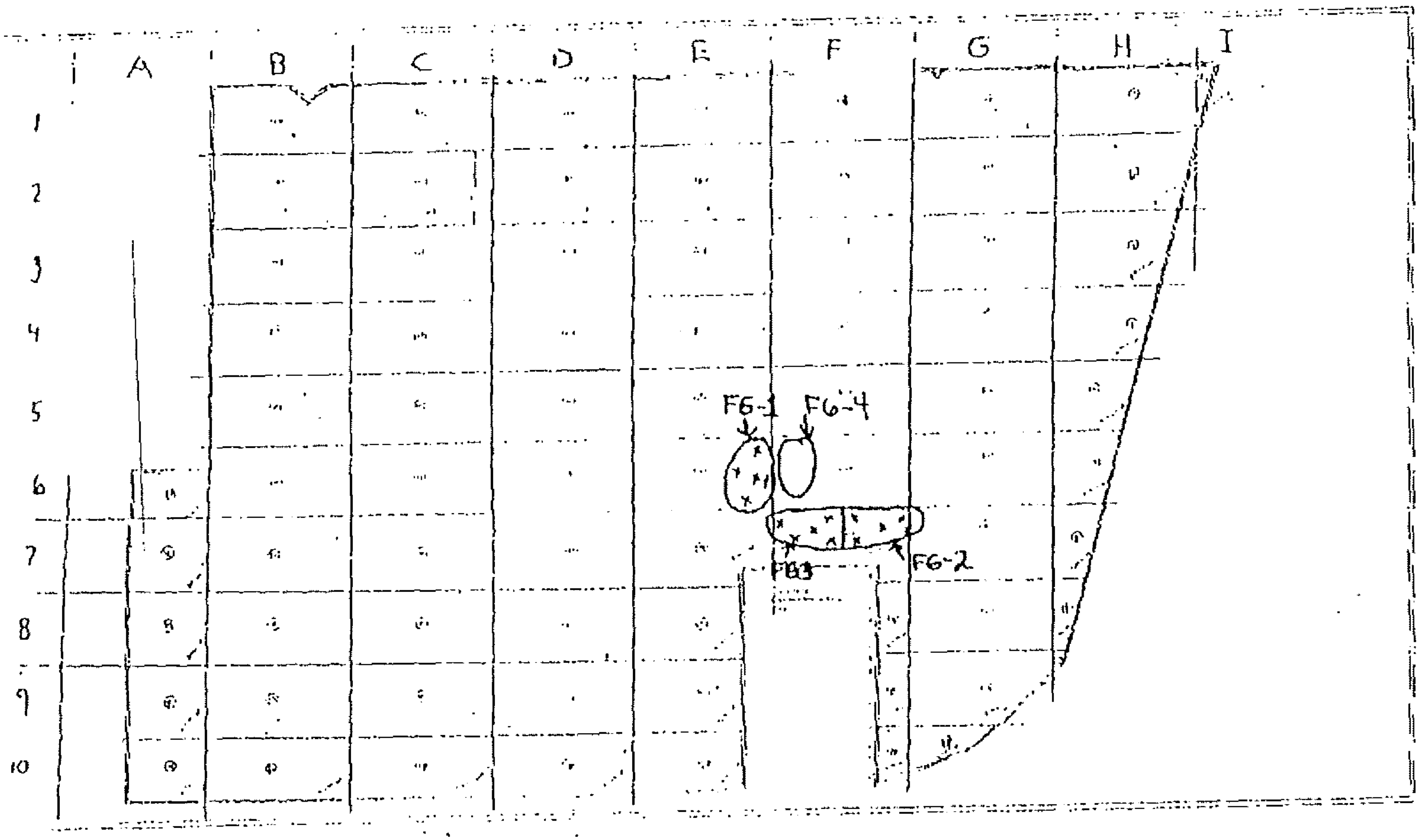
Relinquished by(dd/tt): ____________ Received by (dd/tt): ____________

Sample Location Map
Weston - Project #17396



Date 10/12/95

Site Name: Weston Piles




omments/Observations x - indicates specific sampling point (5 per composite)

Prepared by Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 10-5-95 Samplers: MJ MD Weather: Cloudy, drizzle

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. A | Coordinates Ref. Pt. B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| 06XN2 | 0904 | G | 3'3" | 35'3" | 83'3" | Tan / Orange Sand | 1x8oz |
| 06XE2 | 0906 | | 5'2" | 37'0" | 87'0" | | |
| 06XS2 | 0909 | | 3'6" | 43'0" | 78'0" | | |
| 06XEDUP | 0906 ~~0912~~ | | 5'2" | 37'0" | 87'0" | | |
| 06XW2 | 0915 | | 4'2" | 44'5" | 76'3" | | |
| 06XB2 | 0917 | | 6'6" | 42'3" | 78'6" | | |
| 10XNW1 | 0920 | | 3'11" | 61'9" | POINT C 74'10" | | |
| 10XWW1 | 0923 | | 3'7" | 96'6" | 99'5" | | |
| 10XNWW1 | 0925 | | 3'0" | 79'6" | 81'5" | | |
| 10XSWW1 | 0928 | | 3'0" | 81'8" | 81'5" | | |
| [illegible] 10XWB1 | 0930 | | 3'1" | 82'6" | 82'0" | | |
| 10XNEW1 | 0933 | | 3'6" | 55'0" | 54'7" | | |
| 10XSEW1 | 0936 | | 3'7" | 58'3" | 51'7" | | |

Ref. Pt. A: Well approx. 36 ft North of 6X

Ref. Pt. B: Fence Post approx 78 ft west of 6X

Ref Pt. C Well approx 75 ft west of 10X

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158377 158378 USACE- coc #

Requested Testing: TPH cPAH Other

Relinquished by(dd/tt): Matthew Jones 10-5-95 1200 Received by (dd/tt):

# Soil Sample Collection Log
## Weston - Project #17936



Date: 10-5-95 Samplers: MJ MB Weather: Cloudy, drizzle, 6

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt A | Coordinates Ref. Pt C | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| 10XEB1 | 0939 | G | 3'9" | 56'10" | 53'8" | Orange/tan Sand | 1 x 8oz |
| 10XEW1 | 0942 | | 3'8" | 53'0" | 50'3" | | |
| 10XCB1 | 0945 | | 2'7" | 86'5" | 55'0" | | |
| 10XCWN1 | 0946 | | 2'9" | 87'8" | 55'8" | | |
| 10XCEW1 | 0950 | | 2'7" | 85'2" | 53'0" | | |
| 10XSW1 | 0955 | | 3' 0" ~~100'5~~ | 100'5" | 49'5" | | |
| 10XP | 1000 | C | 1'6"-2' | N/A | N/A | | |
| 10XPDUP | 1000 | | 1'6"-2' | N/A | N/A | → This sample never sent to RFW. | 10/18/95 |
| 6XP | 0958 | | 1'6"-2' | N/A | N/A | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt. A: Well approx 36 ft. North of 6X

Ref. Pt. C: Well approx 75 ft. west of 10X

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158377 158378 USACE- coc #

Requested Testing: TPH cPAH Other

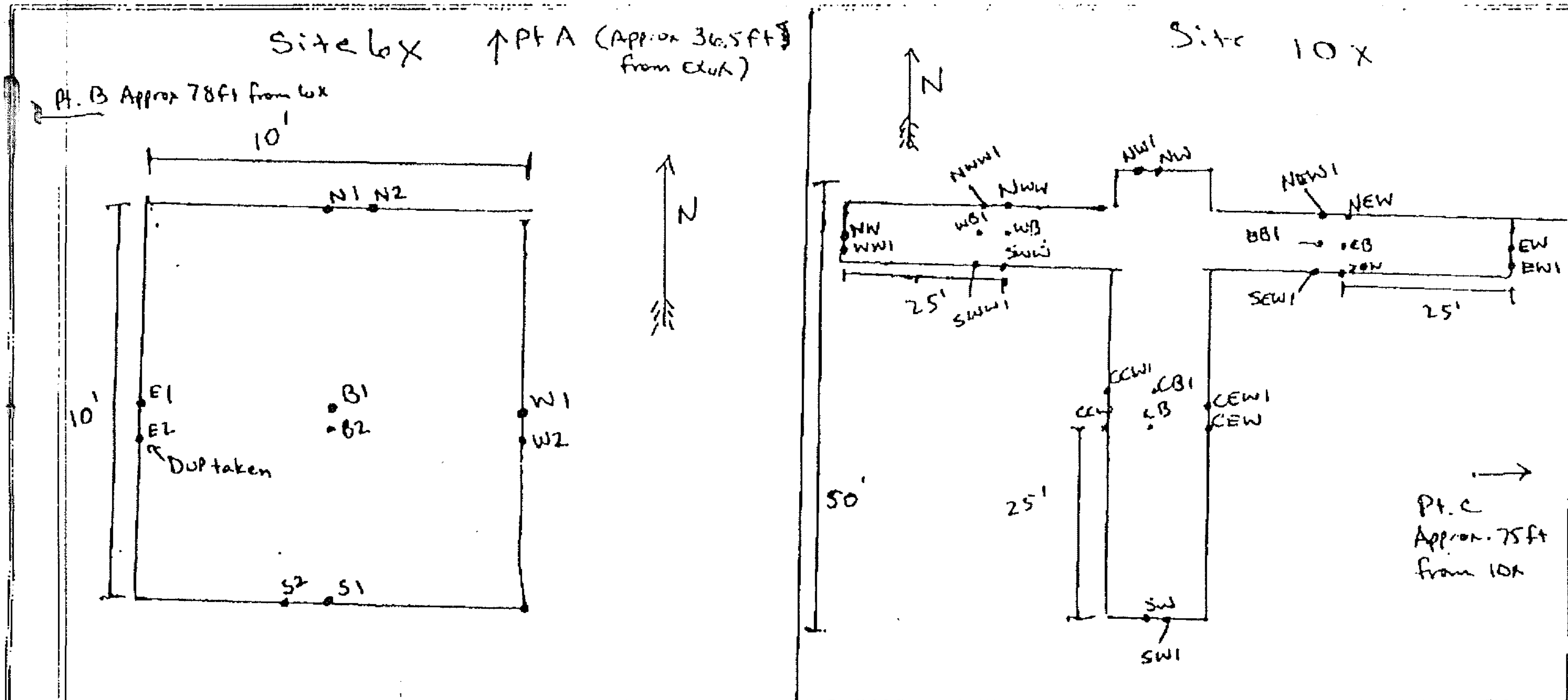
Relinquished by(dd/tt): Matthew Jones 10-5-95 1200 Received by (dd/tt):

# Sample Location Map
## Weston - Project #17396



Date: 10- -95

Site Name: Mogas Spill Sites 44B-92-06X, 44B93-10X




Comments/Observations: 6XN2, W2, S2, E2, E2DUP, B2 : All grab samples sent out for TPH confirmation

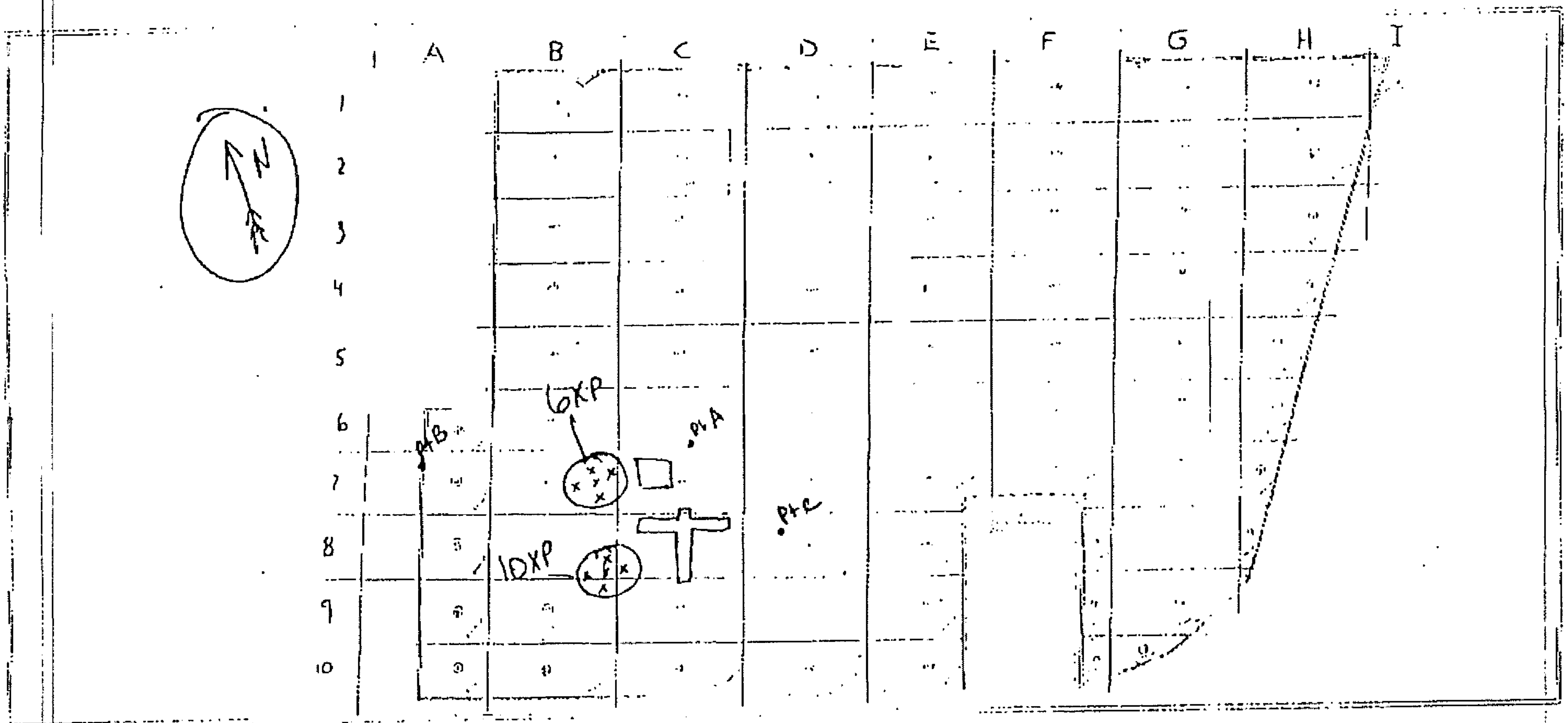
10XNW1, NEW1, EB1, SEW1, EW1, NWW1, WB1, SWW1, WW1, SW1, CCW1, CB1, CEW1 : All grab samples from excavation 10X sent out for TPH confirmation

Prepared by: M. Jones

# Sample Location Map
## Weston - Project #17396

Date

Site Name




Comments/Observations

X - indicates specific sampling point for composite

Dup sample taken for 10XP

Prepared by Matt Jones

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Weston

Form 0019
Field Technical Services
Rev. 08/89

158377

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ft. Devens, Ayer MA
PROJ. NO: 17934
PROJECT CONTACT: Mike Quinlan / Margie Bleau
PROJECT TELEPHONE NO.: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CX6XN2 | 10.5.95 | 0904 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| CX6XE2 | 10.5.95 | 0906 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 06XS2 | 10.5.95 | 0909 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 06XDUP | 10.5.95 | 0906 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 06XW2 | 10.5.95 | 0915 | | X | Tan Orange Sand | 1 x 8oz | X | |
| 06XB2 | 10.5.95 | 0917 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 10XNW1 | 10.5.95 | 0920 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 10XWW1 | 10.5.95 | 0923 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 10XNWW1 | 10.5.95 | 0925 | | X | Tan / Orange Sand | 1 x 8oz | X | |
| 10XSWW1 | 10.5.95 | 0928 | | X | Tan / Orange Sand | 1 x 8oz + 1 VOA vial | X | Coarse sand [illegible] to seive VOA/VOA container seived sand 52,34 & oz bottle is unseived |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-10 | Matthew H Jones | Fed Ex Airbill # 316 4995784 | 10.5.95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |

REMARKS
- A temp blank included
- preserved 4°C
- 5 day TAT

SAMPLER'S SIGNATURE: Matthew H Jones

OHM Rem[illegible]ation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Weston

Form 0019
Field Technical Services
Rev. 08/89

158378

[O].H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston

PROJECT LOCATION: Ft. Devens, Ayer, MA

NO.: 936

PROJECT CONTACT: Margie Bleau

PROJECT TELEPHONE NO.:

CLIENT'S REPRESENTATIVE: Chris Kane

PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH

| SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10XWB1 | 10.5.95 | 0930 | | X | Tan/Orange Sand | 1x8oz 1x40ml | X | | | | | | | Course sand - difficult to seive. 40ml VOA contains 5g screened material. 8oz jar contains unscreened material |
| 10XNEW1 | 10.5.95 | 0933 | | X | Tan/Orange Sand | 1x8oz | X | | | | | | | |
| 10XSEW1 | 10.5.95 | 0936 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XEB1 | 10.5.95 | 0939 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XCB1 | 10.5.95 | 0945 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XCWW1 | 10.5.95 | 0946 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XCEW1 | 10.5.95 | 0950 | | X | Tan/Orange Sand | 1x8oz | X | | | | | | | |
| 10XSW1 | 10.5.95 | 0955 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XEW1 | 10.5.95 | 0942 | | X | Tan Orange Sand | 1x8oz | X | | | | | | | |
| 10XP DUP | 10.5.95 | 1000 | X | | Tan Orange Sand | | | | | | | | | Duplicate for sample 10XP run on site |

| NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-10 | Matthew H Jones | Fed Ex Airbill # 3164995784 | 10.5.95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS

- Temp blank included
- preserved 4°C
- 5 day TAT

SAMPLER'S SIGNATURE: Matthew H Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 10-4-95 Samplers: MJ/MB Weather: Rainy, 68°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| 06XN1 | 1405 | G | | | | Tan Sand | 1x8oz |
| 06XN1DUP | 1405 | G | | | | | |
| 06XS1 | 1408 | | | | | | |
| 06XW1 | 1411 | | | | | | |
| 06XE1 | 1414 | | | | | | |
| 06XB1 | 1417 | | | | | | |
| 10XNW | 1420 | | | | | | |
| 10XWW | 1422 | | | | | | |
| 10XNWW | 1425 | | | | | | |
| 10XSWW | 1428 | | | | | | |
| 10XWB | 1431 | | | | | | |
| 10XNEW | 1433 | | | | | | |
| 10XSEW | 1435 | | | | | | |

Ref. Pt.___: ______________________

Ref. Pt.___: ______________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ______________

Relinquished by(dd/tt): Matthew Jones 10-4-95 1527 Received by (dd/tt): ______________

# Soil Sample Collection Log
## Weston - Project #17936



Date: 10-4-95 Samplers: MJ / MB Weather: Rainy, 68°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| 10XEB | 1437 | G | | | | Tan Sand | 1x8oz |
| 10XEW | 1440 | G | | | | | |
| 10XCB | 1442 | | | | | | |
| 10XCWW | 1445 | | | | | | |
| 10XCEW | 1447 | | | | | | |
| 10XSW | 1450 | | | | | | |
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| | | | | | | | |

Ref. Pt.___ ______________________

Ref. Pt.___: ______________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # __________ USACE- coc # __________

Requested Testing: TPH cPAH Other ______________________

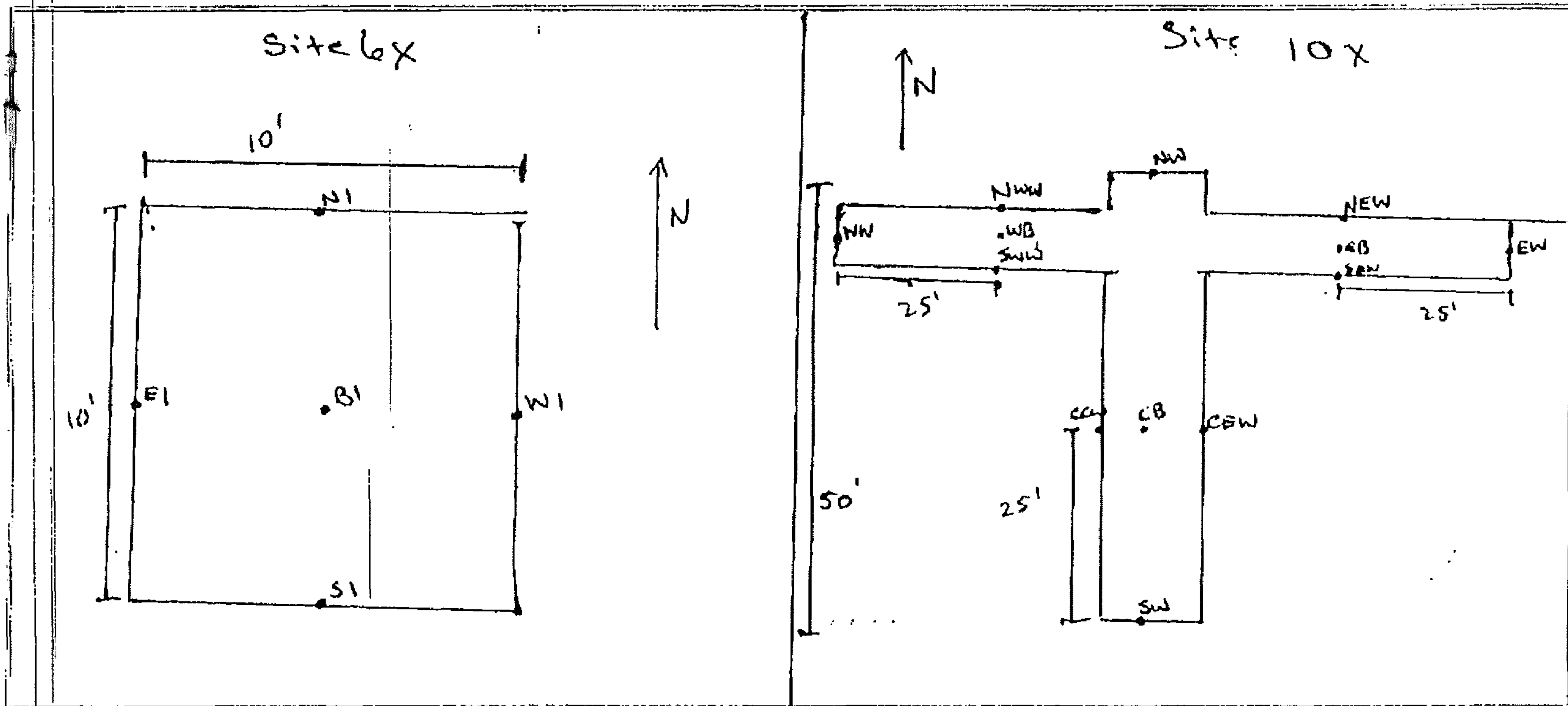
Relinquished by(dd/tt): Matthew Jones 10-4-95 1527 Received by (dd/tt): ______________

**Sample Location Map**
**Weston - Project #17396**

Pg 3 of __

Date: 10-4-95

Site Name: Mogas Spill Sites 44B-92-06X, 44B93-10X




Comments/Observations:

Prepared by: M. Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/27/95 Samplers: MJ/GG Weather: Sunny, 68°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| G6-4 | 1000 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| G5-1 | 1003 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/Cobble | ↓ |
| G5-2 | 1006 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/Cobble | ↓ |
| G5-3 | 1313 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/Cobble | ↓ |
| G5-4 | 1316 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | ↓ |
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| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc #____ USACE- coc #____

Requested Testing: TPH cPAH Other____

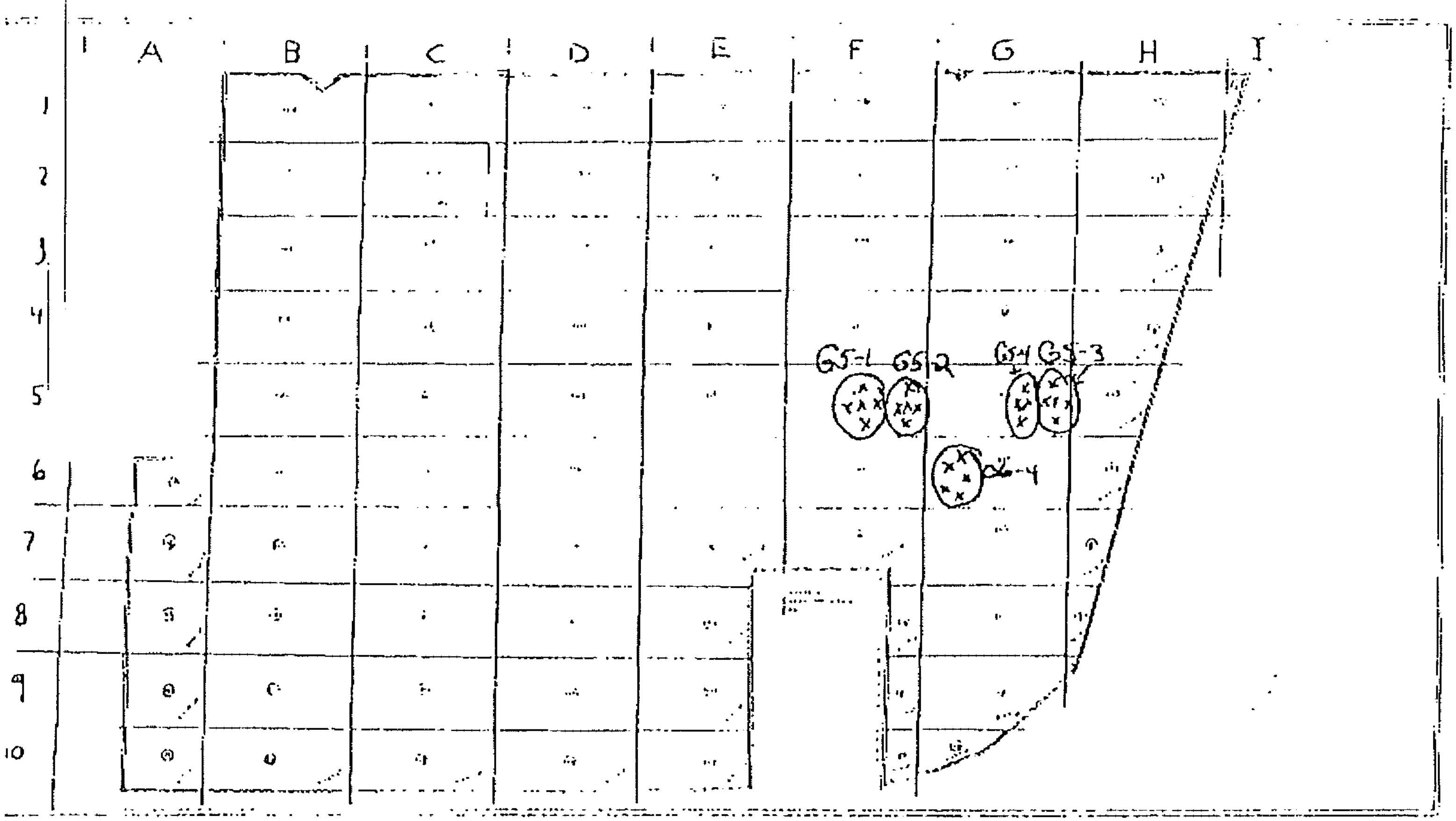
Relinquished by(dd/tt): Matthew Jones 9/27/95 1330 Received by (dd/tt): G. [illegible] 9-27- 1330

# Sample Location Map
# Weston - Project #17396

Date: 9/27/95

Site Name Weston

Pg 2 of 2




Comments/Observations

Prepared by. M. Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date. 9-22-95 Samplers: GG/MJ Weather: Cloudy, Rainy 6

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B9-4 | 1527 | C | 16"-2' | N/A | N/A | Gold Sand | 1x8oz |
| G7-4 | 1534 | C | 16"-2' | N/A | N/A | Gold Sand | 1x8oz |
| G6-3 | 1530 | C | 16"-2' | N/A | N/A | Gold Sand | 1x8oz |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination. Onsite Lab Weston - coc # ________ USACE- coc #________

Requested Testing: TPH cPAH Other________

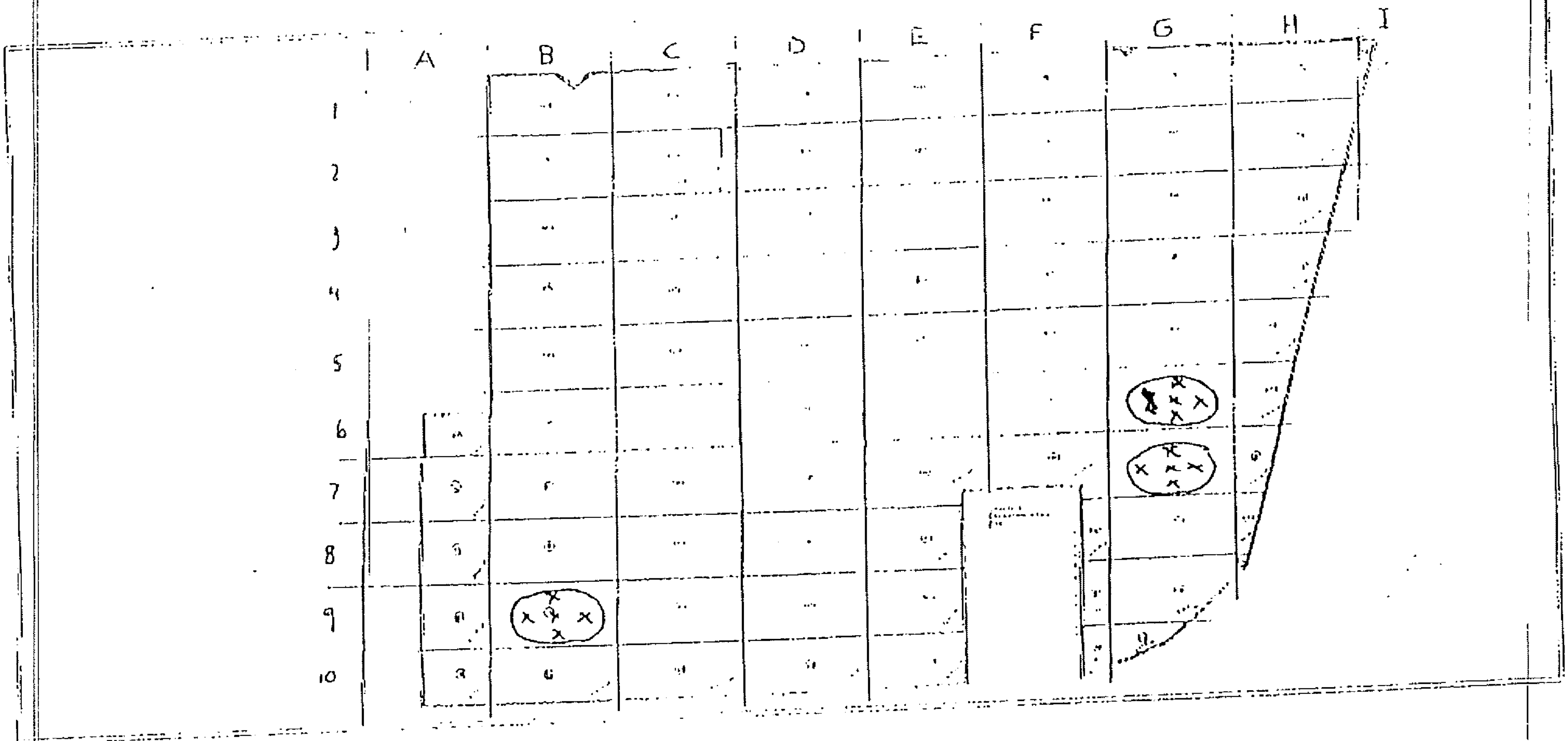
Relinquished by(dd/tt): [signature] 1550 9-22-95 Received by (dd/tt): [signature] 1550 9-22-95

# Sample Location Map
Weston - Project #17396



Date: 9-22-95

Site Name Weston Soil Lift




Comments/Observations

x- discrete sample location

- composite sample taken for each pile.

Prepared by. Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/21/95   Samplers: MJ / GG   Weather: Cloudy, 68

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F7-5 | 1528 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| F7-5DUP | 1528 | C | 1'6"-2' | | | Brown Sandy Soil | 1x8oz |
| G7-3 | 1530 | C | 1'6"-2' | | | Brown Sandy Soil | 1x8oz |
| G6-2 | 1534 | C | 1'6"-2' | | | Brown Sandy Soil | 1x8oz |
| B9-3 | 1535 | C | 1'6"-2' | | | Brown Sandy Soil | 1x8oz |

Ref. Pt.___:

Ref. Pt.___:

Map Attached: Yes No

Sample Type: Stockpile composite   Hot spot screening   Hot spot confirmation

Duplicate Taken: Yes No   Triplicate Taken: Yes No   Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab   Weston - coc # 158354   USACE- coc #

Requested Testing: TPH   cPAH   Other

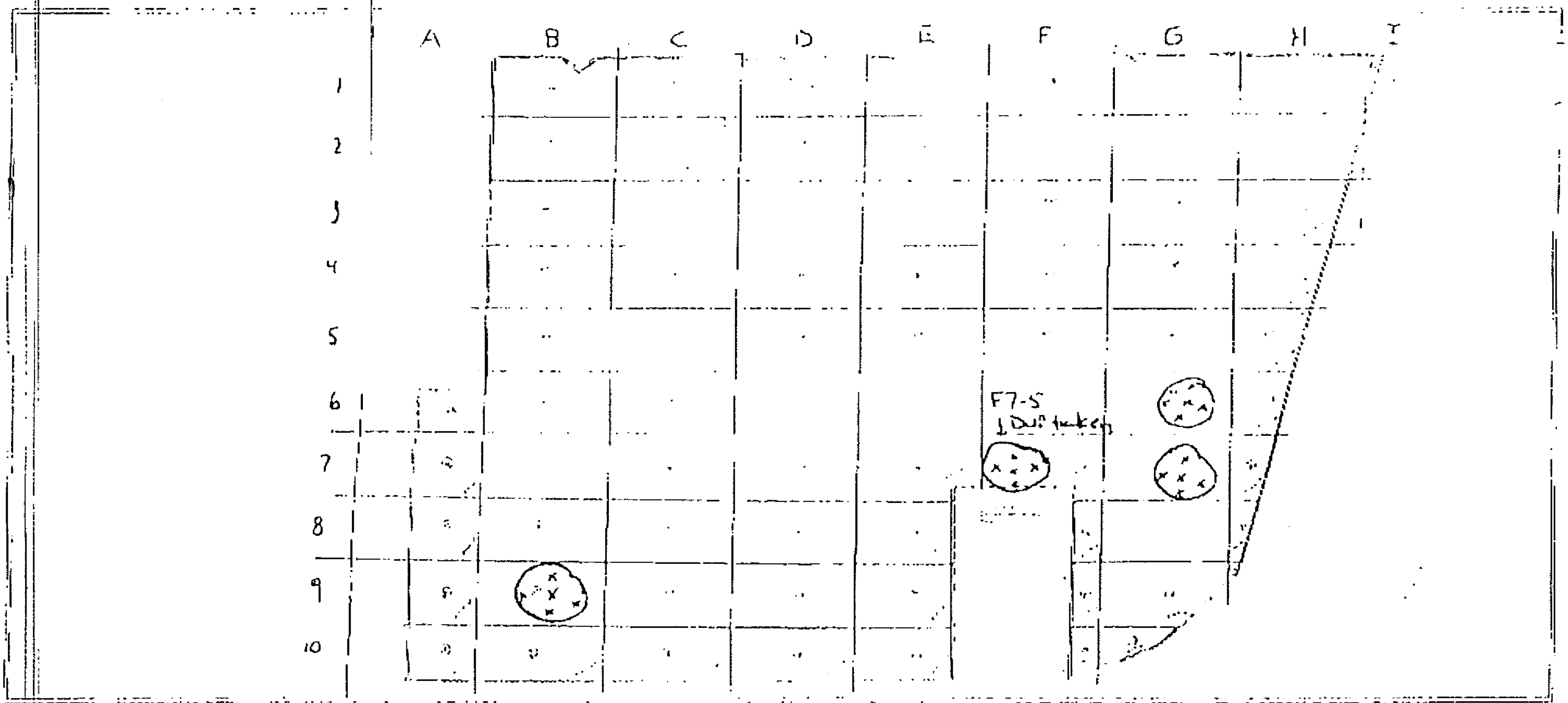
Relinquished by(dd/tt): Matthew Jones 9-21-95 15:45   Received by (dd/tt): [illegible signature] 9-21-95 15:45

# Sample Location Map
## Weston - Project #17396



Date 9/21/95

Site Name Weston




Comments/Observations

X - denotes specific sampling point

5 sampling points per composite

Prepared by Matt Jones

Onsite Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Form
Field Technical Serv.
Rev. 0

158354

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Fort Devens Ayer, MA
PROJ NO: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH, CPAH's

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | CPAH's | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 092195FB | 9-21-95 | 1520 | | x | Equipment Rinsate | 4x1L | ✓ | ✓ | |
| 2 | FT-5 DUP | 9-21-95 | 1528 | x | | Brown sandy soil | 1x8oz | ✓ | ✓ | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-2 | A Hammond | Federal Express Airbill# | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS:
- Preserved at 4°C, Water sample for TPH analysis preserved w/HCl
- Temp blank included
- Soil Sample has been screened with a No. 30 sieve

SAMPLER'S SIGNATURE

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/19/95 Samplers: MJ/GG Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E7-4 | 1604 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1×8oz |
| F7-4 | 1600 | C | ↓ | ↓ | ↓ | Brown Sandy Soil w/ Cobble | 1×8oz |
| G6-1 | 1603 | C | ↓ | ↓ | ↓ | ↓ | 1×8oz |
| G7-2 | 1557 | C | ↓ | ↓ | ↓ | ↓ | 1×8oz |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other________

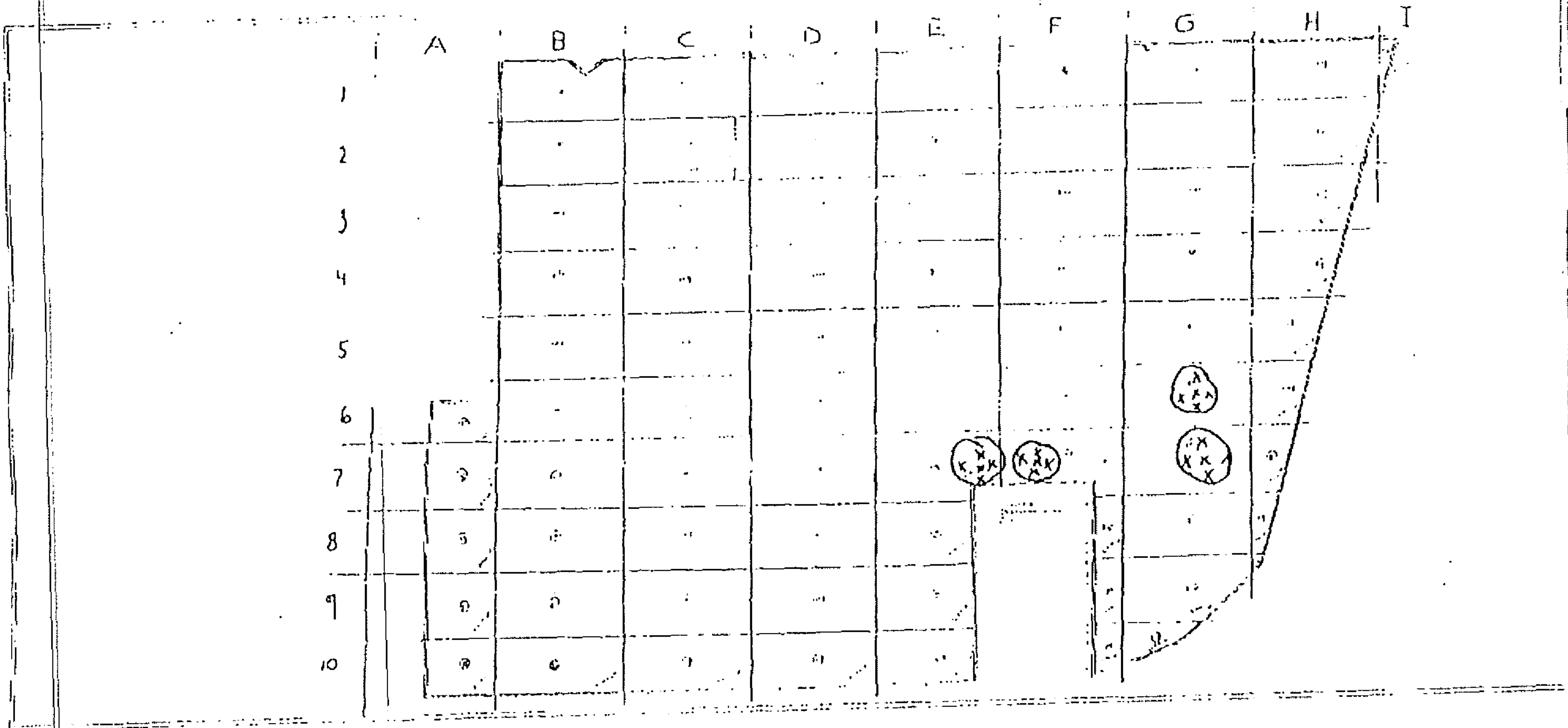
Relinquished by(dd/tt): Matthew Jones 9/19/95 16:25 Received by (dd/tt): ________

# Sam Location Map
Weston - Project #17396



Date 9/19/95

Site Name Weston Piles




Comments/Observations

X denotes unique sample location.

Prepared by Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/18/95 Samplers: GG / MJ Weather: Sunny, 70°

| Sample ID Number | Time | Comp/Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E7-3 | 1610 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x4oz |
| G7-1 | 1612 | C | 1'6"-2' | N/A | N/A | Dark brown sandy soil w/cobble | 1x4oz |
| F7-3 | 1615 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x4oz |

Ref. Pt.___ ________________

Ref. Pt.___ ________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

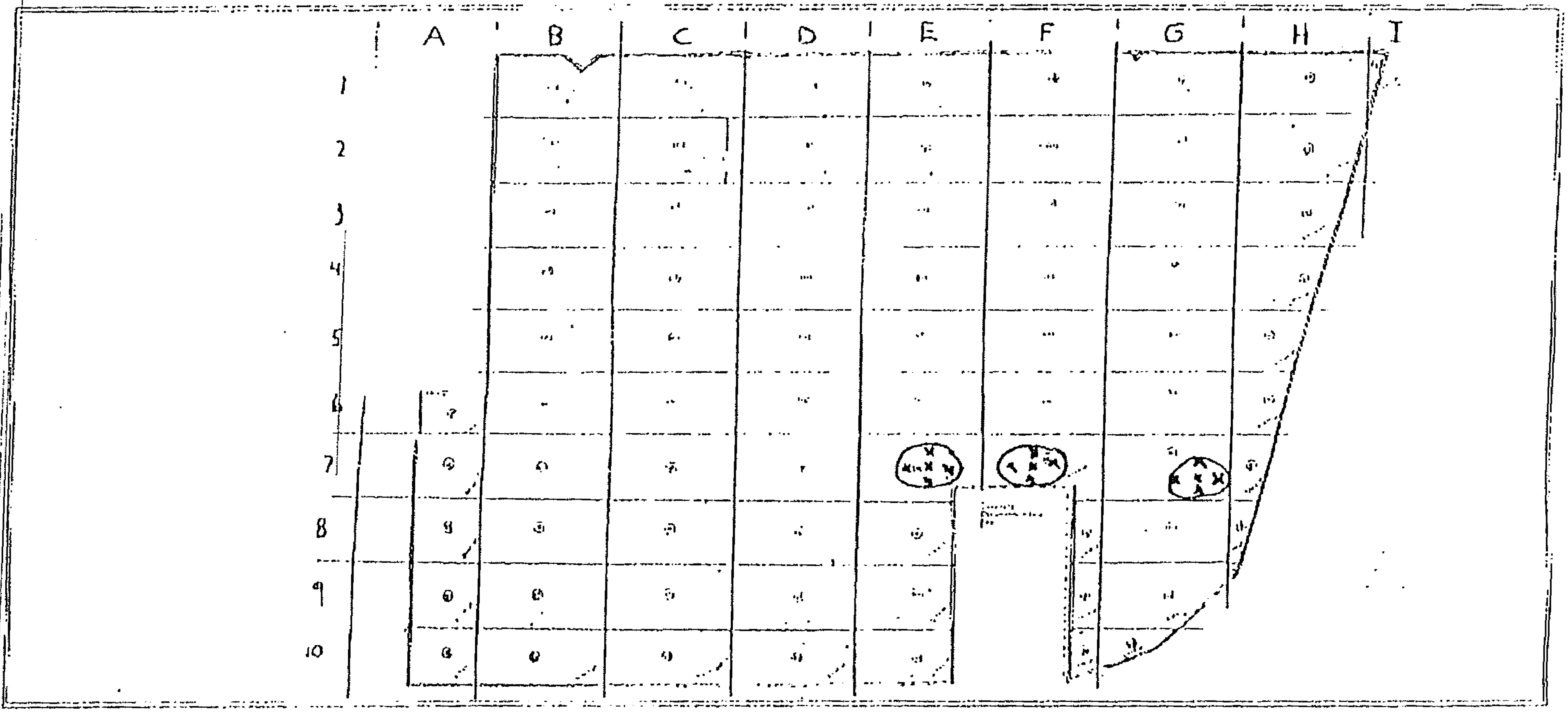
Relinquished by(dd/tt): G. Guimond 1630 9/18/95 Received by (dd/tt): Matthew Jones 16[illegible]

## Sample Location Map
## Weston - Project #17396



Date: 9-18-95

Site Name: Weston Soil Lift




Comments/Observations

x- Discrete sample location

-Composite sample taken for each pile

Prepared by. Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/15/95 Samplers: GG/MJ Weather: Sunny, 75°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B8-4 | 1125 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| F7-2 | 1650 | C | ↓ | ↓ | ↓ | ↓ | 1x4oz |
| E7-2 | 1653 | C | ↓ | ↓ | ↓ | ↓ | 1x4oz |
| A8-4 | 1650 | C | ↓ | ↓ | ↓ | ↓ | 1x4oz |
| B5-4 | 1645 | C | ↓ | ↓ | ↓ | ↓ | 1x4oz |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

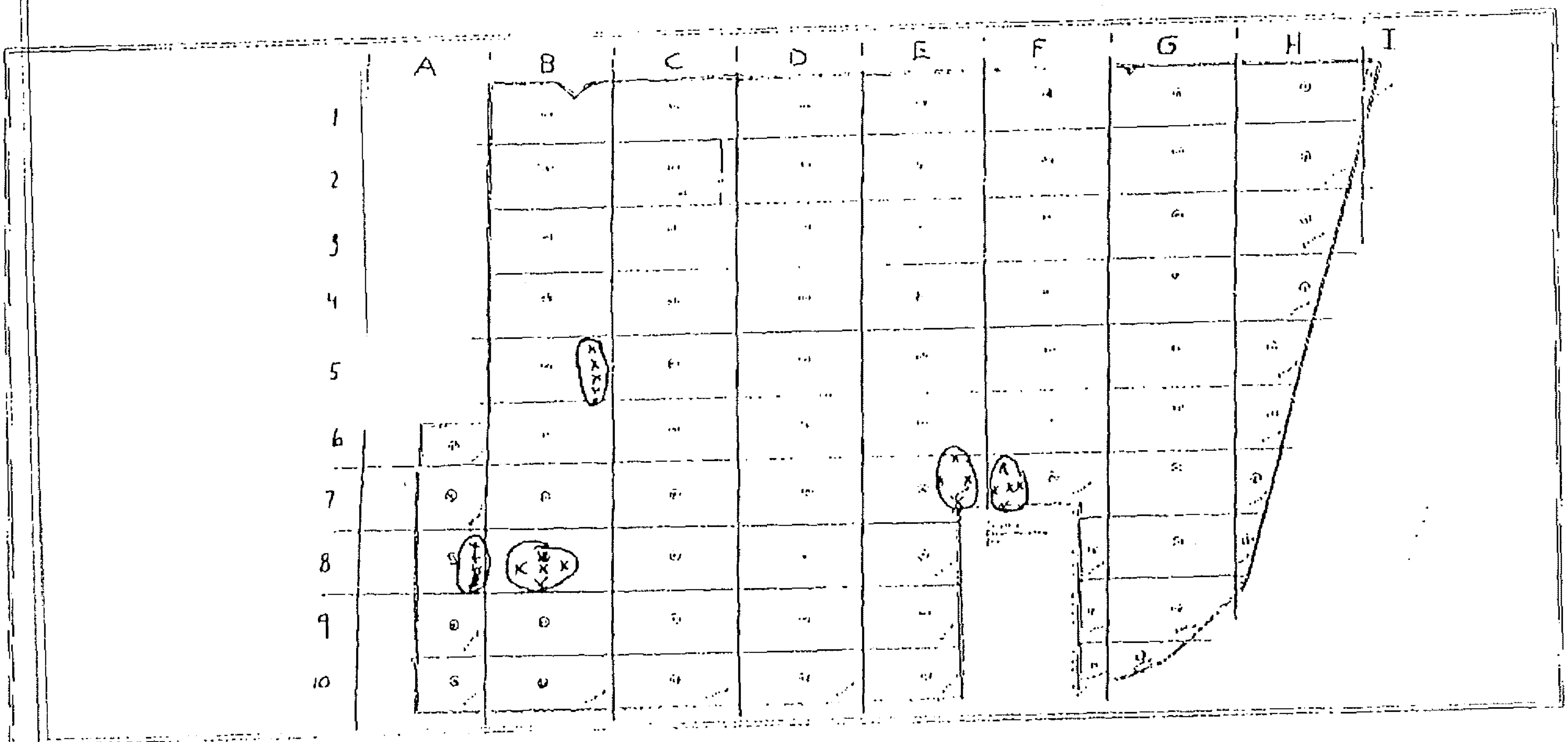
Relinquished by(dd/tt): Matthew Jones 9/15/95 1715 Received by (dd/tt): ______

# Sample Location Map
## Weston - Project #17396



Date: 9/15/95

Site Name: Weston Piles




Comments/Observations

x-denotes discrect sample locations

Prepared by: Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/14/95 Samplers: MJ/GG/MB/MRB Weather: Cloudy, Some rain 75°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| A6-4, A7-4 | 1430 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| A8-3 | 1430 | C | 1'6"-2' | N/A | N/A | BROWN SANDY SOIL | 1X8oz |
| C7-4 | 1436 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| B7-4 | 1730 | C | 1'6"-2' | N/A | N/A | Brown Sand | 1x8oz |
| B6-4 | 1732 | C | 1'6"-2' | N/A | N/A | Brown Sand | 1x8oz |
| B5-3 | 1738 | C | 1'6"-2 | N/A | N/A | Brown Sand | 1x8oz |
| E7-1 | 1747 | C | 1'6"-2' | N/A | N/A | Brown soil w/cobble | 1x8oz |
| F7-1 | 1745 | C | 1'6"-2' | N/A | N/A | Brown Soil w/cobble | 1x8oz |
| F4-4 | 1735 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt. N/A

Ref. Pt. N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

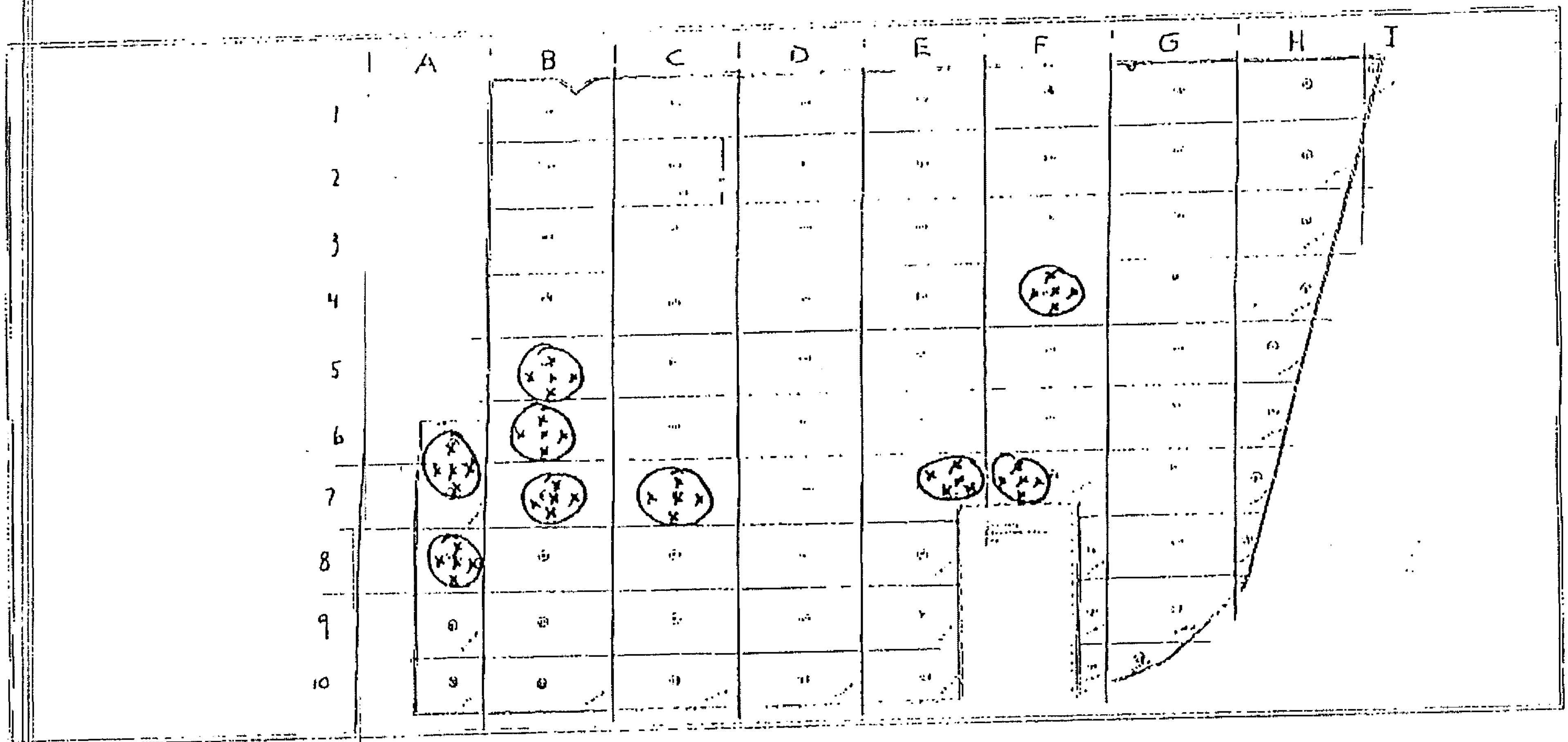
Relinquished by(dd/tt): Matthew Jones 9/14/95 1805 Received by (dd/tt): G Guimond 9-14-95 1805

## Sample Location Map
## Weston - Project #17396



Date 9/14/95

Site Name: Weston Piles




Comments/Observations:

Prepared by: Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date ~~13~~ 9/13/95 Samplers: MJ / MB / GG Weather: Cloudy, 6

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C8-4 | 1325 | C | 1'6"-2' | N/A | N/A | WET SAND | 1x8oz |
| D8-4 | 1327 | C | 1'6"-2' | N/A | N/A | Wet Sand | 1x8oz |
| D7-4 | 1332 | C | 1'6"-2' | N/A | N/A | Gold SAND | 1x8oz |
| B6-3 | 1609 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| BD4-4 | 1619 | C | 1'6"-2 | N/A | N/A | Gold Sand | 1x8oz |
| C4-4 | 1618 | C | 1'6-2' | N/A | N/A | Gold Sand | 1x8oz |
| B4-4 | 1608 | C | 1'6'-2' | N/A | N/A | Gold Sand | 1x8oz |
| E4-4 | 1624 | C | 1'6"-2' | N/A | N/A | Gold sand some cobble | 1x8oz |
| F4-3 | 1626 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B4-4 DUP | 1608 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B4-4 TRP | 1608 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| | | | | | | | |
| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes ~~No~~ yes Rinsate Taken: Yes No

Laboratory Destination Onsite Lab Weston - coc # ______ USACE- coc # 158296

Requested Testing: TPH cPAH Other______

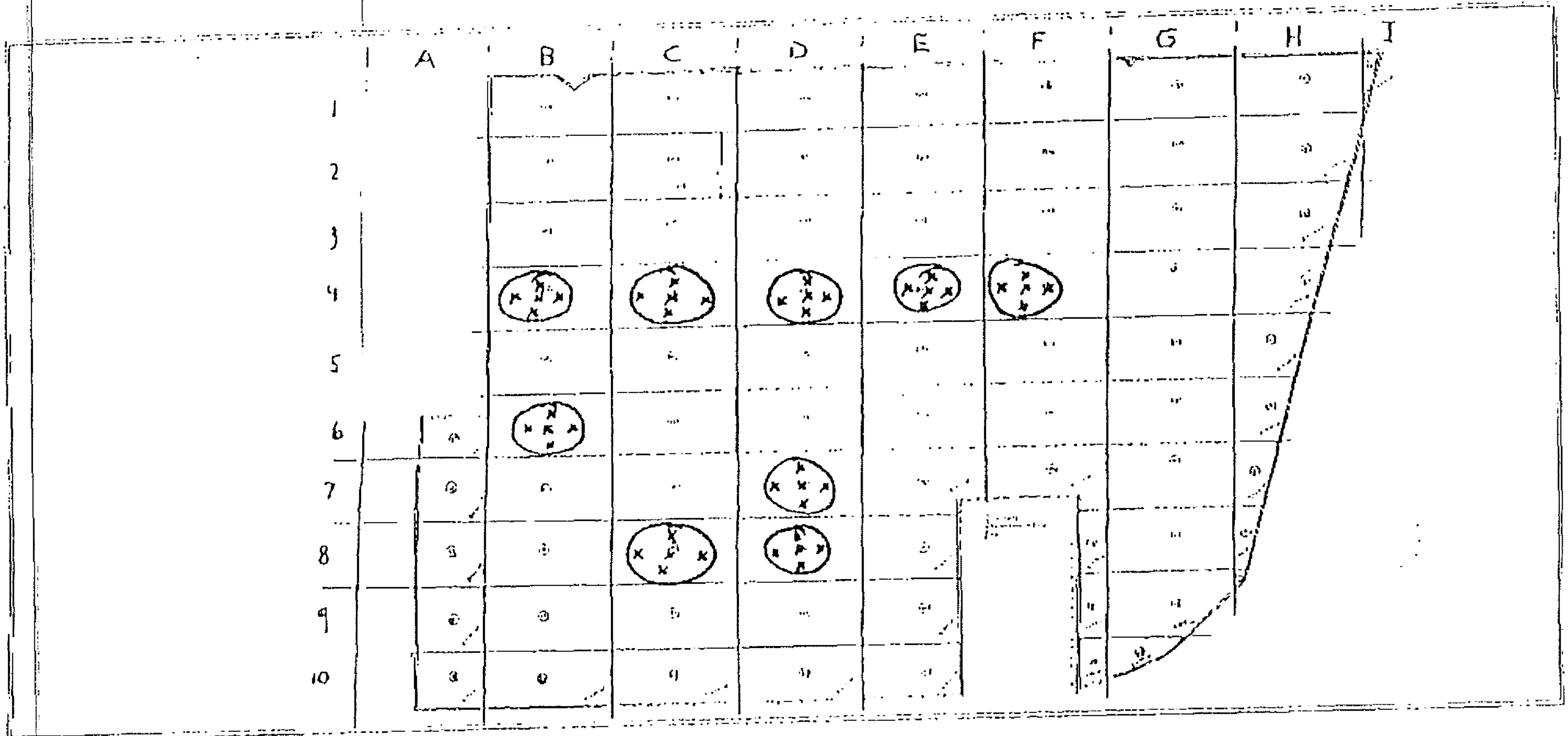
Relinquished by(dd/tt): Matthew Jones 9.13.95 1645 Received by (dd/tt): [illegible signature] 9-13-95 1645

## Sample Location Map
## Weston - Project #17396



Date 9/13/95

Site Name Weston




Comments/Observations:

Prepared by: Matt Jones

OHM Remediation Services Corp.

E0456

# CHAIN-OF-CUSTODY RECORD

Field Tech.
158296

O H MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ NO: 17936
PROJECT CONTACT: Mike Quinlan
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH, C PAH

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | C PAH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B4-4TRP | 9-13-95 | 1608 | ✓ | | Gold Sand Mixture | 1x8oz | X | X | | | | | | Triplicate of samples B4-4 and B4-4 DUP |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | Matthew Jones | Federal Express Airbill # 259 5103221 | 9-13-95 | 1930 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
- Preserved at 4°C
- Temp blank included
- Sample has been screened through a #20 sieve

SAMPLER'S SIGNATURE: Matthew Jones

OHM Remediation Services Corp. 9/14/95

# CHAIN-OF-CUSTODY RECORD

Field Technical Rev.

158234

O.H. MATERIALS CORP • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ. NO.: 17936
PROJECT CONTACT: Mike Quinlan
PROJECT TELEPHONE NO.: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | cPAH | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B4-4 DUP | 9-13-95 | 1608 | X | | Gold Sand | 1x8oz | X | X | | | | | | | |
| 2 | 091395 RB | 9-13-95 | 1220 | | X | Equipt. Rinsate | 4x1L | X | X | | | | | | | TPH samples preserved w/ HCl pH<2 |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | | Matthew Jones | Fed Ex Airbill 2596070881 | 9-14-95 | 1630 |

REMARKS

- Preserved at 4°C
- temp blank included
- Sample B4-4 DUP has been screened through a #20 sieve

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Field Technical No. 158324

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ NO: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | SPAH's | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 091195 ~~ER~~ RB | 9-11-95 | 0925 | | X | Equipment Rinsate | 4x1L | X | X | | | | | | |
| 2 | D9-4 DUP | 9-11-95 | 1541 | X | | Gold Sand | 1x8oz | X | X | | | | | | |
| 3 | 091295 RB | 9-12-95 | 0850 | | X | Equipment Rinsate | 4x1L | X | X | | | | | | |
| 4 | E8-4 DUP | 9-12-95 | 1724 | X | | Brown Sandy Soil | 1x8oz | X | X | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-4 | Matthew Jones | Federal Express Airbill # 2595638852 | 9-12-95 | 1930 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS: All samples preserved w/ ice to 4°C
- Rinsate samples also preserved to pH<2 w/ H
- Temp blank included
- 3 day TAT
- Soil samples have been screened through #20 sieve

SAMPLER'S SIGNATURE: Matthew H Jones

Soil Sample Collection Log
Weston - Project #17936



Date: 9/12/95 Samplers: MJ / MB Weather: Sunny, 80°

| Sample ID Number | | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| ~~D4~~ F3-4 | 1408 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| E4-3 | 1400 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| E3-4 | 1407 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| G4-4 | 1710 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| B3-4 | 1717 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| D4-3 | 1715 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| ~~G4-4~~ | ~~1710~~ | | | | | | |
| C4-3 | 1723 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| E8-4 | 1724 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| E8-4DUP | 1724 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ___ USACE- coc #___

Requested Testing: TPH cPAH Other___

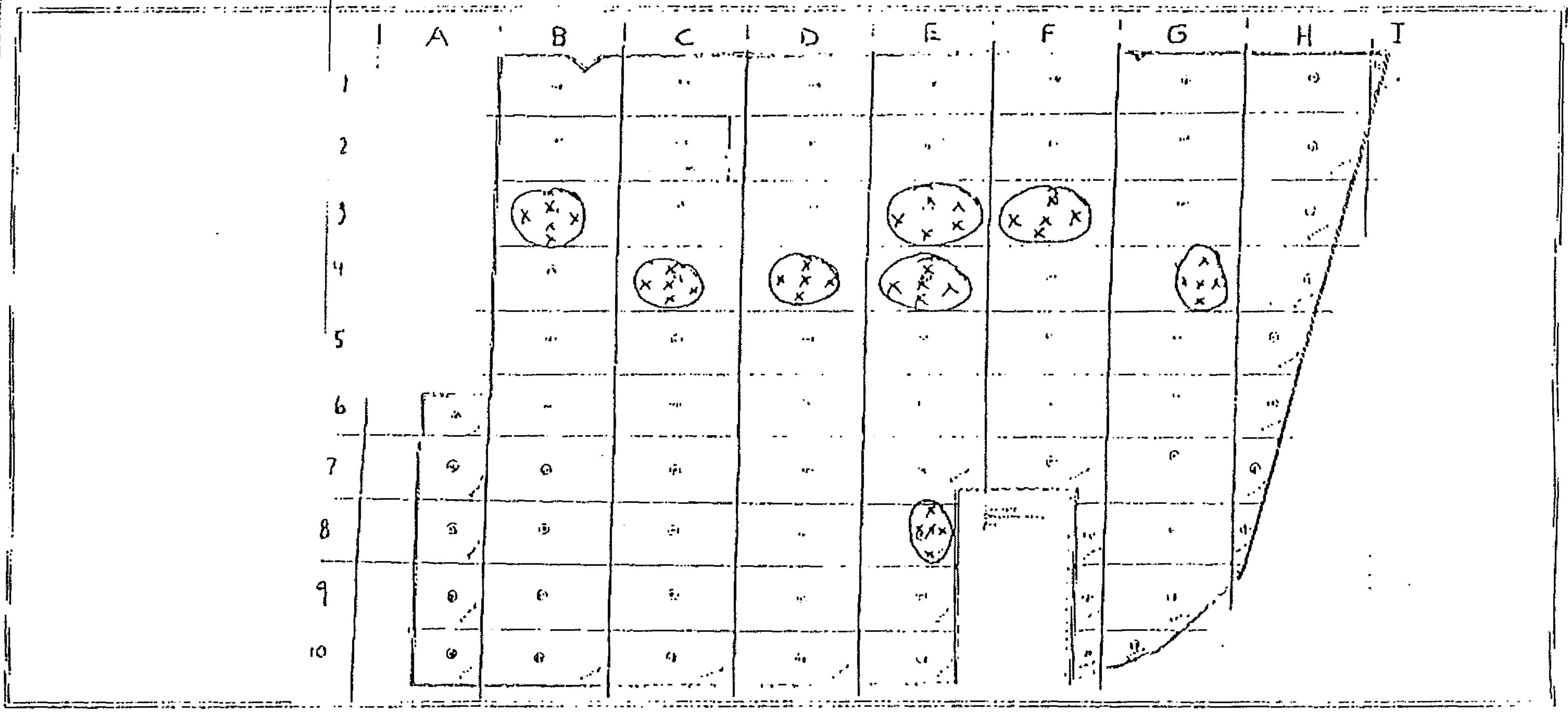
Relinquished by(dd/tt): Matthew Jones 9/12/94 18:30 Received by (dd/tt):___

**Sample Location Map**
**Weston - Project #17396**



Date 9/12/95

Site Name: Weston




Comments/Observations:

Prepared by: Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936
## UST - Excavation & Piles



Date 9.12.95 Samplers: MJ, MB Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt.A | Coordinates Ref. Pt.B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| SWest W1 | 0838 | G | ~~11'5"~~ 11.4' | 47' | 36'10" | Gold Sand | 1x8oz |
| W2 | 0842 | G | 12' | 37' | 51'4" | Gold Sand | 1x8oz |
| W3 | 0845 | G | 10'2" | 32' | 54'6" | Gold Sand | 1x8oz |
| W4 | 0847 | G | 8'8" | 21'2" | 50'10" | Gold Sand | 1x8oz |
| W5 | 0849 | G | 10-6 | 17'8" | 42'3" | Gold Sand | 1x8oz |
| W6 | 0853 | G | 9'4" | 35' | 27'10" | Gold Sand | 1x8oz |
| W7 | 0856 | G | 11'1" | 38'5" | 19'10" | Gold Sand | 1x8oz |
| W8 | 0859 | G | 11'0" | 46'8" | 31'8" | Gold Sand | 1x8oz |
| B1 | 0838 | G | 13'7" | 42'1" | 34'0" | Gold Sand | 1x8oz |
| B2 | 0840 | G | 13'3" | 33'4' | 45'7" | Gold Sand | 1x8oz |
| SB UST 0-4' | 0924 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1x8oz |
| SB UST 4'-8' | 0930 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1x8oz |
| SB UST 8'-10' | 0936 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1x8oz |

Ref. Pt. A Pole on Fence - See Map

Ref. Pt B Pole on fence - See Map

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

Relinquished by(dd/tt): Matthew Jones 9.12.95 1104 Received by (dd/tt): M Hammond 9-12-95 1104

Soil Sample Collection Log
Weston - Project #17936
UST - Excavation & Piles



Date: 9.12.95 Samplers: MJ, MB Weather: Sunny, 80°

| Sample ID Number | Time | Comp/Grab | Sample Depth (ft) | Coordinates Ref. Pt A | Coordinates Ref. Pt. B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| UST NRTH SL ~~UST 2 ...~~ ~~UST N. Slope~~ | 0933 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1×8oz |
| UST UST SL ~~UST E. Slope 2 ...~~ | 0944 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1×8oz |

Ref. Pt. A: Pole on fence - See Map

Ref. Pt. B: Pole on fence - See Map

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

Relinquished by(dd/tt): Matthew Jones 9-12-95 1103 Received by (dd/tt): [signature] 1104 9-12-95

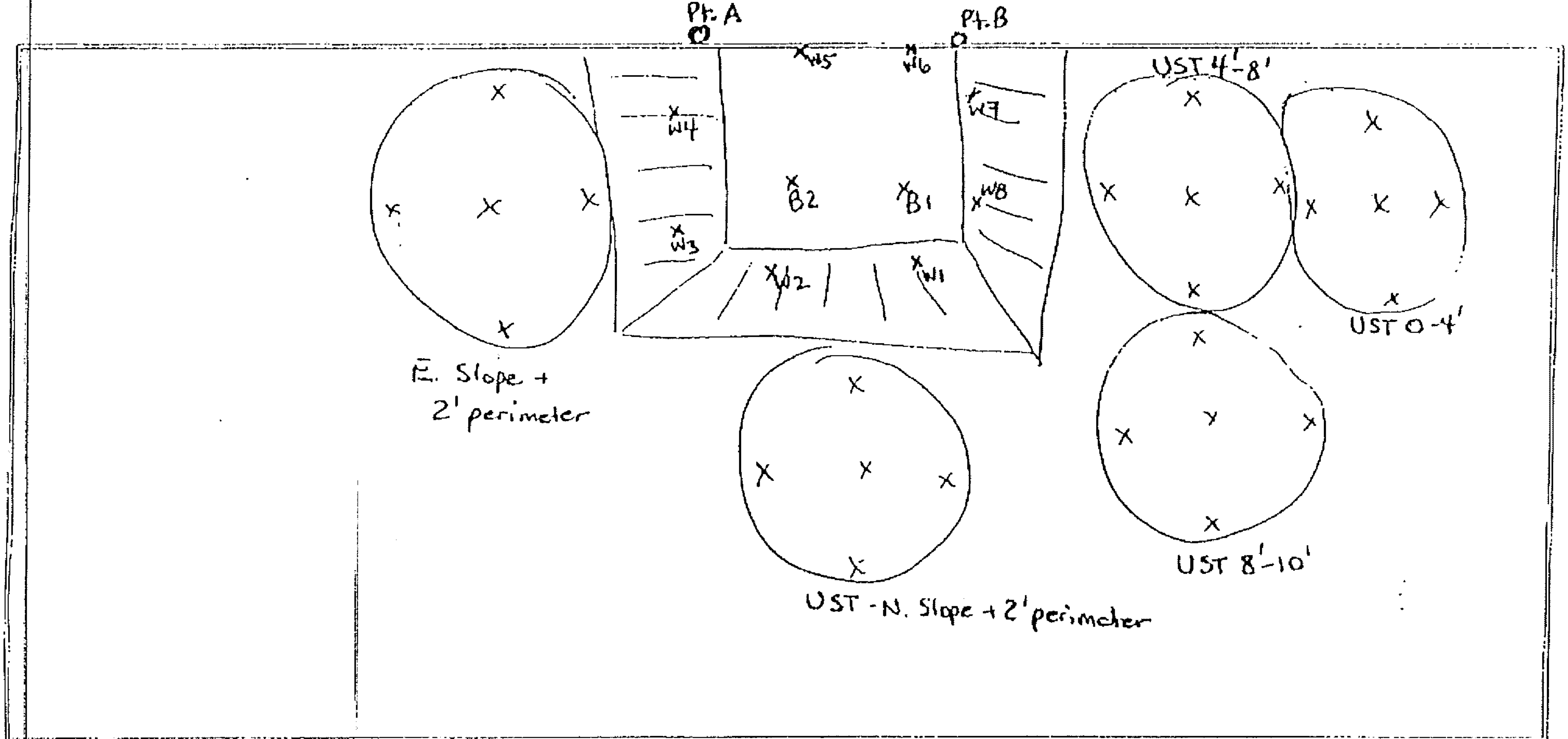
# Sample Location Map

~~Fo[illegible] — Project [illegible]~~



Date: 9.12.95

Site Name: Weston UST excavation




Comments/Observations: W1 → W8, B1, B2 all grab samples
UST & Slope Piles composite samples

- Grabs labelled with prefix SB West (SB- subsurface soil)

Prepared by: Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/12/95 Samplers: MJ / MB Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt A | Coordinates Ref. Pt B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| SBWESTW1A | 1805 | G | 11'4" | 47' | 36'10" | Gold Sand | 1×8oz. |
| W2A | 1504 | G | 12' | 37' | 51'4" | Gold Sand | ↓ |
| W3A | 1505 | G | 10'2" | 32' | 54'6" | ↓ | ↓ |
| W4A | 1503 | G | 8'8" | 21'2" | 50'10" | ↓ | ↓ |
| W5A | 1507 | G. | 10'6" | 17'8" | 42'3" | ↓ | ↓ |
| W6A | 1513 | G | 9'4" | 35' | 27'10" | ↓ | ↓ |
| W7A | 1511 | G | 11'1" | 38'5" | 19'10" | ↓ | ↓ |
| W8A | 1508 | G | 11'0" | 46'8" | 31'8" | ↓ | ↓ |
| B1A ~~W9A~~ | 1510 | G | 13'7" | 42'1" | 34'0" | ↓ | ↓ |
| B2A ~~W10A~~ | 1506 | G | 13'3" | 33'4" | 45'7" | ↓ | ↓ |
| W1ADUP | 1805 | G | 11'4" | 47' | 36'10" | ↓ | ↓ |
| W1ATRP | 1805 | G | 11'4' | 47' | 36'10" | ↓ | ↓ |
| | | | | | | ↓ | ↓ |

Ref. Pt. A : Pole on fence - See Map

Ref. Pt. B : Pole on fence - See Map

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

AEN COC# ~~15829~~ 158295

Laboratory Destination: Onsite Lab Weston - coc # 158294 USACE- coc # ______

Requested Testing: TPH cPAH Other ______

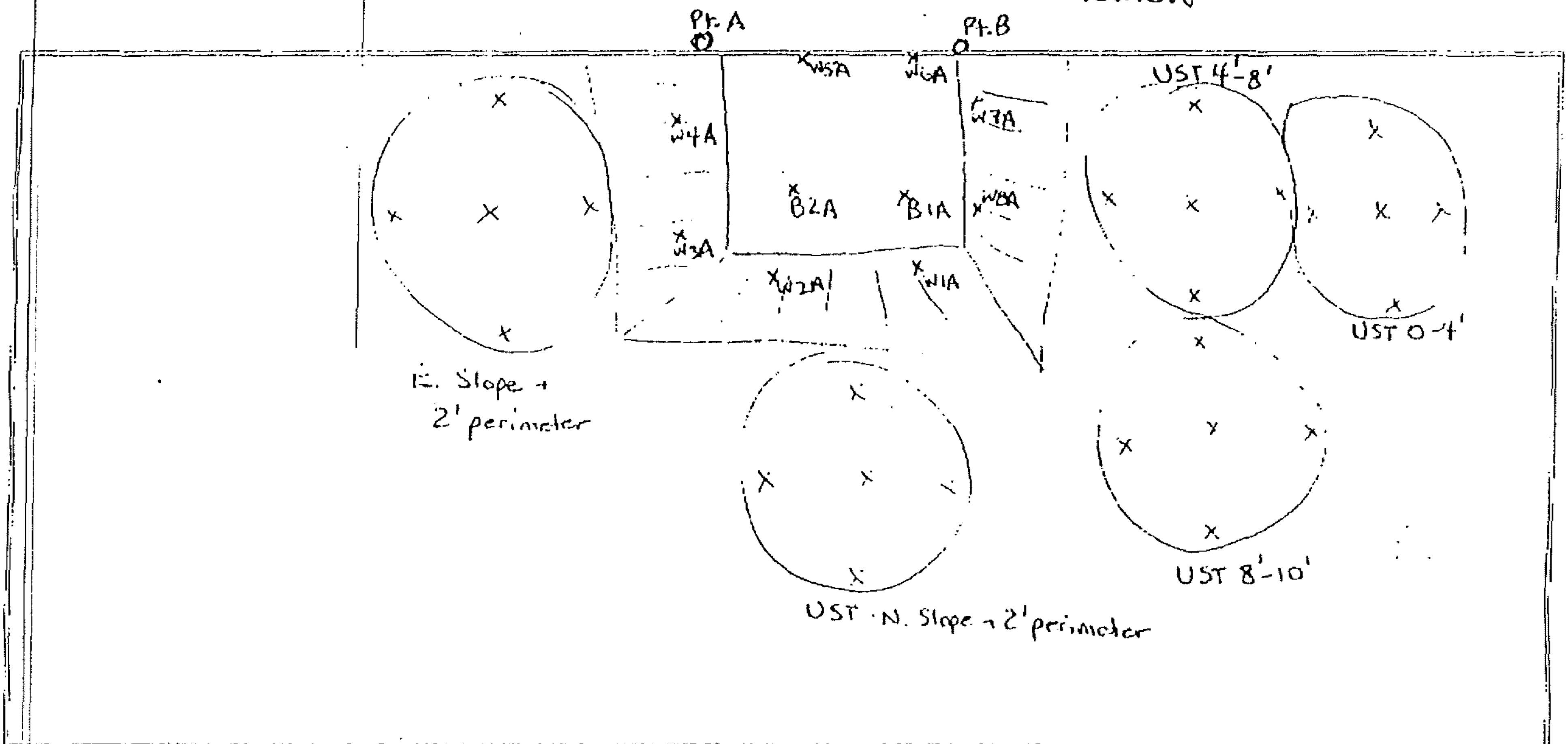
Relinquished by(dd/tt): Matthew Jones 9-12-95 1820 Received by (dd/tt): [signature] 9-12-9 18

# Sample Location Map

~~F[illegible] Project [illegible]~~

Date: 9.12.95

Site Name: Weston UST excavation




Comments/Observations: W1 → W8, B1, B2 all grab samples
UST & Slope Piles composite samples

- Grabs labelled with prefix SB West (SB: subsurface soil)

Prepared by: Matt Jones

Send on 9/12/95

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Field Technical Ser[illegible]
Rev 08/[illegible]

158294

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

| PROJECT NAME | PROJECT LOCATION |
|---|---|
| Weston | Ayer, MA |

| PROJ NO | PROJECT CONTACT | PROJECT TELEPHONE NO |
|---|---|---|
| 17934 | Bill Dale | (508) 772-2019 |

| CLIENTS REPRESENTATIVE | PROJECT MANAGER/SUPERVISOR |
|---|---|
| Chris Kane | Mike Quinlan |

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBWESTW1A DUP | 9/12/95 | 1805 | | X | Gold Sand | 1×8oz | X | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | | Matthew Jones | Fed Ex Express Airbill # 2595638857 | 9.12.95 | 1930 |
| 2 | | | | | |
| 3 | | | | | |

REMARKS
- Preserved w ice to 4°C
- Temp blank included
- ~~3 day TAT~~
- Sample has been screened through #20 Sieve

SAMPLER'S SIGNATURE Matthew Jones

WESTON

OHM Remediation Services Corp.

Mailed on 9/14/95

# CHAIN-OF-CUSTODY RECORD

Form ... Field Technical Service Rev 08/81

158240

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston

PROJECT LOCATION: Ayer, MA

PROJ. NO.: 17936

PROJECT CONTACT: Bill Dale

PROJECT TELEPHONE NO.: (508) 772-2019

CLIENT'S REPRESENTATIVE: Chris Kiernan

PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SBWESTW1A | 9.12 95 | 1505 | | ✓ | Gold Sand | 1X8OZ | X | | | | | | | | |
| 2 | SBWESTW2A | 9.12 95 | 1504 | | ✓ | Gold Sand | ↓ | X | | | | | | | | |
| 3 | SBWESTW3A | 9.12 95 | 1505 | | ✓ | Gold Sand | | X | | | | | | | | |
| 4 | SBWESTW4A | 9.12 95 | 1513 | | ✓ | Gold Sand | | X | | | | | | | | |
| 5 | SBWESTW5A | 9.12 95 | 1507 | | ✓ | ~~Gold~~ Sand MS/MSD | | X | | | | | | | | |
| 6 | SBWESTW6A | 9.12 95 | 1513 | | ✓ | Gold Sand | | X | | | | | | | | |
| 7 | SBWESTW7A | 9.12 95 | 1511 | | ✓ | Gold Sand | | X | | | | | | | | |
| 8 | SBWESTW8A | 9.12 95 | 1508 | | ✓ | Gold Sand | | X | | | | | | | | |
| 9 | SBWESTB1A | 9.12 95 | 1510 | | ✓ | Gold Sand | | X | | | | | | | | |
| 10 | SBWESTB2A | 9.12 95 | 1506 | | ✓ | Gold Sand | ↓ | X | | | | | | | | |

| ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|
| 1-10 | Matthew Jones | Fed Ex Airbill # 2596070881 | 9.14 95 | 1700 |
| | | | | |
| | | | | |

REMARKS

- Samples have been seived w a #20 seive
- Preserved 4°C

OHM Remediation Services Corp.

Send on 9/12/95

E0456

# CHAIN-OF-CUSTODY RECORD

Field Techni... Re...

158297

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston

PROJECT LOCATION: Fort Devens, Ayer, MA

PROJ. NO.: 17936

PROJECT CONTACT: Bill Dale

PROJECT TELEPHONE NO: (508) 772-2019

CLIENT'S REPRESENTATIVE: Chris Kane

PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SBWESTW1ATRP | 9-12-95 | 1805 | | X | Gold Sand | 1x8oz | X | | | | | | | Triplicate of SBWESTW1A and SBWESTW1ADUP |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | Matthew Jones | Federal Express Airbill # 2595903721 | 9-13-95 | 1930 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS

- Preserved at 4°C
- Temp blank included
- Sample has been screened through a #20 sieve

SAMPLER'S SIGNATURE: Matthew Jones

Soil Sample Collection Log
Weston - Project #17936
UST - Excavation & Piles



Date: 9.12.95 Samplers: MJ, MB Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt.A | Coordinates Ref. Pt.B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| West W1 | 0838 | G | ~~17'8"~~ 11'4" | 47' | 36'10" | Gold Sand | 1x8oz |
| W2 | 0842 | G | 12' | 37' | 51'4" | Gold Sand | 1x8oz |
| W3 | 0845 | G | 10'2" | 32' | 54'6" | Gold Sand | 1x8oz |
| W4 | 0847 | G | 8'8" | 21'2" | 50'10" | Gold Sand | 1x8oz |
| W5 | 0849 | G | 10-6 | 17'8" | 42'3" | Gold Sand | 1x8oz |
| W6 | 0853 | G | 9'4" | 35' | 27'10" | Gold Sand | 1x8oz |
| W7 | 0856 | G | 11'1" | 38'5" | 19'10" | Gold Sand | 1x8oz |
| W8 | 0859 | G | 11'0" | 46'8" | 31'8" | Gold Sand | 1x8oz |
| B1 | 0838 | G | 13'7" | 42'1" | 34'0" | Gold Sand | 1x8oz |
| B2 | 0840 | G | 13'3" | 33'4' | 45'7" | Gold Sand | 1x8oz |
| UST 0-4' | 0924 | C | 1.5-2' | N/A | N/A | Gold Sand | 1x8oz |
| UST 4'-8' | 0930 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1x8oz |
| UST 8'-10' | 0936 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1x8oz |

Ref. Pt. A: Pole on Fence - See Map

Ref. Pt. B: Pole on fence - See Map

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: ~~Yes~~ No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

Relinquished by(dd/tt): Matthew Jones 9.12.95 1104 Received by (dd/tt): [signature] 1104 9-12-95

# Soil Sample Collection Log
## Weston - Project #17936
## UST - Excavation & Piles

Page 2 of 3

Date: 9.12.95 Samplers: MJ, MB Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. A | Ref. Pt. B | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| UST ORTH SL ~~UST 2° perimeter UST N. Slope~~ | 0933 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1×8oz |
| B UST AST SL ~~UST E. Slope 2° perimeter~~ | 0944 | C | 1.5'-2' | N/A | N/A | Gold Sand | 1×8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt. A: Pole on fence - See Map

Ref. Pt. B: Pole on fence - See Map

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

Relinquished by(dd/tt): Matthew Jones 9-12-95 1105 Received by (dd/tt): M. [illegible] 9-12-95 1104

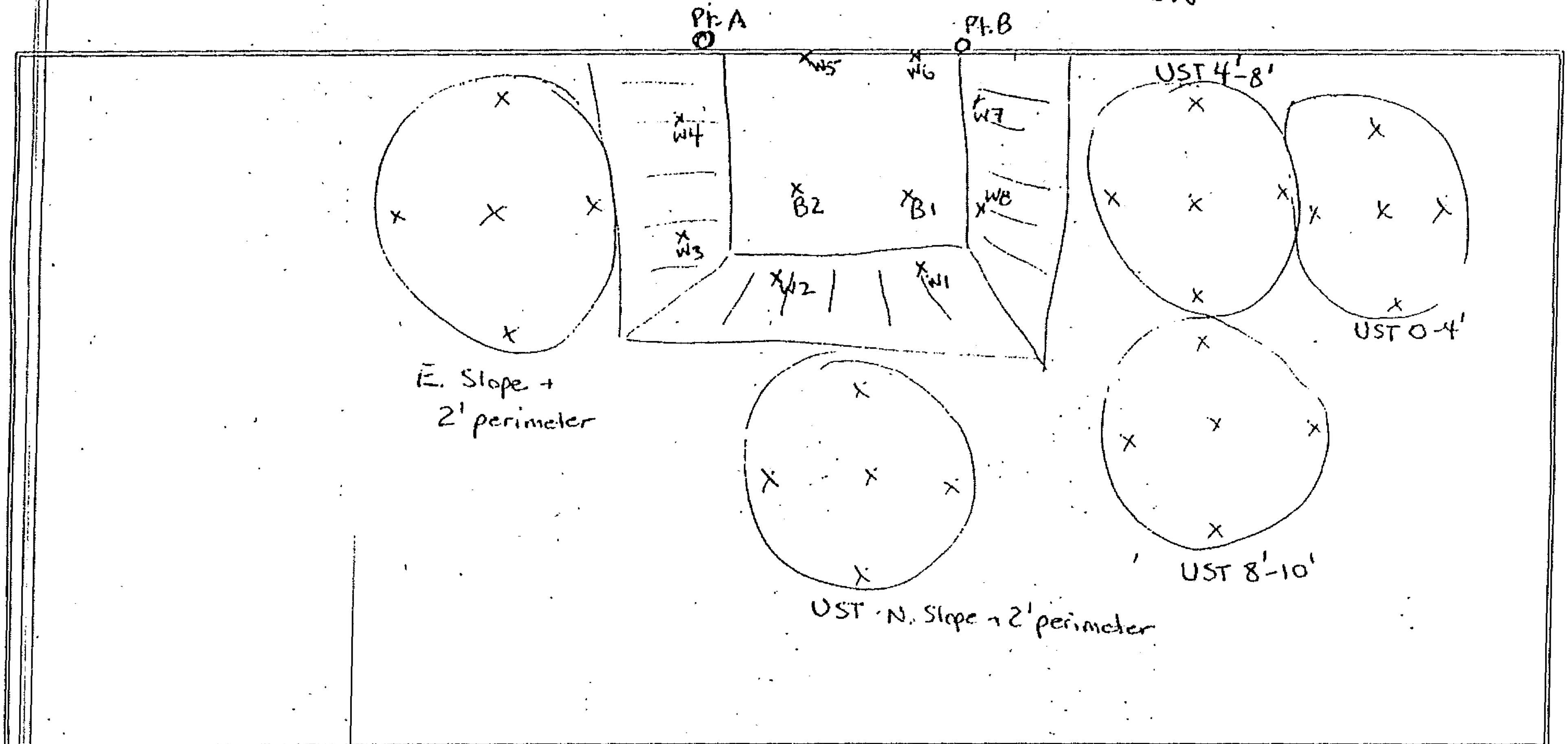
# Sample Location Map

~~Fort Devens - Project #?8808~~



Date: 9.12.95

Site Name: Weston UST excavation




Comments/Observations: W1 → W8, B1, B2 all grab samples

UST & Slope Piles composite samples

- Grabs labelled with prefix SB West (SB- subsurface soil)

Prepared by: Matt Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 09-11-95 Samplers. BD, MJ, GG Weather: Sunny 75°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F3-3 | 1128 | C | 1'6"-2'0" | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| G4-3 | 1126 | C | 1'6"-2'0" | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D9-4 | 1541 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| D9-4DUP | 1541 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| ~~B8-3~~ B7-3 | 1613 | C | 1'6-2' | N/A | N/A | Brown Sandy Soil w/ Cobble | 1x8oz |
| C2-4 | 1557 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| C3-4 | 1551 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| C9-4 | 1549 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| D3-4 | 1605 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| ~~D9-4~~ | ~~1541~~ | ~~C~~ | ~~1'6"-2'~~ | ~~N/A~~ | ~~N/A~~ | ~~Gold Sand~~ | ~~1x8oz~~ |
| E3-3 | 1558 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| E9-4 | 1543 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B8-3 | 1800 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |

Ref. Pt.___: N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158324 USACE- coc #____

Requested Testing: TPH cPAH Other____

Relinquished by(dd/tt): [signature] 9-11-95 1730 Received by (dd/tt):____

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/11/95 Samplers: BD, MJ, GG Weather: Sunny 75

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B2-4 | 1759 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| G3-4 | 1806 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| A6-3 A7-3 | 1805 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
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| | | | | | | | |

Ref. Pt. N/A

Ref. Pt. N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening ~~Hot spot confirmation~~

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 15834 USACE- coc # ______

Requested Testing TPH cPAH Other ______

Relinquished by(dd/tt): [signature] 9-11-95 15:30 Received by (dd/tt): ______

weston

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

LAB COPY

Form 0019
Field Technical Services
Rev 08/8?

158324

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419 423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ. NO: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| SAMPLE NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | SPAH'S | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 091195 ~~ER1~~ RB | 9-11-95 | 0925 | | X | Equipment Rinsate | 4x1L | X | X | | | | | | |
| 2 | D9-4 DUP | 9-11-95 | 1541 | X | | Gold Sand | 1x8oz | X | X | | | | | | |
| 3 | 091295 RB | 9-12-95 | 0850 | | X | Equipment Rinsate | 4x1L | X | X | | | | | | |
| 4 | E8-4 DUP | 9-12-95 | 1724 | X | | Brown Sandy Soil | 1x8oz | X | X | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-4 | Matthew Jones | Federal Express Airbill # 2595638852 | 9-12-95 | 1930 |
| 2 | | | | | |
| 3 | | | | | |

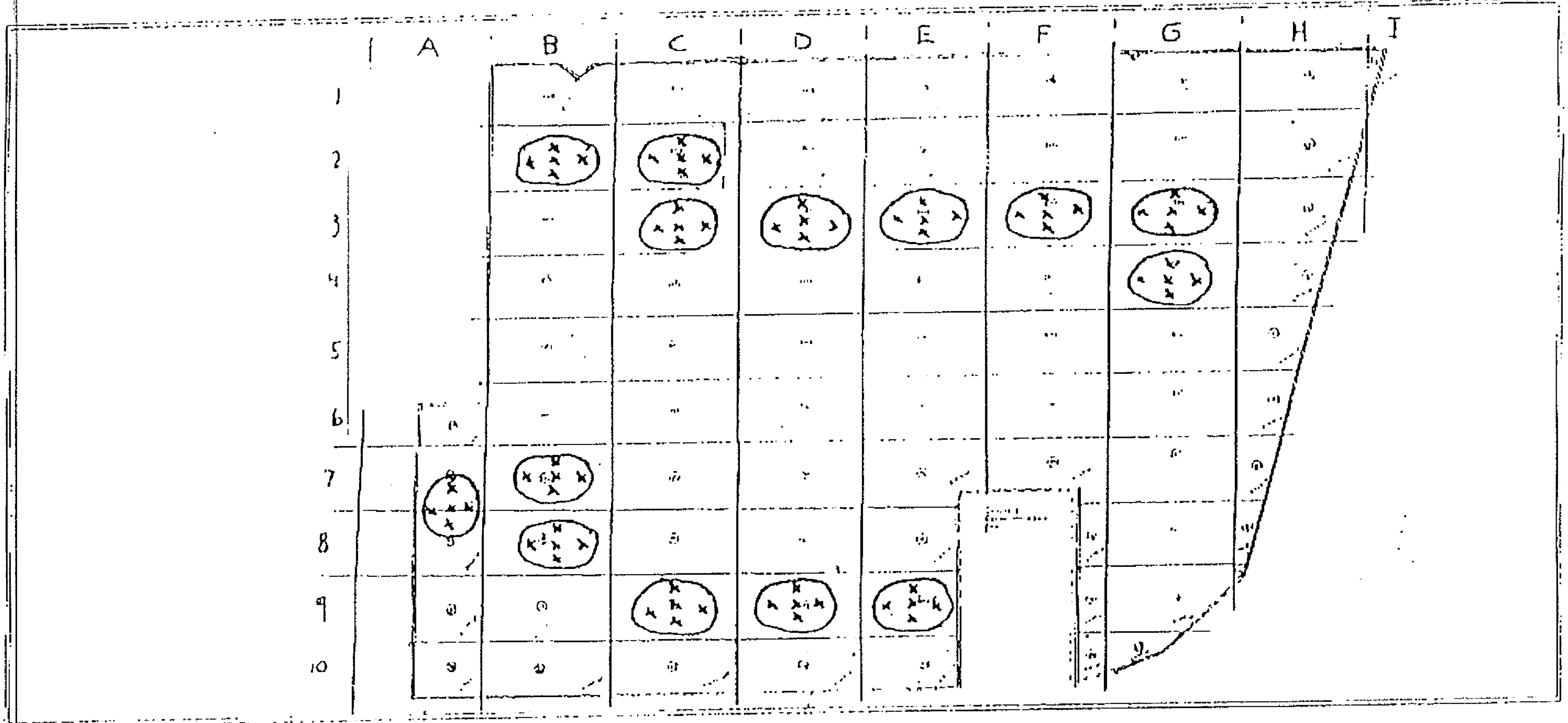
REMARKS: All samples preserved w/ ice to 4°C
- Rinsate samples also preserved to pH<2 w/ HCl
- Temp blank included
- 3 day TAT
- Soil samples have been screened through a #20 sieve

**Sample Location Map**
**Weston - Project #17396**



Date: 09-11-95

Site Name: Weston Soil Lift




Comments/Observations:

x Discrete sample location

- Composite sample taken at each pile

- Duplicate sample taken at D9 (D9-4 DUP)

Prepared by: Greg Grimond

# Soil Sample Collection Log
## Weston - Project #17936



Date: 09-08-95 Samplers: GG/MJ/MB Weather: Cloudy, 65°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E8-3 | 1518 | C | 1'6"-2' | N/A | N/A | Gold Sand w/cobble | 1x8oz |
| E9-3 | 1520 | C | 1'6"-2' | N/A | N/A | Gold Sand w/cobble | 1x8oz |
| D9-3 | 1524 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| D8-3 | 1525 | C | 1'6"-2' | N/A | N/A | Gold Sand w/some cobble | 1x8oz |
| D7-3 | 1531 | C | 1'6"-2' | N/A | N/A | Gold Sand w/some cobble | 1x8oz |
| C9-3 | 1533 | C | 1'6"-2' | N/A | N/A | Gold Sand w/some cobble | 1x8oz |
| C8-3 | 1536 | C | 1'6"-2' | N/A | N/A | Gold Sand w/some cobble | 1x8oz |
| G3-3 | 1708 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| C7-3 | 1715 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| | | | | | | | |
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| | | | | | | | |

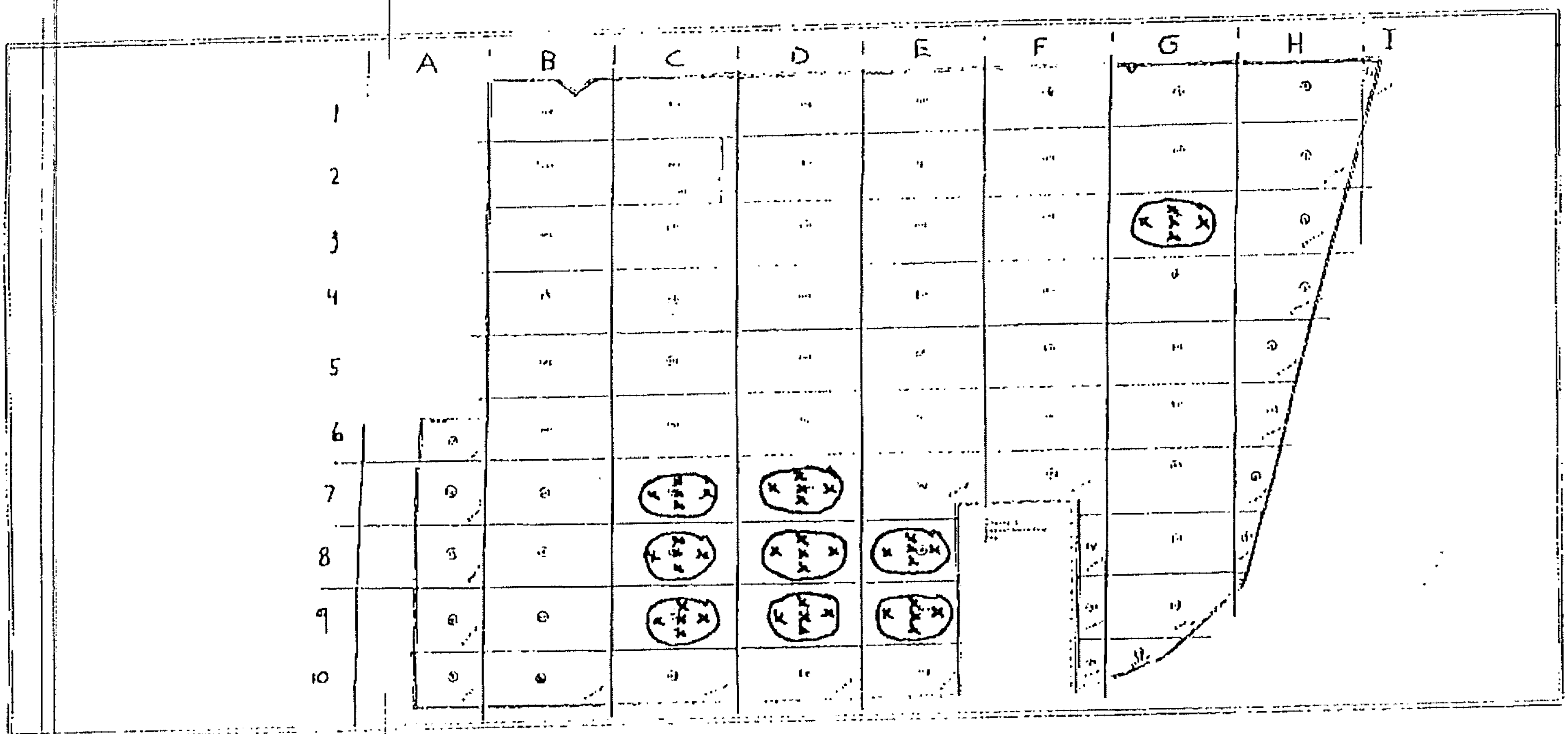
Ref. Pt.___ ______

# Sample Location Map
## Weston - Project #17396



Date: 9-8-95

Site Name: Weston Soil Lift




Comments/Observations

x - Discrete sample location

- Composite sample taken at each pile

Prepared by: Greg Guimond

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD Weston

Field No. 158291

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston

PROJECT LOCATION: Ayer MA

PROJ. NO.: 1793

PROJECT CONTACT: Bill Date

PROJECT TELEPHONE NO.: 508 772 2019

CLIENT'S REPRESENTATIVE: Chris Kerne

PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH 418.1; EPAH 8270

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | EPAH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B7-23XP | 9-1-95 | 1559 | ✓ | | Brown Sandy Soil w/ Cobble | 1x8oz | X | X | | | | | | |
| 2 | 010795RB | 9-7-95 | 1700 | | ✓ | Equipment Rinsate | 4x1l | X | X | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
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| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
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| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-2 | Matthew H. James | Fed Ex Airbill # 2594977454 | 9/8/95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
* Preserved @ 4°C
* One Week TAT
* Temp blank included
- Please return cooler & ice to OHM 2613 Lake George St. Ft. Devens, MA 01433

SAMPLER'S SIGNATURE: Matthew H. James

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/7/95 Samplers: MJ / BD Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| D4-2 | 1040 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| C4-2 | 1041 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| D3-3 | 1105 | C | 1'6"-2' | N/A | N/A | Gold sand w/ odor | 1×8oz |
| C3-3 | 1046 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ odor | 1×8oz |
| B3-3 | 1048 | C | 1'6"-2' | N/A | N/A | Gold sand some cobble | 1×8oz |
| B4-3 | 1530 | C | 1'6"-2' | N/A | N/A | Brown Sandy soil w/ cobble | 1×8oz |
| F2-4 | 1537 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| B10-4 | 1540 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| A10-4 A9-4 | 1536 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ Cobble | 1×8oz |
| B8-2 | 1558 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| B7-2 | 1559 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1×8oz |
| G2-4 | 1617 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1×8oz |
| C2-3 | 1626 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1×8oz |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab ~~Weston - coc #~~ ~~USACE- coc #~~

Requested Testing: TPH CPAH Other

Relinquished by(dd/tt): Matthew Jones 9/7/95 1655 Received by (dd/tt): M. [illegible] 9-7-95 1655

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/7/95 Samplers: MJ /BD Weather: Sunny 80's

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B7-2DUP | 1559 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1 x 8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken Yes No Rinsate Taken: Yes No

Laboratory Destination: ~~Onsite Lab~~ MHJ Weston - coc # ______ USACE- coc #______

Requested Testing: TPH cPAH Other______

Relinquished by(dd/tt): [signature] 9/7/95 1655 Received by (dd/tt): [signature] 9-7-95 1655

OH Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Weston

Form CO
Field Technical Servic
Rev 03/

158291

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer MA
PROJ NO: 17936
PROJECT CONTACT: Bill Date
PROJECT TELEPHONE NO: 508-772-2019
CLIENT REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH 418.1; EPAH 8270

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH 418.1 | EPAH 8270 | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B7-2DUP | 9.7.95 | 1559 | ✓ | | Brown Sandy Soil w/ Cobble | 1x8oz | X | X | | | | | | |
| 2 | 090795RB | 9.7.95 | 1700 | | ✓ | Equipment Rinsate | 4x1L | X | X | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
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| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-2 | Matthew H Jones | Fed Ex Airbill # 2594977454 | 9.8.95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

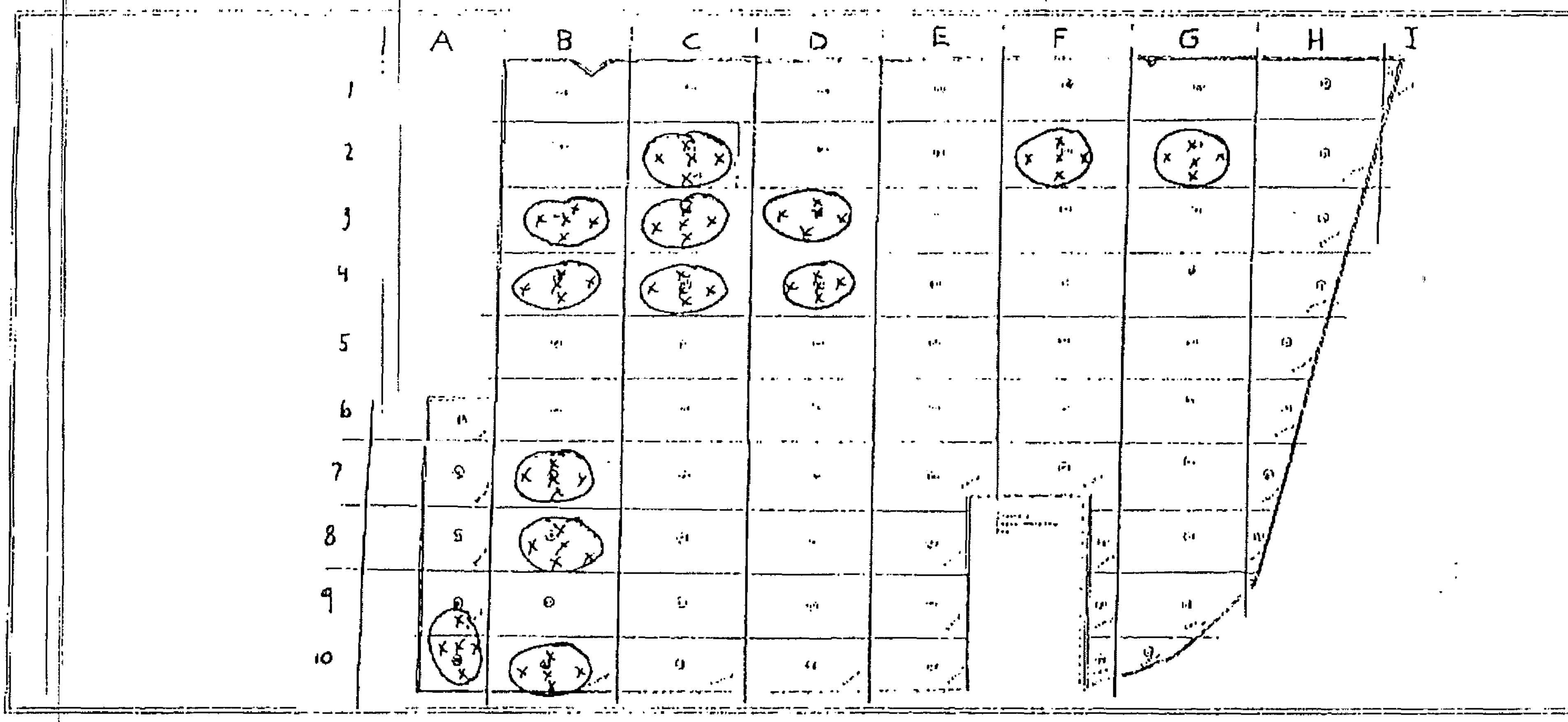
REMARKS
* Preserved @ 4°C
* One Week TAT
* Temp blank included
- Please return cooler & ice to
OHM
2613 Lake George St.
Ft. Devens, MA 01433

SAMPLER'S SIGNATURE: Matthew H Jones

**Sample Location Map**
**Weston - Project #17396**



Date: 9/7/95 Site Name:




Comments/Observations:

Prepared by: Matthew Jones

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9/6/95 Samplers: GG, MS Weather: Sunny, 85°

| *Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| D8-2 | 1118 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1x8oz |
| C8-2 | 1115 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| B8-1 | 1126 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| C7-2 | 1124 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| A8-2 | 1135 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| A6-2, A7-2 | 1137 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| B7-1 | 1141 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D10-4 | 1516 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| E10-4 | 1514 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| C10-4 | 1522 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| D7-2 | 1525 | C | 1'6"-2' | N/A | N/A | Gold/Brown Sand | 1x8oz |
| B10-3 | 1533 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B9-2 | 1535 | C | 1'6"-2' | N/A | N/A | Gold Brown sand w/some cobble | 1x8oz |

Ref. Pt ___: N/A

Ref. Pt. ___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

Relinquished by(dd/tt) G. Guernsey 9-6-95 1615 Received by (dd/tt): ________

# Soil Sample Collection Log
Weston - Project #17936



Date: 9-6-95 Samplers: GG/MJ Weather: Sunny 85°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| ~~A10-3~~ A9-3 | 1541 | C | 1'6"-2' | N/A | N/A | Gold Sand some cobble | 1x8oz |
| B1-4 | 1543 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| G2-3 | 1550 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening ~~Hot spot confirmation~~

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________

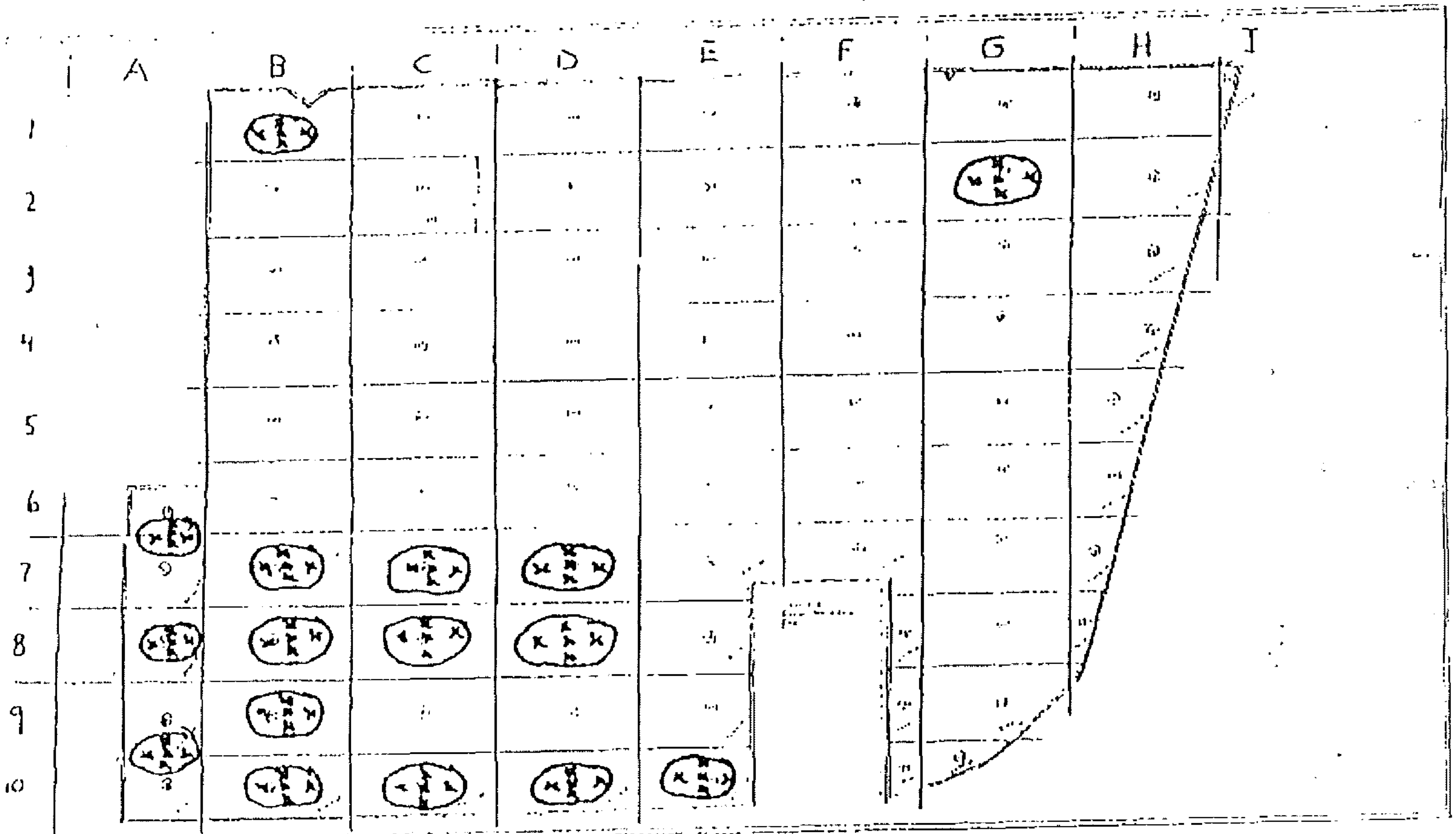
Relinquished by(dd/tt): G. Guimaraes 9-6-95 1615 Received by (dd/tt): ________

# Sample Location Map
## Weston - Project #17396



Date: 9-6-95

Site Name: Weston Soil Lift




Comments/Observations:

x- Discrete sample location

- Composite sample taken for each stockpile

Prepared by: Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936



Date 9-05-95 Samplers: GG/MJ Weather: Sunny, 75

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E[illegible]-2 | 1145 | G | 1'6"-2' | N/A | N/A | Brown Sandy soil w/cobble | 1x8oz |
| E9-2 | 1148 | G | 1'6"-2' | N/A | N/A | Brown sandy Soil w/cobble | 1x8oz |
| D9-2 | 1157 | C | 1'6"-2 | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| B4-2 | 1200 | C | 1'6"-2' | N/A | N/A | Brown sand w/some cobble | 1x8oz |
| B6-2 | 1209 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| B5-2 | 1211 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| B5-2DUP | 1211 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| C9-2 | 1215 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D10-3 | 1542 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| E10-3 | 1543 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| C10-3 | 1547 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B10-2 | 1552 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| B2-3 | 1600 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |

Ref. Pt.___ N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158322 USACE- coc #___

Requested Testing: TPH cPAH Other___

Relinquished by(dd/tt): A. [illegible] 9-5-95 Received by (dd/tt):___

# Soil Sample Collection Log
## Weston - Project #17936



Date: 9-5-95 Samplers: GG/MJ Weather: Sunny 85°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C1-4 | 1610 | C | 16"-2' | N/A | N/A | Gold Sand | 1×8oz |
| A9-2, N12 | 1615 | C | 16"-2' | N/A | N/A | Brown sandy soil w/cobble | 1×8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite ~~Hot-spot-screening~~ Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

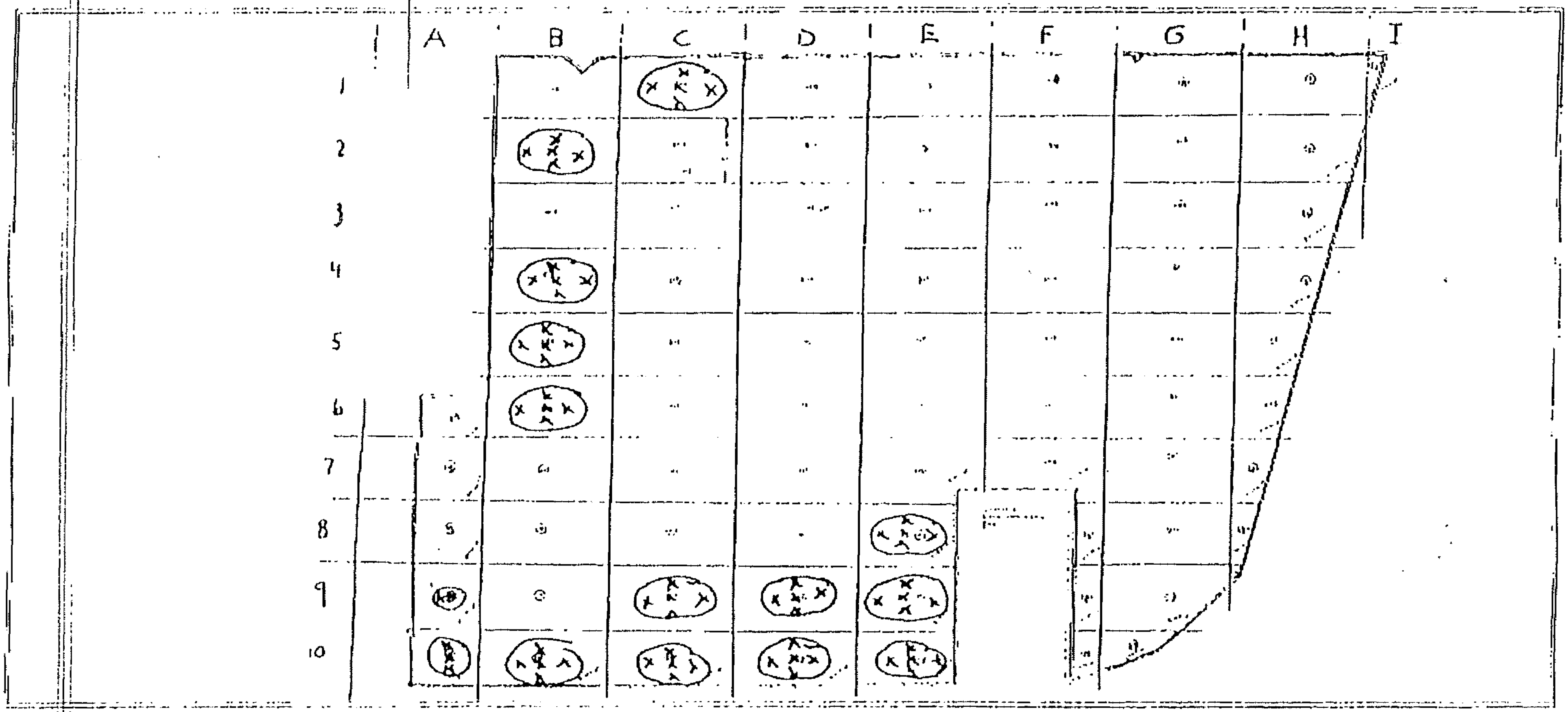
Relinquished by(dd/tt): G. Guimond 9-5-95 Received by (dd/tt): ______

# Sample Location Map
## Weston - Project #17396



Date 9-5-95

Site Name: ~~Bldg~~ Weston Soil Lift




Comments/Observations

x - Discreet sample location

- Composite sample taken for each pile (A9 and A10 were combined)

Prepared by: Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936

Page __ of __

Date: 9-1-95 Samplers: MJ, GG, BD Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E10-2 | 1142 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1X 8oz |
| E10-2DUP | 1142 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1X 8oz |
| D10-2 | 1145 | C | 1'6"-2' | N/A | N/A | Orange/brown sandy soil w/cobble | 1X 8oz |
| E1-4 | 1159 | C | 1'6"-2' | N/A | N/A | Orange sand | 1X 8oz |
| F1-4 | 1200 | C | 1'6"-2' | N/A | N/A | Gold sand | 1X 8oz |
| D2-4 | 1544 | C | 1'6"-2' | N/A | N/A | Gold sand w/cobble | 1X 8oz |
| E2-4 | 1555 | C | 1'6"-2' | N/A | N/A | Gold sand w/cobble | 1X 8oz |
| A6-1A7-1 | 1610 | C | 1'6"-2' | N/A | N/A | Brown organic soil w/ lots of cobble | 1X 8oz |
| A8-1 | 1625 | C | 1'6"-2' | N/A | N/A | Brown organic soil w/ lots of cobble | 1X 8oz |
| A10-1A9-1 | 1635 | C | 1'6"-2' | N/A | N/A | Brown organic soil w/lots of cobble | 1X 8oz |
| B9-1 | 1651 | C | 1'6"-2' | N/A | N/A | Brown organic soil w/lots of cobble | 1X 8oz |
| B10-1 | 1700 | C | 1'6"-2' | N/A | N/A | Brown organic soil w/lots of cobble | 1X 8oz |
| | | | | | | | |

Ref. Pt. N/A: ____________________

Ref. Pt. N/A: ____________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ____________________

Relinquished by(dd/tt): William Dale 9/1/95 1715 Received by (dd/tt): ____________________

Weston

LAB COPY

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Form 001
Field Technical Services
Rev 08/8

158322

O.H. MATERIALS CORP • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419 423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ. NO: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH, cPAH's 8270

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | cPAH's 8270 | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 090195ER | 9-1-95 | 0930 | | ✓ | Equipment Rinsate | 4x1L | X | X | | | | | | | |
| 2 | E10-2 DUP | 9-1-95 | 1110 | ✓ | | Brown sandy soil w/cobble | 1x8oz | X | X | | | | | | | |
| 3 | 090595 ER | 9-5-95 | 1032 | | ✓ | Equipment Rinsate | 4x1L | X | X | | | | | | | |
| 4 | E5-2 DUP | 9-5-95 | 1211 | ✓ | | Brown sandy soil w/cobble | 1x8oz | X | X | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-4 | [signature] | Federal Express Airbill # 2873010152 | 9-5-95 | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
- Preserved at 4°C, HCl (TPH liquid sample)
- Temp blank included
- 1 week TAT

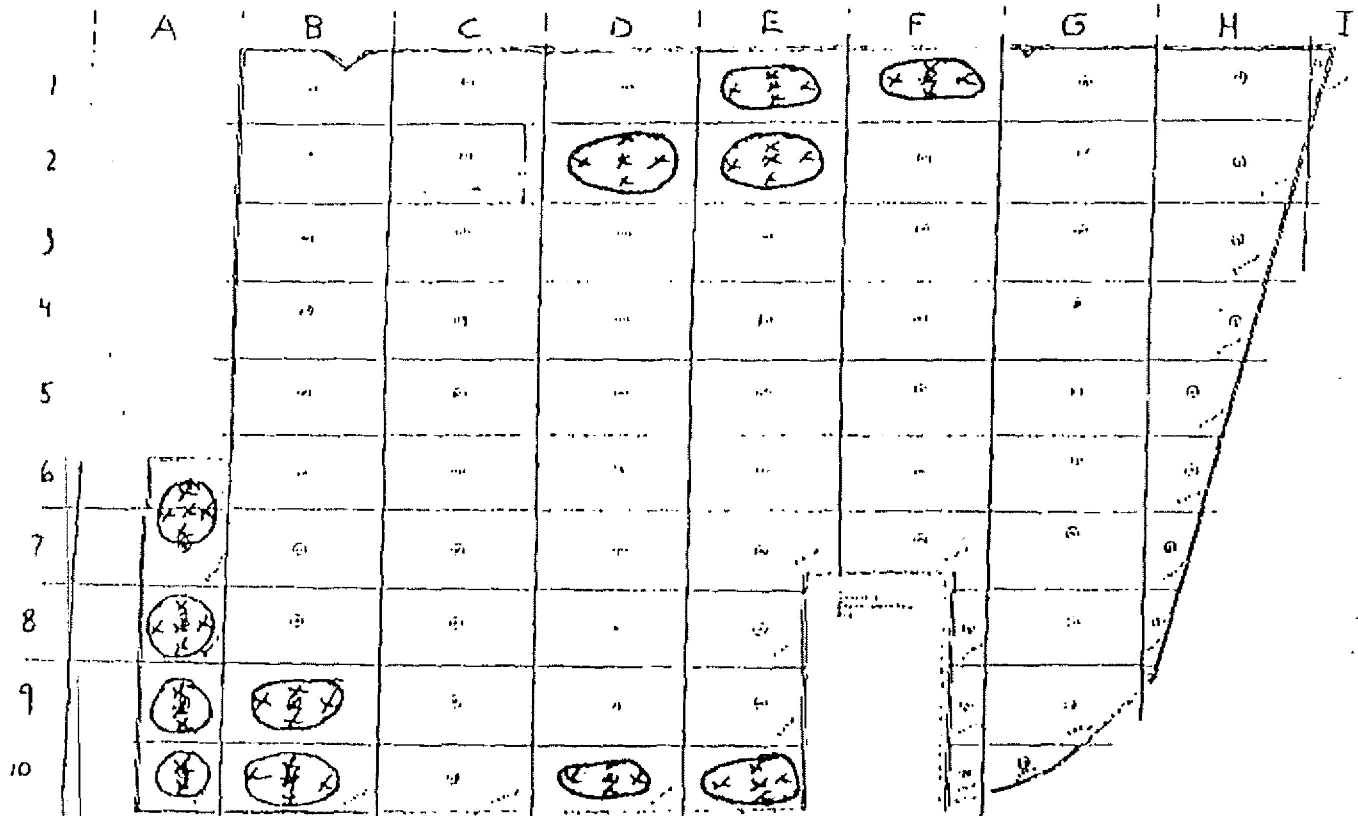
SAMPLER'S SIGNATURE [signature]

Sample Location Map
Weston - Project #17396

Pg. 2 of __

Date: 9-1-95

Site Name: WESTON




Comments/Observations

Prepared by: Bill Dale

Soil Sample Collection Log
Weston - Project #17936



Date: 8-31-95 Samplers: MJ, BD Weather: Sunny, 85

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| G8-4 | 1105 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| F8-4 | 1106 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| G8-4 Dup | 1105 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| G8-4 TRP | 1105 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| G9-4 | 1111 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| ~~E9-4~~ ~~G10-4~~ F10-4 | 1115 | C | 1'6"-2' | N/A | N/A | Gold Brown Sand | 1x8oz |
| E2-3 | 1128 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| F2-3 | 1129 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| E1-3 | 1134 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ cobble | 1x8oz |
| F1-3 | 1133 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil | 1x8oz |
| G1-4 | 1150 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ some Cobble | 1x8oz |
| D1-4 | 1527 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ some Cobble | 1x8oz |
| B1-3 | 1534 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ some Cobble | 1x8oz |

Ref. Pt.___: ____________________

Ref. Pt.___: ____________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158320 USACE - coc # 158321

Requested Testing: TPH cPAH Other__________

Relinquished by(dd/tt): Matthew Jones 8-31-95 1630 Received by (dd/tt): A. [illegible] 8-31-95 1630

Soil Sample Collection Log
Weston - Project #17936



Date. 8.31 Samplers: MJ BD Weather: Sunny 80

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C1-3 | 1528 | C | 1'6"-2' | N/A | N/A | Gold Soil w/ ~~Soil~~ Cobble | 1x8oz |
| C1D-2 | 1540 | C | 1'6"-2' | N/A | N/A | Gold Brown Sandy Soil w/ cobble | 1x8oz |
| D2-3 | 1535 | C | 1'6"-2' | N/A | N/A | Gold Sand w/ Some Cobble | 1x8oz |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt.___:

Ref. Pt.___:

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab ~~Weston - coc #~~ ~~USACE- coc #~~

Requested Testing: TPH cPAH Other

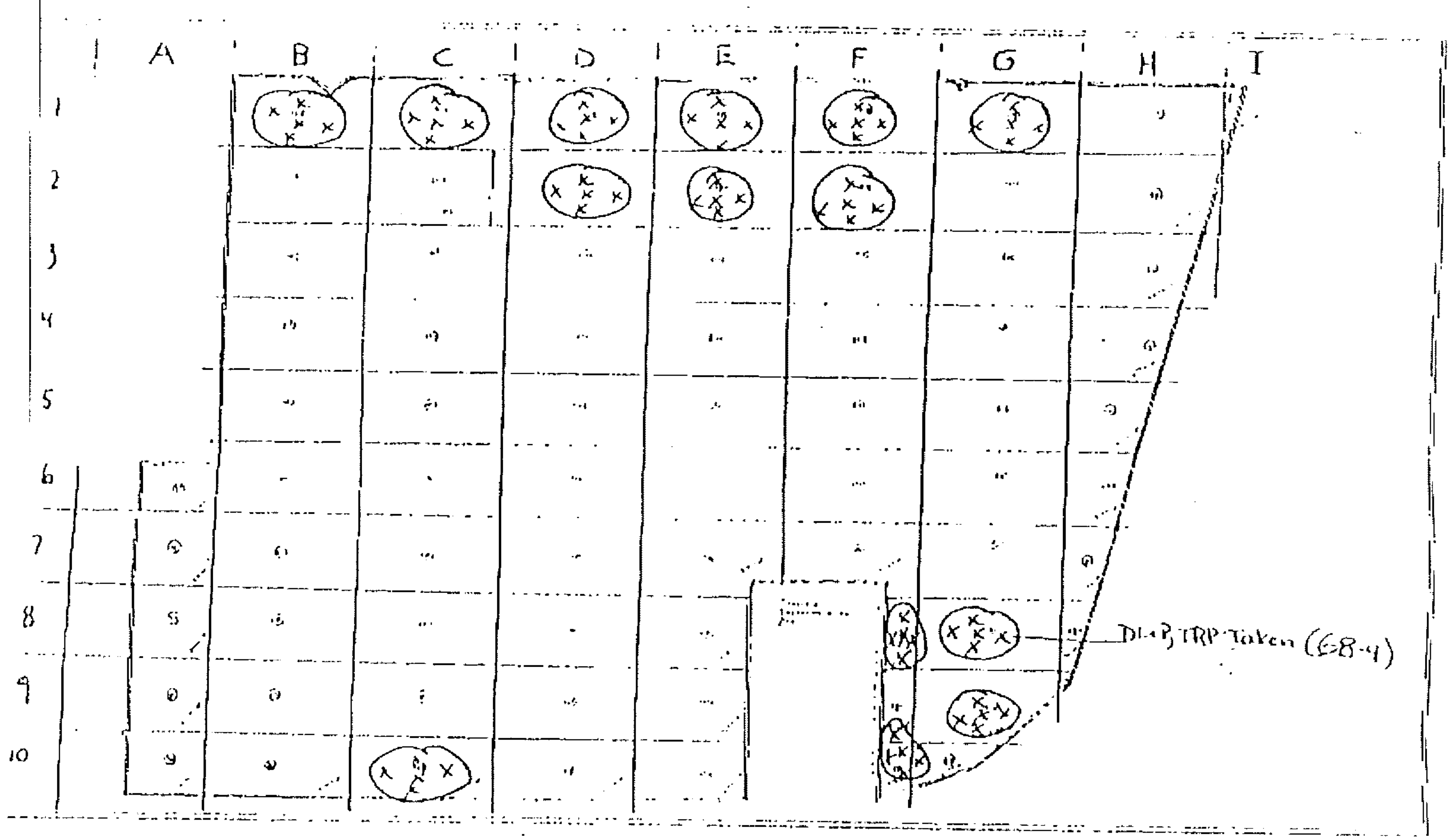
Relinquished by(dd/tt): Matthew Jones 8-31-95 1630 Received by (dd/tt): A. Hammond 8-31-95 1630

# Sample Location Map
## Weston - Project #17396



Date: 8-31-95

Site Name: Weston Soil Lift




Comments/Observations:

X - Discreet sample location

- Composite sample taken for each pile
- Duplicate and Triplicate taken for Pile G8-4

Prepared by: Matt Jones

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Field Technical Rec. 158320

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: WESTON
PROJECT LOCATION: Ayer, MA
PROJ. NO: 17936
PROJECT CONTACT: BILL DALE
PROJECT TELEPHONE NO: 508-772-2014
CLIENT'S REPRESENTATIVE: CHRIS KANE
PROJECT MANAGER/SUPERVISOR: MIKE QUINLAN

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | cPAH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 083195RA | 8-31-95 | 1241 | | X | Equipment Rinsate | 4X1L | X | X | | | | | | |
| 2 | GB-4DUP | 8-31-95 | 1105 | X | | Gold Brass Sand | 1X8oz | X | X | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-2 | Cynthia [illegible] | Federal Express Airbill # | 8-31-95 | 1630 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
* Preserved @ 4°C
* one week TAT
* Temperature blank included

SAMPLER'S SIGNATURE

OHM Remediation Services Corp.

E0456

# CHAIN-OF-CUSTODY RECORD

Field Technical
Rev

158321

O.H. MATERIALS CORP • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: WESTON
PROJECT LOCATION: AYER, MA
PROJ NO: 17936
PROJECT CONTACT: BILL DALE
PROJECT TELEPHONE NO: (508)-772-2019
CLIENT'S REPRESENTATIVE: CHRIS KANE
PROJECT MANAGER/SUPERVISOR: MIKE QUINLAN

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | PAH | TPH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G8-4TRP | 8-31-95 | 105 | X | | Gold brown sand | 1X8oz | X | X | | | | | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
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| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | William Dale | Federal Express Airbill# | 08/31/95 | 1630 |
| 2 | | | | | |
| 3 | | | | | |

REMARKS
* Preserved @ 4°C
* temperature blank included

SAMPLER'S SIGNATURE

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8/30/95 Samplers: MJ GG Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| E4-2 | 1213 | C | 1'6"-2' | N/A | N/A | Brown Sandy soil w/cobble | 1x 8oz |
| F4-2 | 1222 | C | 1'6"-2' | N/A | N/A | Brown Sandy soil w/cobble | 1x 8oz |
| G4-2 | 1218 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/cobble | 1x 8oz |
| G3-2 | 1225 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble | 1x 8oz |
| H1-4, I1-4 | 1231 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/some cobble | 1x 8oz |
| ~~H2~~-4 D-4 | 1531 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| H3-4 | 1538 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x 8oz |
| H4-4 | 1539 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x 8oz |
| H5-4 | 1536 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x 8oz |
| H6-4, H7-4, H8-4, H9-4 | 1528 ~~1528~~ | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x 8oz |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Ref. Pt. ___: ______________________

Ref. Pt. ___: ______________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination. Onsite Lab Weston - coc # ________ USACE- coc # ________

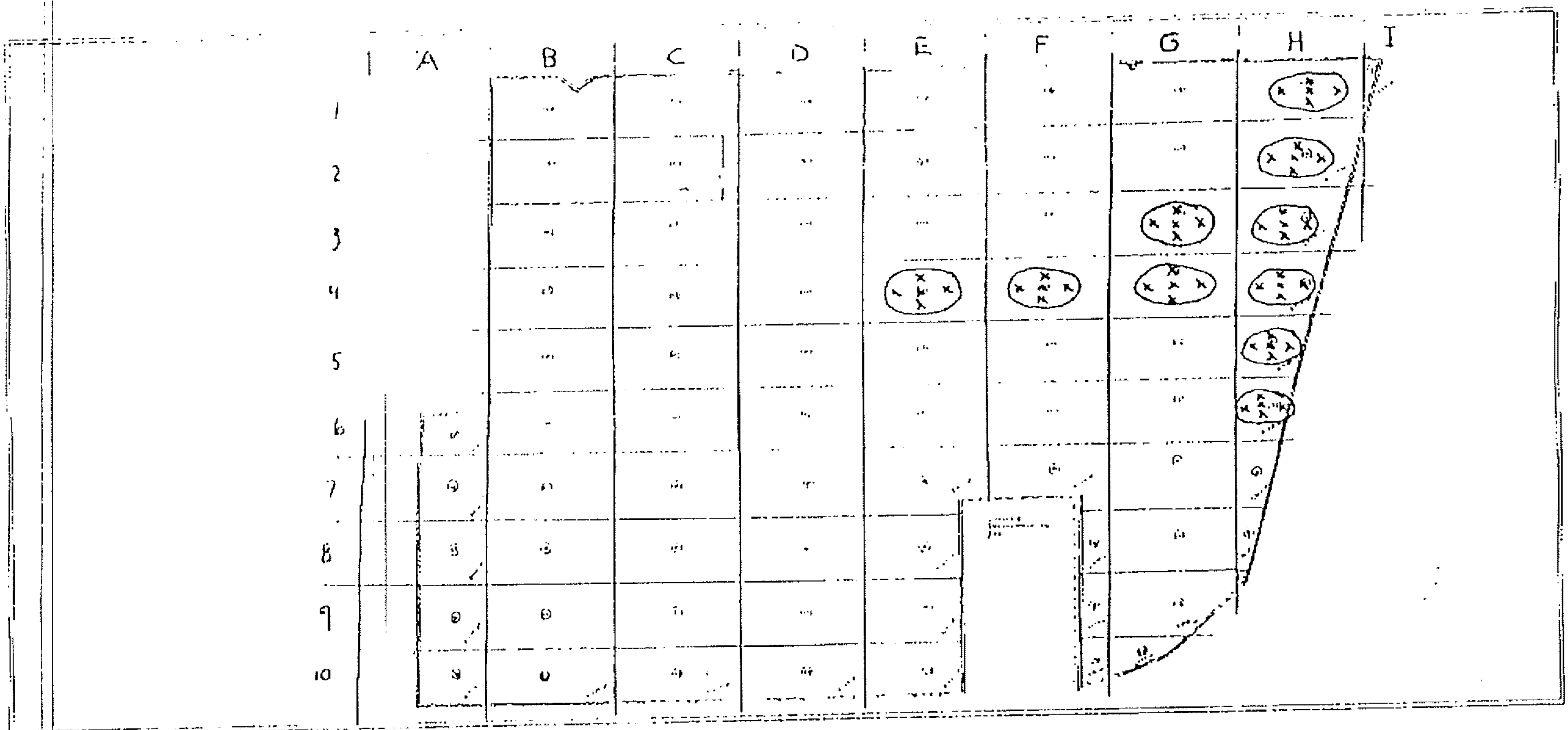
Requested Testing. TPH cPAH Other ______________________

Relinquished by(dd/tt): [signature] 1550 8-30-95 Received by (dd/tt): [signature] 155- 8-30-

# Sample Location Map
## Weston - Project #17396

Date: 8-30-95

Site Name Weston Soil Lift




Comments/Observations:

x - Discreet sample location

- Composite sample taken for each pile

Prepared by. Greg Guimond

Soil Sample Collection Log
Weston - Project #17936



Date: 8/29/95 Samplers: MJ/BD Weather: Sunny, Warm 80

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B6-1 | 1136 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x 8oz |
| B5-1 | 1140 | C | 1'6-2' | N/A | N/A | Brown Sandy Soil much cobble | 1x 8oz |
| B4-1 | 1149 | C | 1'6-2' | N/A | N/A | Dry Brown sandy soil w/heavy cobble | 1x 8oz |
| B2-2 | 1153 | C | 1'6-2' | N/A | N/A | Orange Sandy Soil w/ some cobble | 1x 8oz |
| B3-2 | 1202 | C | 1'6"-2' | N/A | N/A | TAN SAND w/some cobble | 1x 8oz |
| C2-2 | 1210 | C | 1'6"-2' | N/A | N/A | Brown Sandy w/some Cobble | 1x 8oz |
| D2-2 | 1213 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/some cobble | 1x 8oz |
| ~~E2-2~~ | | ~~C~~ | ~~1'6"-2'~~ | ~~N/A~~ | ~~N/A~~ | | 1x 8oz |
| F2-2 | 1237 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/Cobble | 1x 8oz |
| E2-2 | 1235 | C | 1'6-2' | N/A | N/A | Brown Soil w/ cobble | 1x 8oz |
| E2-2 DUP | 1235 | C | 1'6"-2' | N/A | N/A | Brown Soil w/ Cobble | 1x 8oz |
| G2-2 | 1243 | C | 1'6-2 | N/A | N/A | Brown Sandy Soil w/cobble | 1x 8oz |
| | | | | | | | |

Ref. Pt.___: __________

Ref. Pt.___: __________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

Relinquished by(dd/tt): William Dale 8-29-95 1300 Received by (dd/tt): [signature] 8-29-95

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

158308 Rev 08

O.H MATERIALS CORP • P O BOX 551 • FINDLAY, OH 45839-0551 • 419 423-3526

PROJECT NAME: Weston

PROJECT LOCATION: Ayer, MA

PROJ NO: 7936

PROJECT CONTACT: Bill Dale

PROJECT TELEPHONE NO: (508) 772-2019

CLIENT'S REPRESENTATIVE: Chris Kane

PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH (418.1), CPAH (8270)

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH (418.1) | CPAH (8270) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E2-2Dup | 8.29.95 | 1235 | | ✓ | Brown sand, few pebbles | 1x8oz | ✓ | ✓ | |
| 2 | 082995ER | 8.29.95 | 1448 | | ✓ | Equipment Rinsate | 4x1L | ✓ | ✓ | TPH preserved w HCL, pH |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
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| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1, 2 | William Dale | Fed Ex Airbill 2077 8969 295 | 8.29.95 | 1530 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS

- one week TAT
- preserved 4°C.
- temp blank included

SAMPLER'S SIGNATURE: William Dale

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8-29-95 Samplers: BD, MJ Weather: Sunny 85°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C3-2 | 1513 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D3-2 | 1528 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| E3-2 | 1526 | C | 1'6"-2'6" | N/A | N/A | Brown Sandy Soil w/cobble | 1x8oz |
| F3-2 | 1512 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
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| | | | | | | | |

Ref. Pt. ___: ______________________

Ref. Pt. ___: ______________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ______________

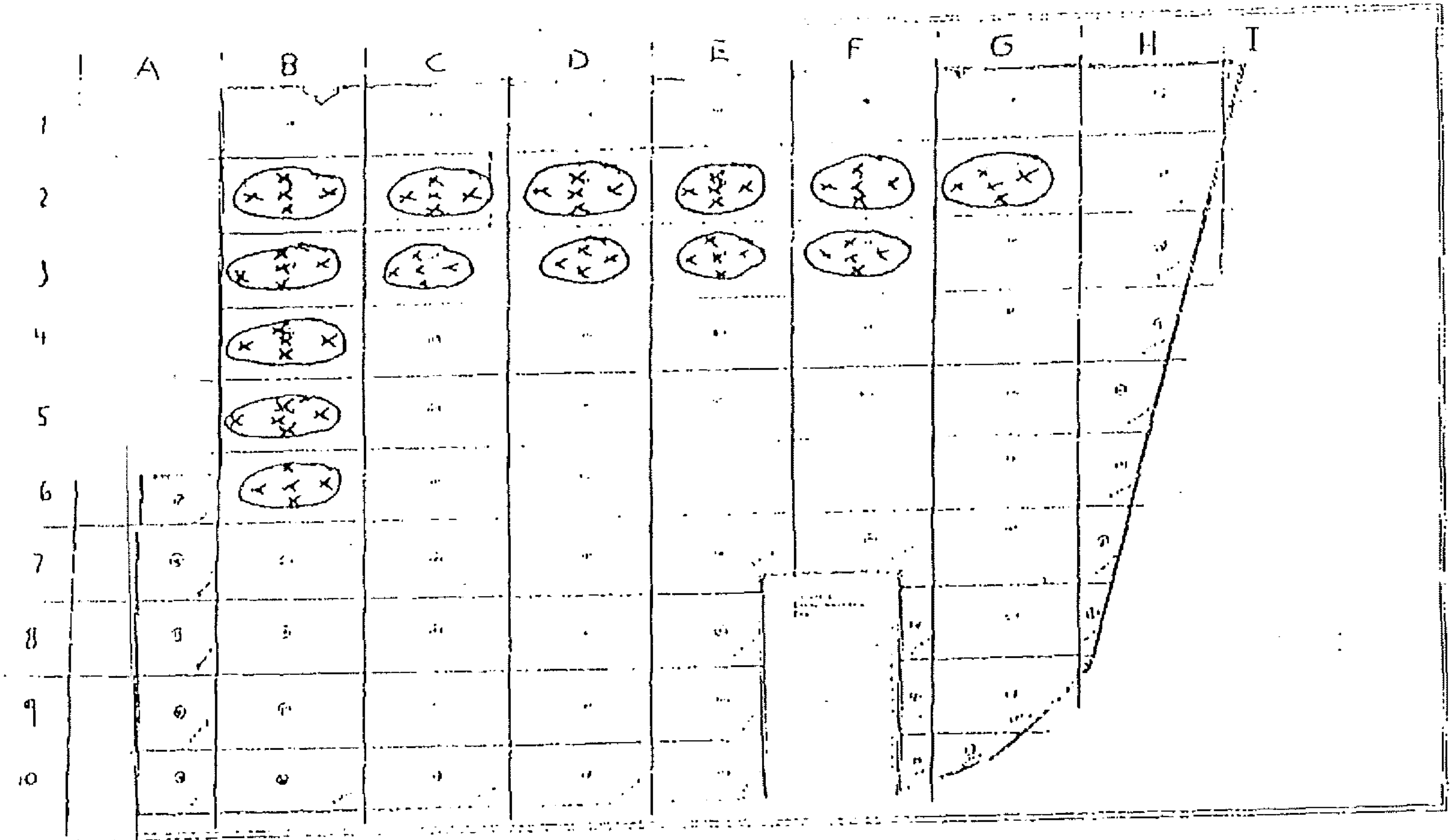
Relinquished by(dd/tt): [signature] 8-29-95 1540 Received by (dd/tt): [signature] 8-29-95 1540

# Sample Location Map
Weston - Project #17396



Date 8-29-95

Site Name Weston




Comments/Observations

Prepared by: Bill Dale

# Soil Sample Collection Log
# Weston - Project #17936



Date 8/28/95 Samplers: GG/MJ Weather: Sunny, 75°F

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| G9-3 | 1220 | C | 1'6"-2' | N/A | N/A | Brown sand w/some cobble | 1x8oz |
| G8-3 | 1225 | C | 1'6"-2' | N/A | N/A | Brown sand w/some cobble | 1x8oz |
| G8-3DUP | 1225 | C | 1'6"-2' | N/A | N/A | Brown sand w/some cobble | 1x8oz |
| H6-3, H7-3 H8-3, H9-3 | 1228 | C | 1'6"-2' | N/A | N/A | Brown sand w/ some cobble | 1x8oz |
| H5-3 | 1236 | C | 1'6"-2' | N/A | N/A | Brown/Or. Sand some cobble | 1x 8oz |
| H4-3 | 1240 | C | 1'-6"-2' | N/A | N/A | Brown Sand w/ Some Cobble | 1x 8oz |
| H3-3 | 1245 | C | 1'6"-2' | N/A | N/A | Brown/Gold Sand, little cobble | 1x8oz |
| H2-3 ~~I2-3~~ | 1246 | C | 1'-6"-2 | N/A | N/A | Brown / Gold Sand | 1x 8oz |
| G1-3 ~~G3-3~~ | 1254 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x8oz |
| H1-3 I1-3 | 1257 | C | 1'6"-2' | N/A | N/A | Brown/Gold Sand | 1x8oz |
| ~~D57-1~~ C7-1 | 1615 | C | 1'6"-2' | N/A | N/A | Brown rocky soil | 1x8oz |
| D7-1 ~~C37-1~~ | 1619 | C | 1'6"-2' | N/A | N/A | Brown sandy Soil w/cobble | 1x 8oz |
| D1-3 | 1628 | C | 1'6"-2' | N/A | N/A | Gold Sand | 1x 8oz |

Ref. Pt.___: N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 159305 USACE- coc #

Requested Testing: TPH cPAH Other

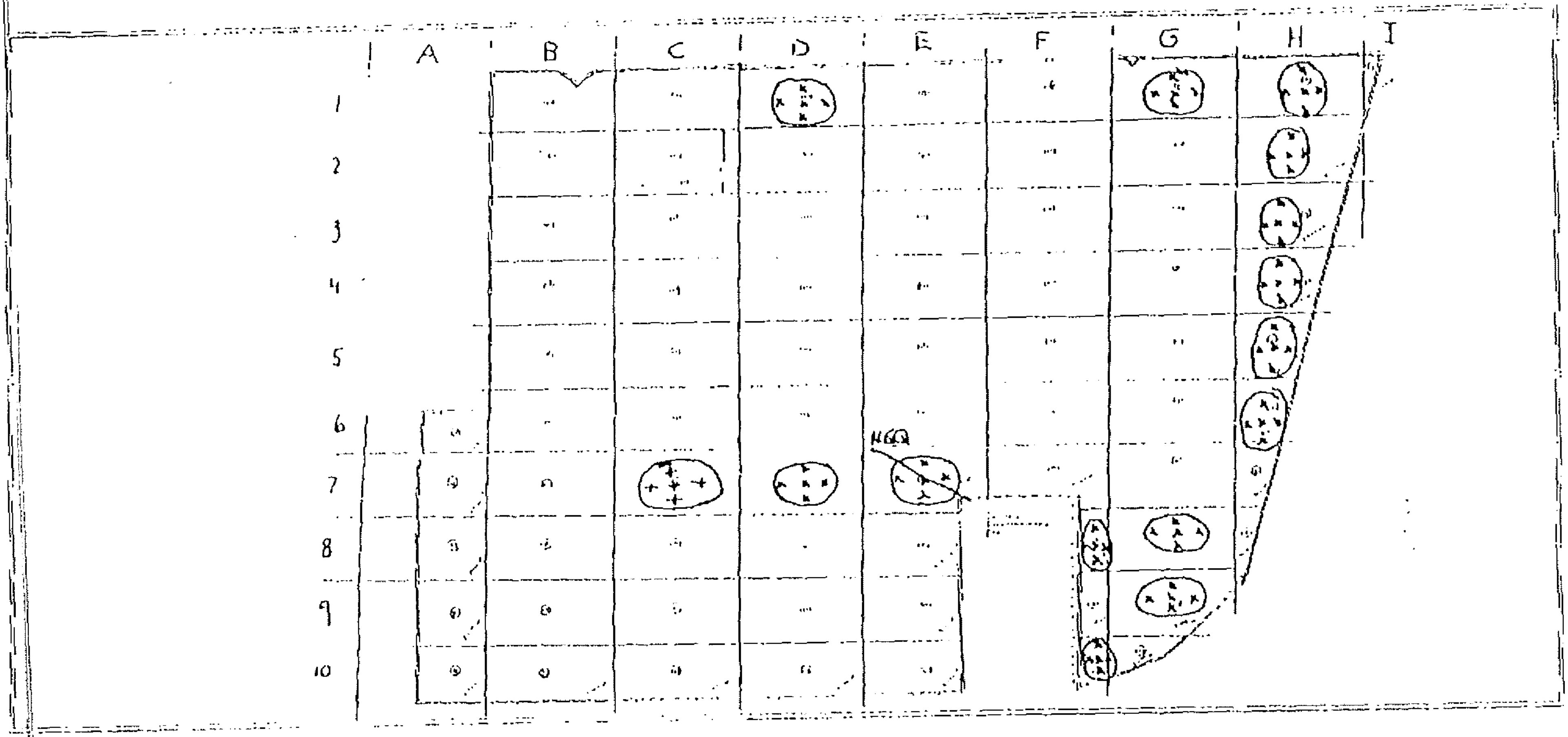
Relinquished by(dd/tt): [signature] 8/28/95 1700 Received by (dd/tt) [signature] 8/28/95 1700

## Sample Location Map
## Weston - Project #17396



Date. 8·28·95

Site Name Weston Soil Lift




Comments/Observations

x- Discreet sample location

- Composite sample taken for each pile

- Duplicate sample taken from G8 (G8-3 DUP)

Prepared by: Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8-25-95 Samplers: GG Weather: Sunny 70-75°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C9-1 | 1155 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/ cobble | 1x8oz |
| C10-1 | 1203 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/ cobble | 1x8oz |
| D10-1 | 1208 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D9-1 | 1214 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| E10-1 | 1223 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| E9-1 | 1600 | C | 1'6"-2' | N/A | N/A | Dk. Brown sandy soil w/cobble | 1x8oz |
| E8-1 | 1605 | C | 1'6"-2' | N/A | N/A | Dk. Brown sandy soil w/cobble | 1x8oz |
| B1-2 | 1613 | C | 1'6"-2' | N/A | N/A | Orange/Brown Sandy Soil w/cobble | 1x8oz |
| C1-2 | 1617 | C | 1'6"-2' | N/A | N/A | Orange/Brown sandy soil w/cobble | 1x8oz |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt.___ N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ___ USACE- coc # ___

Requested Testing: TPH cPAH Other ___

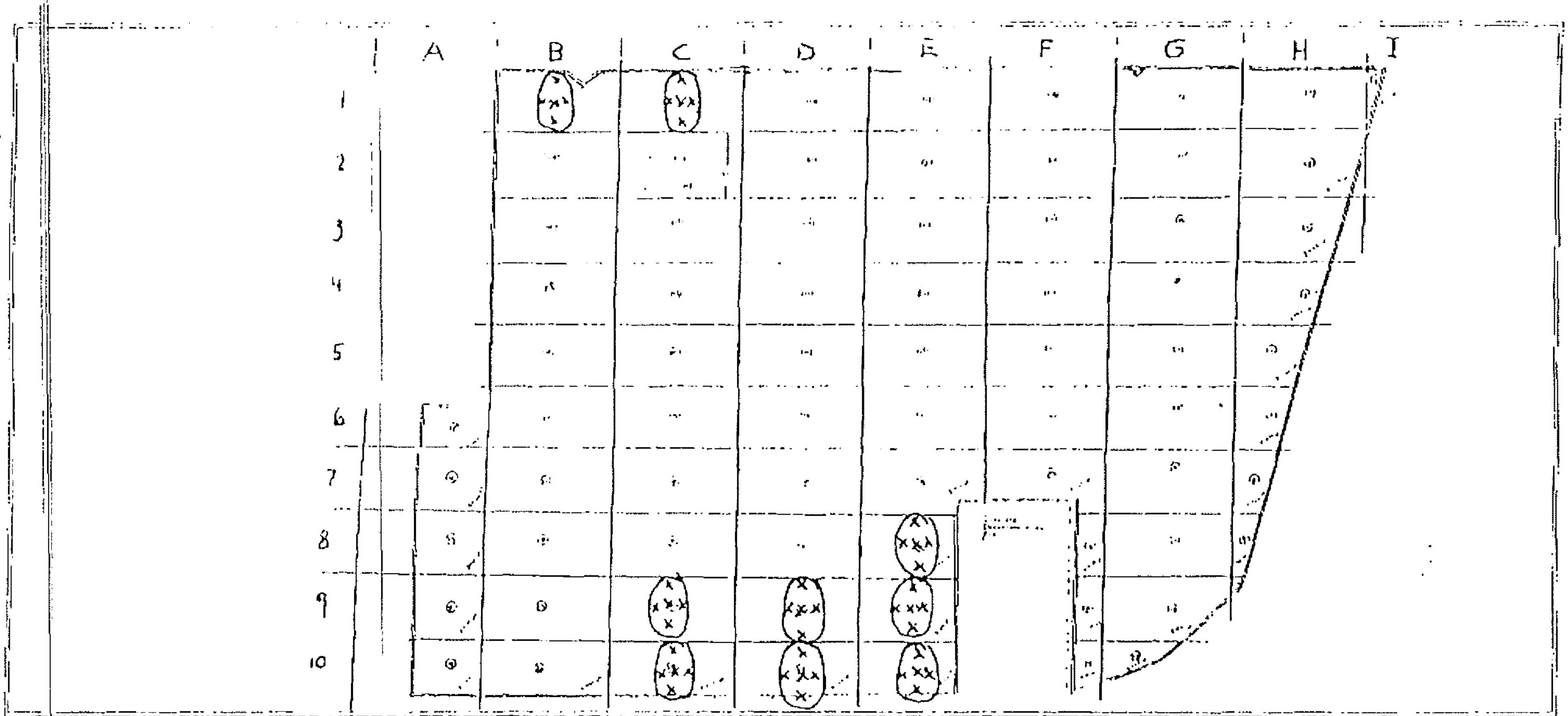
Relinquished by(dd/tt): [signature] 8/25/95 1635 Received by (dd/tt): [signature] 8/25/95 1635

# Sample Location Map
## Weston - Project #17396



Date: 8-25-95

Site Name: Weston Soil Lift




Comments/Observations:

x - Discreet Sample location

- Composite sample taken for each pile

Prepared by: Greg Guimond

Soil Sample Collection Log
Weston - Project #17936



Date: 8-24-95 Samplers: BD Weather: Sunny 70-75

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| C4-1 | 1102 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/ cobble | 1x8oz |
| D4-1 | 1110 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/ cobble | 1x8oz |
| E4-1 | 1121 | C | 1'6"-2'6" | N/A | N/A | Brown damp sandy soil w/ cobble & blackstone | 1x8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing. TPH cPAH Other ________

Relinquished by(dd/tt): [signature] 8/24/95 1140 Received by (dd/tt): [signature] 8/24/95

# Soil Sample Collection Log
Weston - Project #17936



Date: 8-24-95 Samplers: GG, BD Weather: Sunny 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F4-1 | 1337 | C | 16"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D8-1 | 1527 | C | 16"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| C8-1 | 1530 | C | 16"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

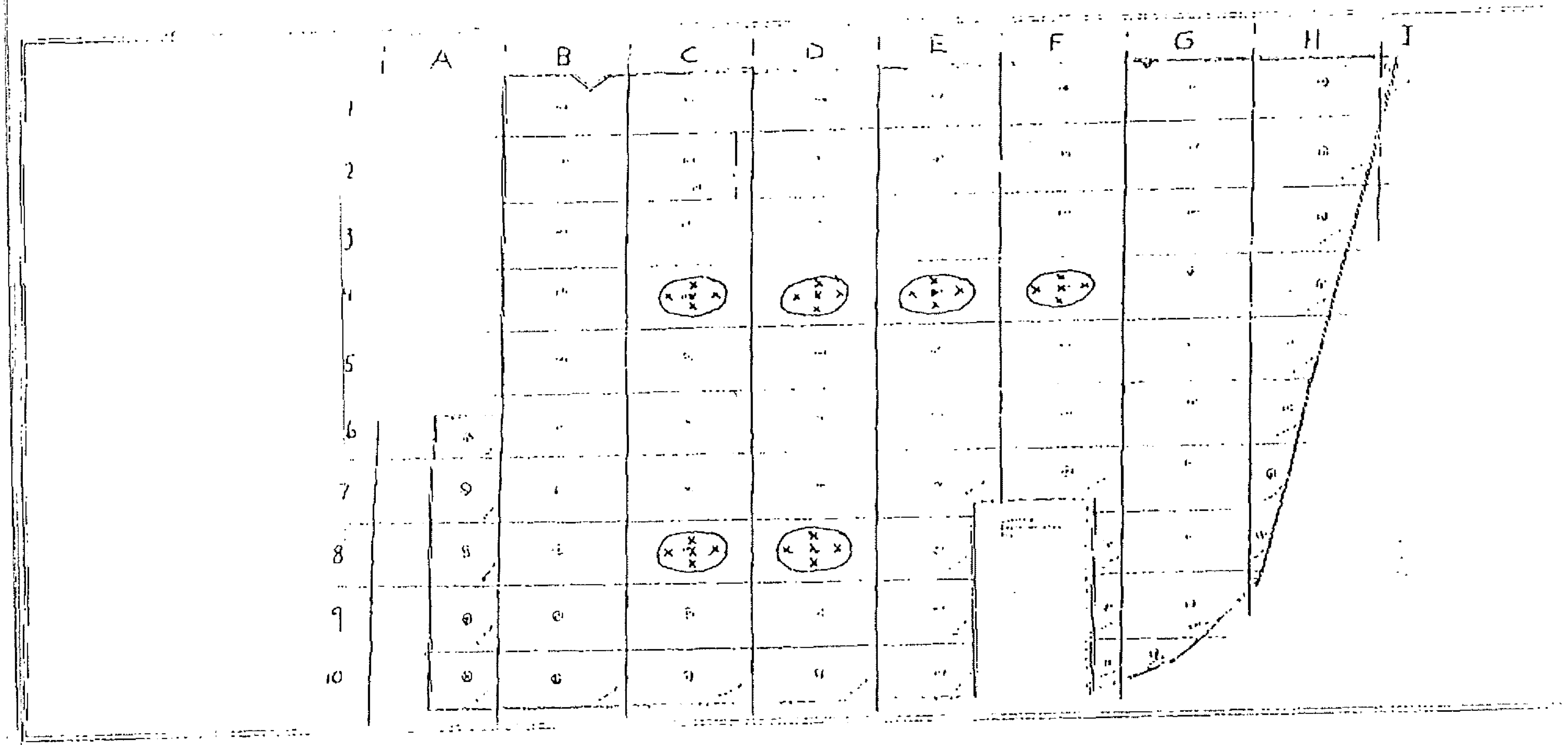
Relinquished by(dd/tt): H. Guenard 8-24-95 1540 Received by (dd/tt): ______

# Sample Location Map
Weston - Project #17396



Date: 8-24-95

Site Name: Weston




Comments/Observations:

x- Sample location (discrete)

Composite taken for each pile

Prepared by: Greg Guimond

# Soil Sample Collection Log
## Weston - Project #17936



8/23/95 Samplers: MJ GG Weather: Sunny, 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| G8-2 | 1500 | C | 1.5-2' | N A | N/A | Brown Sandy soil w/cobble | 1x8oz |
| G8-2 DUP | 1500 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| G1-2 | 1508 | C | 1'6"-2' | N/A | N/A | Orange/Brown Sandy soil w/cobble | 1x8oz |
| F1-2 | 1516 | C | 1'6"-2' | N/A | N/A | Brown/Orange Sandy soil w/cobble | 1x8oz |
| E1-2 | 1523 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
| D1-2 | 1540 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 158214 USACE- coc #_____

Requested Testing: TPH cPAH Other_____

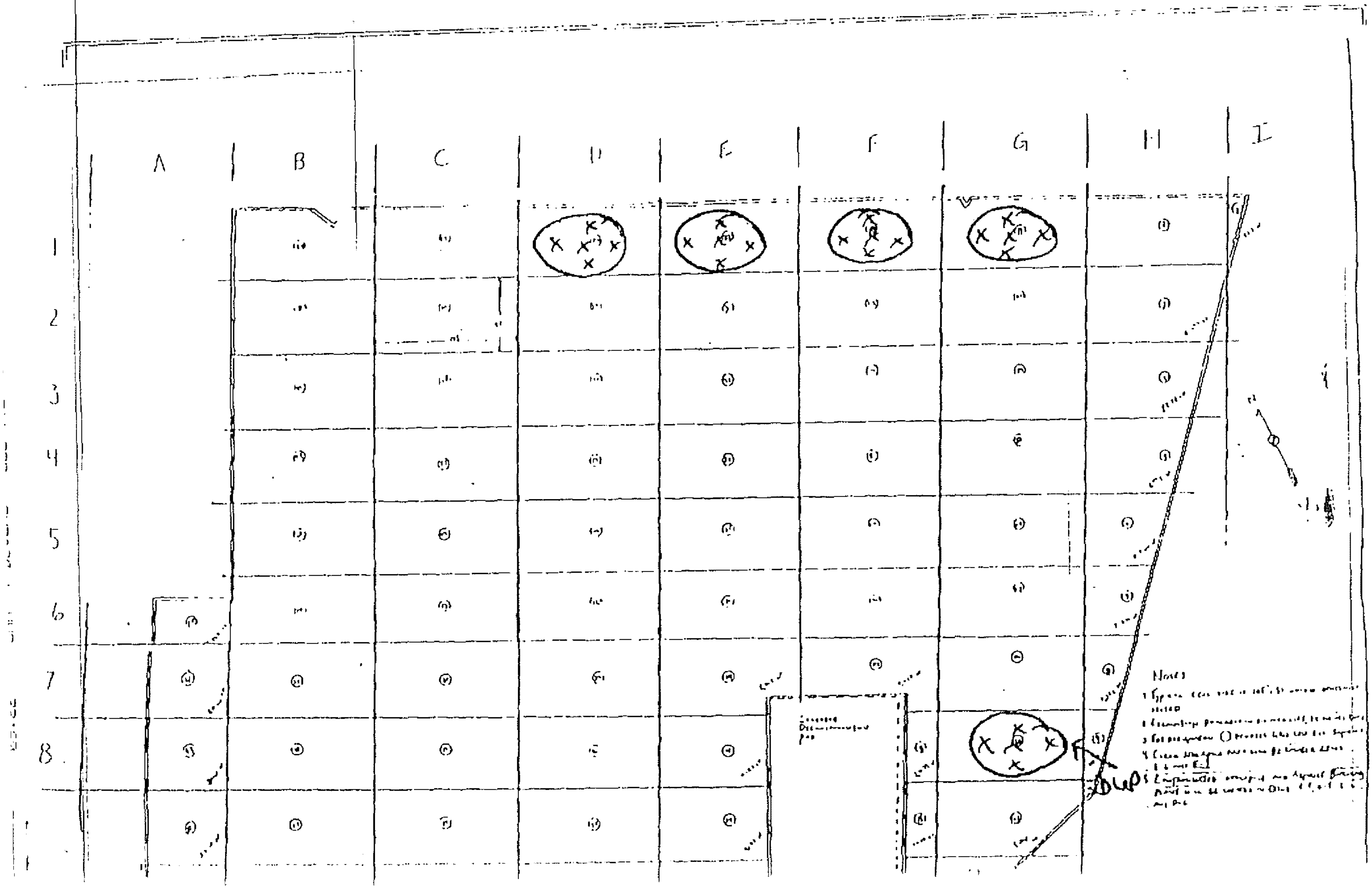
Relinquished by(dd/tt): G Guimond 8-23-95 1600 Received by (dd/tt): William Dale 8-23-95 1600

# Sample Location Map
## Weston - Project #17396



Date. 8/23/95

Site Name: Weston



Soil Sample Collection Log
Weston - Project #17936



.e: 8/23/95 Samplers: MJ / GG Weather: Sunny, 80

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref Pt. | Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F8-2 | 1107 | C | 1.5-2' | NA | NA | Brown sandy soil w/cobble | 1x8oz. |
| G9-2 | 1109 | C | 1.5-2' | N/A | N/A | Brown sandy soil w/cobble | 1x8oz |
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Ref. Pt.___ N/A

Ref. Pt.___ N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other______

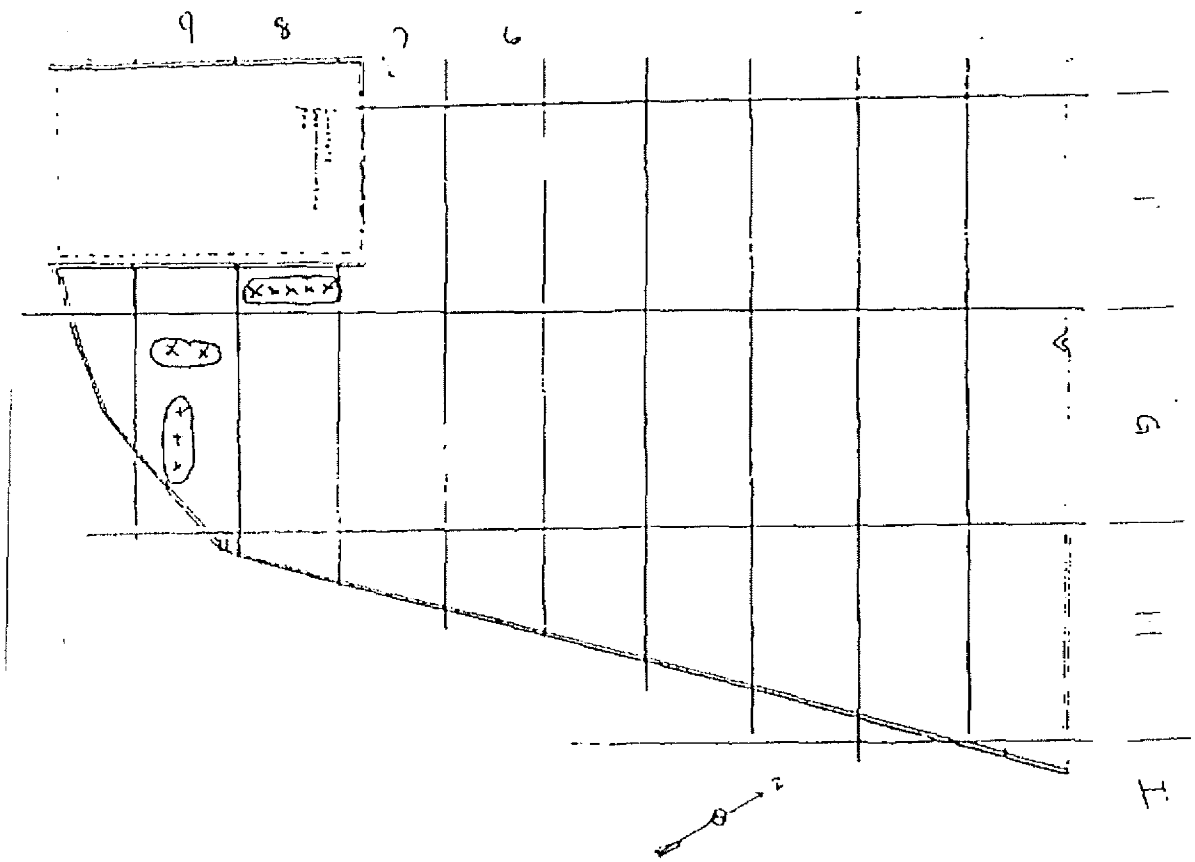
Relinquished by(dd/tt): M. Marmon [signature] 8-23-95 1120 Received by (dd/tt): William Dale [signature] 8-23-95 1120

Sample Location Map
Weston - Project #17396



Date 6-17-95

Site Name Weston




Comments/Observations:

Prepared by ~~Bill Bate~~ MATT JONES

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Field 15821

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

| PROJECT NAME | PROJECT LOCATION |
|---|---|
| Weston | Fort Devens, Ayer, MA |

| PROJ. NO | PROJECT CONTACT | PROJECT TELEPHONE NO. |
|---|---|---|
| 17936 | Bill Dale | (508) 772-2019 |

| CLIENT'S REPRESENTATIVE | PROJECT MANAGER/SUPERVISOR |
|---|---|
| Chris Kane | Mike Quinlan |

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | cPAH's | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G8-2DUP | 8-23-95 | | X | | Brown sandy soil w/cobble | 1x8oz | X | X | | | | | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | G. Hummond | Federal Express Airbill # 207 3082 794 | 8-23-95 | 1650 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

REMARKS
Temp blank included
Sample preserved at 4°C
1 week TAT

SAMPLER'S SIGNATURE
Gregory Hummond

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8-22-95 Samplers: BD, MJ Weather: Sunny 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| H6-2 H7-2 H8-2 H9-2 | 1353 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil w/some fine black stained | 1x8oz |
| H5-2 | 1405 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil | 1x8oz |
| H4-2 | 1406 | C | 1'6"-2'6" | N/A | N/A | Brown sand, soil w/black staining | 1x8oz |
| H3-2 | 14:20 | C | 1'6"-2'6" | N/A | N/A | Brown sandy soil some black | 1x8oz |
| H2-2 I2-2 | 1422 | C | 1'6"-2'6" | N/A | N/A | Brown sand | 1x8oz |
| | | | | | | | |
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Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ____________ USACE- coc #_________

Requested Testing: TPH cPAH Other ____________________

Relinquished by(dd/tt): Matthew Jones 1445 8-22-95 Received by (dd/tt): G. Guimond 1445 8-22-95

OHM Remediation Services Corp.

LAB COPY

Form 001
Field Technical Services
Rev 08/8

# CHAIN-OF-CUSTODY RECORD

158212

O.H. MATERIALS CORP • P.O BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ. NO.: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO.: 508-772-2019
CLIENT'S REPRESENTATIVE: Chris Gane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPTH 418.1; Carcinogenic PAH's 8270

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPTH 418.1 | Carcinogenic PAH's 8270 | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E7-1 DUP | 9-8-95 | | | | Dk brown sandy soil w/heavy odor | 1-8oz | ✓ | ✓ | | | | | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | H. Howard | Federal Express Airbill | 9-12-95 | 1030 |
| 2 | | | | | |
| 3 | | | | | |

REMARKS
* Preserved @ 4°c
* temp blank included
* 1 week TAT

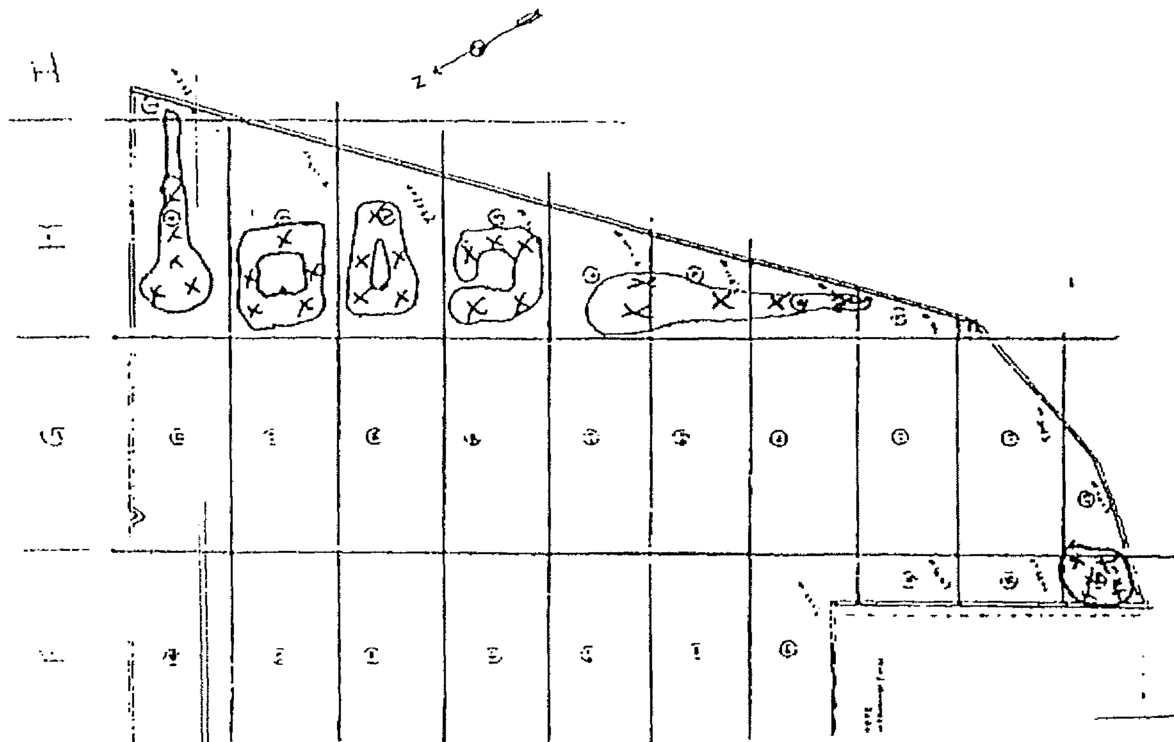
SAMPLER'S SIGNATURE

# Sample Location Map
Fort Devens - Project #~~16308~~



Date: 8/22/95

Site Name: Weston - Project # 17936



Comments/Observations:

Prepared by: M. Jones

Soil Sample Collection Log
Weston - Project #17936



Date: 8/21/95 Samplers: BD/MB Weather: Sunny 80°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| B3-1 | 1512 | C | 1'6"-2' | N/A | N/A | Brown Sandy Soil w/ cobble from Russian | 1X8 oz |
| C3-1 | 1526 | C | ↓ | ↓ | ↓ | Brown Sandy Soil w/ cobble | ↓ |
| D3-1 | 1538 | C | ↓ | ↓ | ↓ | ↓ | ↓ |
| E3-1 | 1536 | C | ↓ | ↓ | ↓ | Brown ~~Sandy~~ Sand w/ some Black stain | ↓ |
| F3-1 | 1600 | C | ↓ | ↓ | ↓ | Brown Sand w/ cobble Black stain | ↓ |
| G4-1 | 1602 | C | ↓ | ↓ | ↓ | Brown Sand w/ cobble | ↓ |
| HH2I1-2 | 1610 | C | 1'6"-2' | N/A | N/A | Brown soil w/ sand | ↓ |
| | | | | | | | |
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| | | | | | | | |

Ref. Pt.___: ____________________

Ref. Pt.___: ____________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # 15821 USACE- coc #________

Requested Testing: TPH cPAH Other____________

Relinquished by(dd/tt): Will Dale 8-21-95 1630 Received by (dd/tt):____________

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

LAB C.C. Form Field Technical Se... Re.

158211

O.H. MATERIALS CORP • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ NO.: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO: 508-772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH 418.1; Cloroinorganic DNH 2 8270

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH 418.1 | Cloroinorganic DNH 2 8270 | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 081895RB ~~RB081895~~ | 8-18-95 | 1000 | | X | Equipment Rinsate | 2x1liter 2x1liter | √ | √ | | | | | | TRPH preserved pH<2 w/HCl |
| 2 | 082195RB ~~RB082195~~ | 8-21-95 | 1200 | | X | Equipment Rinsate | 2x1liter 2x1liter | √ | √ | | | | | | TRPH preserved pH<2 w/HCl |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
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| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1-2 | [signature] | Federal Express Airbill # | 8-21-95 | 1630 |
| 2 | | | | | |
| 3 | | | | | |

REMARKS
* Preserved @ 4°C
* temperature blank included

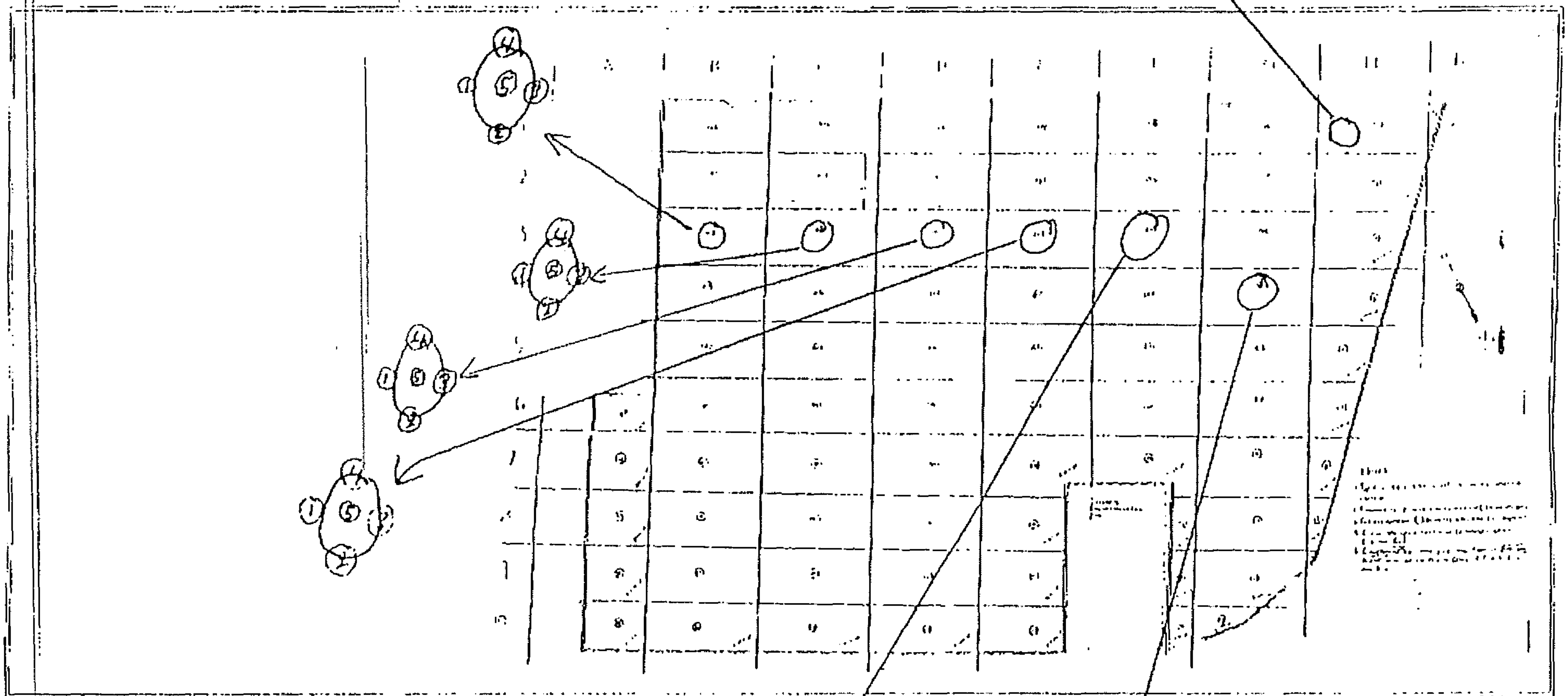
SAMPLER'S SIGNATURE: [signature] SD

# Sample Location Map
## Weston - Project #17396



Date: 8/21/95

Site Name:



Comments/Observations:

each number represents a sample point.

Prepared by: [signature]

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8/21/95 Samplers: GG/MB Weather: Sunny, Hot

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| F1-1 | 1145 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| E1-1 | 1149 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| D1-1 | 1155 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| C1-1 | 1200 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| B1-1 | 1219 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| B2-1 | 1455 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| C2-1 | 1500 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| D2-1 | 1512 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| E2-1 | 1517 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| E2-1DUP | 1517 | C | 1'6"-2' | N/A | N/A | Dk brown sandy soil w/heavy cobble | 1x8oz |
| F2-1 | 1524 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/ heavy cobble | 1x8oz |
| G2-1 | 1533 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/ heavy cobble | 1x8oz |
| G3-1 | 1542 | C | 1'6"-2' | N/A | N/A | Brown sandy soil w/ heavy cobble | 1x8oz |

Ref. Pt.___ : ______

Ref. Pt.___ : ______

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ______ USACE- coc # ______

Requested Testing: TPH cPAH Other ______

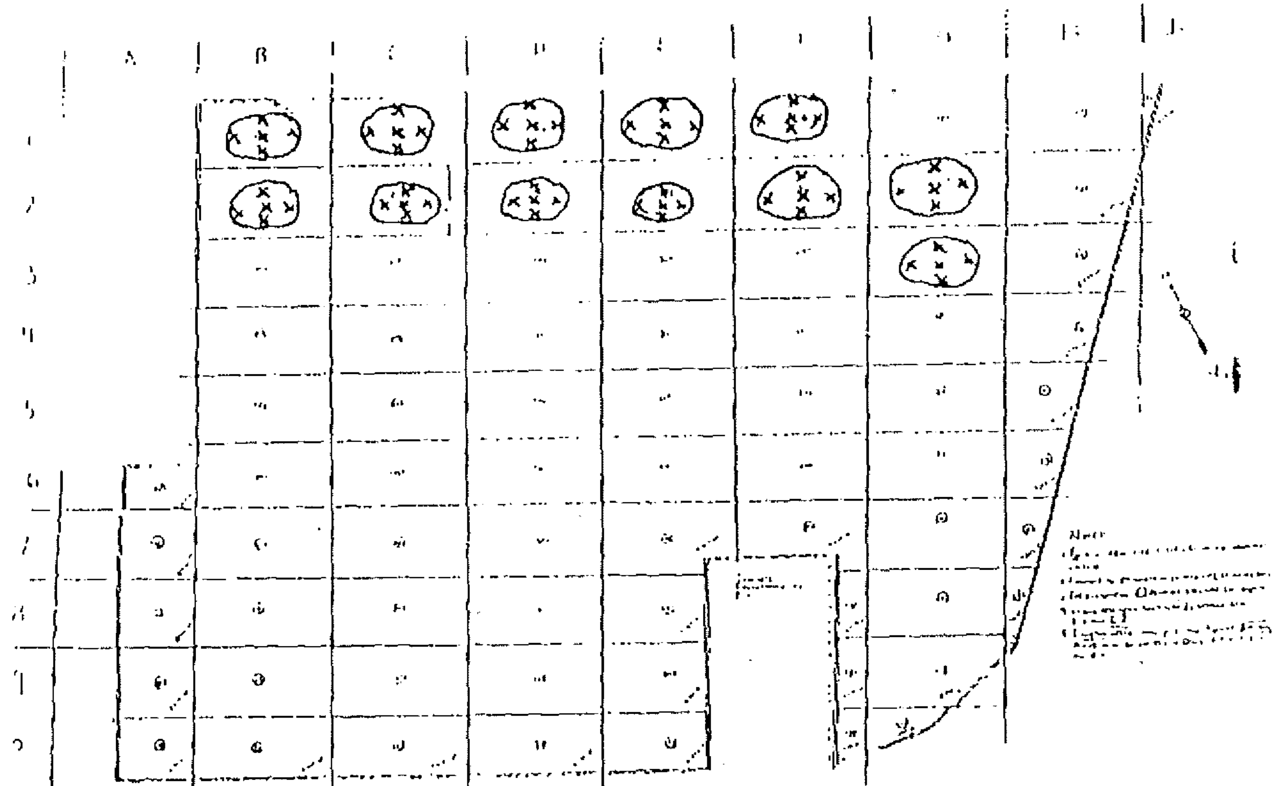
Relinquished by(dd/tt): M Guimond 8/21/95 1600 Received by (dd/tt): ______

## Sample Location Map
## Weston - Project #17396



Date 8-18-95

Site Name: Stockpile Screening



Comments/Observations:

x - discreet sample locations

Composite taken at each pile

Prepared by: Greg Guimond

Soil Sample Collection Log
Weston - Project #17936



Date: 8-17-95 Samplers: SD/GG Weather: Sunny, Hot

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| G9-1 | 1655 | C | 1'6"-2' | N/A | N/A | Brown soil w/some black staining Pile loaded w/asphalt chunks | 1x 8oz |
| F9-1 F10-1 G10-1 | 1702 | C | 1'6"-2' | N/A | N/A | Brown soil w/some black coloring moist w/cobble & Pavement | 1 x 8oz |
| F8-1 | 1708 | C | 1'6"-2' | N/A | N/A | Brown soil w/ heavy cobble | 1x8oz |
| G8-1 | 1717 | C | 1'6"-2' | N/A | N/A | moisture content variable Brown soil w/ heavy cobble | 1x8oz |
| G1-1 | 1721 | C | 1'6"-2' | N/A | N/A | Brown soil w heavy cobble some asphalt | 1x8oz |
| H1-I1-1 | 1737 | C | 1'6"-2' | N/A | N/A | Brown soil w heavy cobble | 1x 8oz |
| | | | | | | | |
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Ref. Pt.___: ____________________

Ref. Pt.___: ____________________

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening _____ Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc # ________

Requested Testing: TPH cPAH Other ________________

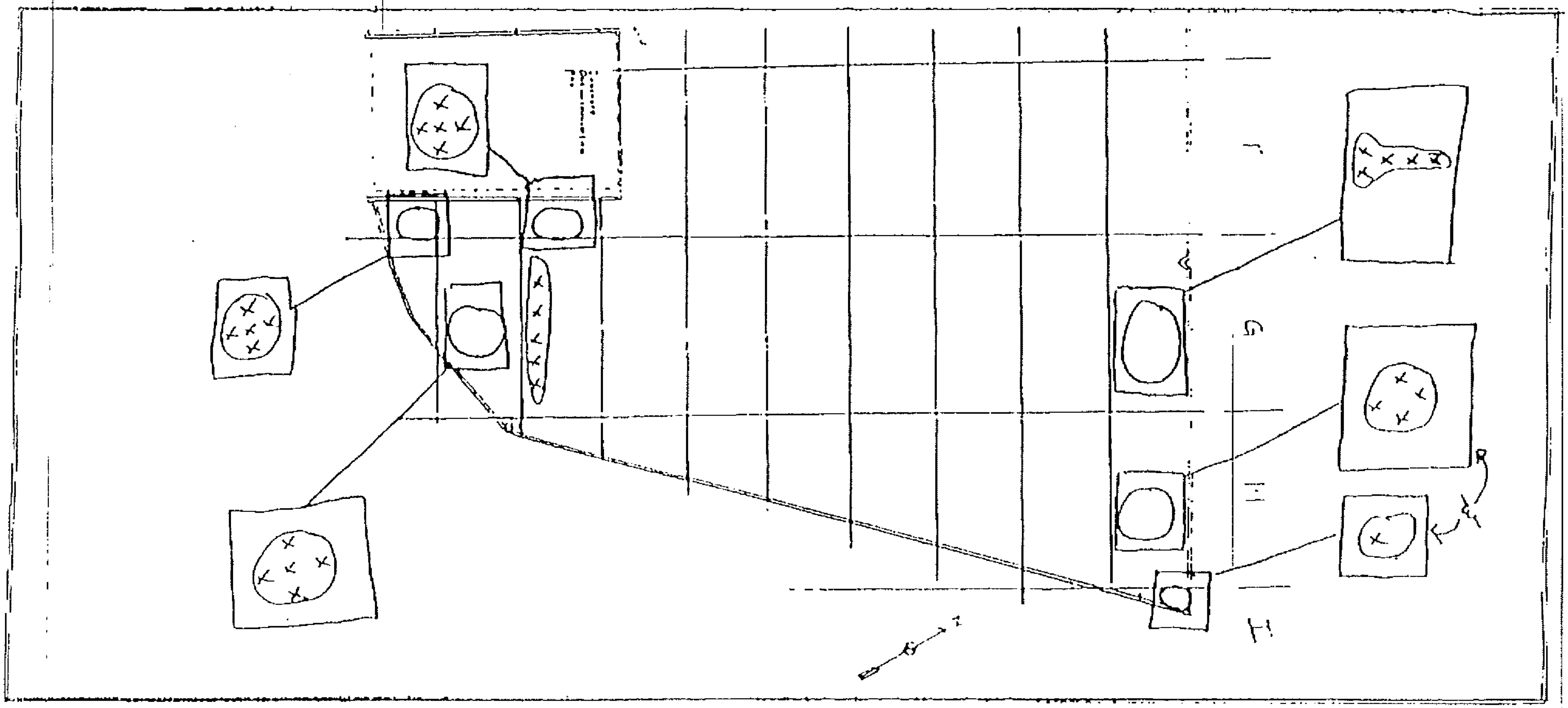
Relinquished by(dd/tt): [signature] 8-17-95 1745 Received by (dd/tt): [signature] 8-17-95 1745

# Sample Location Map
## Weston - Project #17396

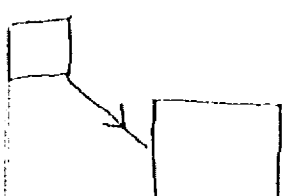


Date 8-17-95

Site Name Weston




Comments/Observations 10 9 8 7 6 5 4 3 2 1



- enlarged

Prepared by: Bill Dale

# Soil Sample Collection Log
## Weston - Project #17936



Date: 8-16-95 Samplers. GD, GG Weather: Sunny 80-85°

| Sample ID Number | Time | Comp/ Grab | Sample Depth (ft) | Coordinates Ref. Pt. | Coordinates Ref. Pt. | Sample Description | # of Bottles |
|---|---|---|---|---|---|---|---|
| H6-1 H7-1 H8-1 H9-1 | 1415 | C | 1'6"-2'0" | N/A | N/A | Brown fine grained organic SOIL | 1×8 oz |
| H5-1 | 1425 | C | 1'6"-2'0" | N/A | N/A | Brown fine grained organic soil | 1x8oz |
| H4-1 | 1435 | C | 1'6"-2'0" | N/A | N/A | Brown, fine grained organic soil | 1x8oz |
| H3-1 | 1445 | C | 1'6"-2'0" | N/A | N/A | Brown, fine grained organic soil | 1x8oz |
| H2-1 I2-1 | 1645 | C | 1'6"-2'0" | N/A | N/A | Brown, fine grained organic soil | 1x8oz |

Ref. Pt.___: N/A

Ref. Pt.___: N/A

Map Attached: Yes No

Sample Type: Stockpile composite Hot spot screening Hot spot confirmation

Duplicate Taken: Yes No Triplicate Taken: Yes No Rinsate Taken: Yes No

Laboratory Destination: Onsite Lab Weston - coc # ________ USACE- coc #________

Requested Testing: TPH cPAH Other________

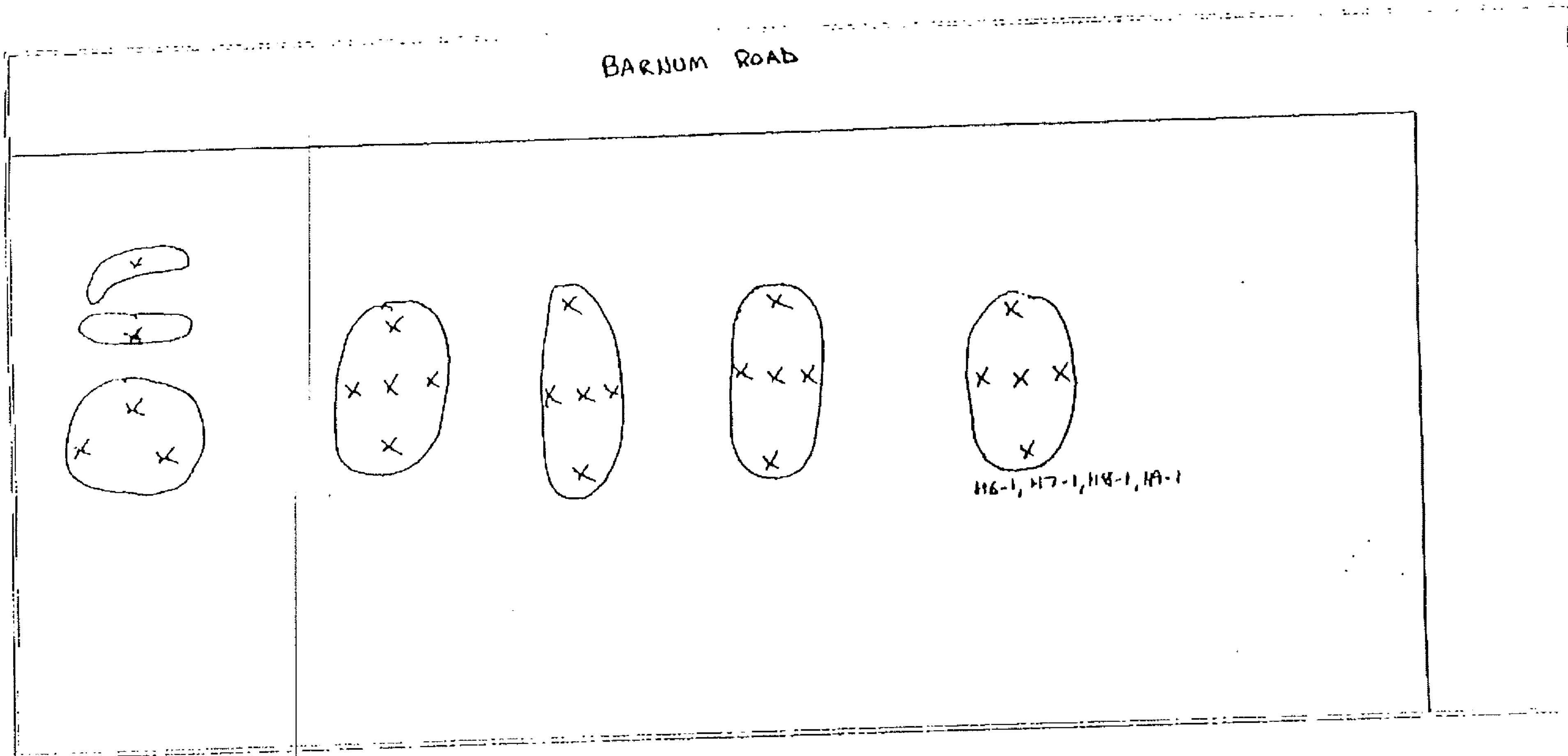
Relinquished by(dd/tt): William Dale 8-16-95 1458 Received by (dd/tt): ~~William Dale~~ M.G. Luick 8-16-95 1458

M.G. Luick 8-16-95 17

**Sample Location Map**
**Weston - Project #17396**

Date 8-16-95

Site Name: Weston




Comments/Observations:

x - sample location

Prepared by: Bill Dale

J

508-772-7251

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/25/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 09999-099-099-9999-00

WESTON BATCH #: 9508L989

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | 081895RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |
| -002 | 082195RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |

508-772-7251

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/30/95

CLIENT: USACE-FT DEVENS

WESTON BATCH #: 9508L021

WORK ORDER: 09999-099-099-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | GS-2 DUP | % Solids | 95.5 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 109 | MG/KG | 3.5 | 1.0 |

Non-seived results

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/25/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 09999-099-099-9999-00

WESTON BATCH #: 9508L000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | E2-1 DUP | % Solids | 95.2 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 2130 | MG/KG | 35.0 | 10.0 |

Non-seived results

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/08/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 09999-099-099-9999-00

WESTON BATCH #: 9509L120

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | E2-1 DUP | % Solids | 95.7 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 1700 | MG/KG | 34.8 | 10.0 |
| -002 | G8-2 DUP | % Solids | 93.5 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 200 | MG/KG | 7.1 | 2.0 |
| -003 | E2-2 DUP | % Solids | 94.1 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 43.6 | MG/KG | 3.5 | 1.0 |
| -004 | G8-3 DUP | % Solids | 94.3 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 36.5 | MG/KG | 3.5 | 1.0 |

508-772-7251

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/08/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 09999-099-099-9999-00

WESTON BATCH #: 9509L108

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | 083195RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |
| -002 | GB-4DUP | % Solids | 94.1 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 32.5 | | MG/KG | 3.5 | 1.0 |

Chris Kane 508-772-725

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/13/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 03886-118-001-0209-00

WESTON BATCH #: 9509L139 Inv. # C-42243

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | 090195ER | Petroleum Hydrocarbons | 1.1 | u | MG/L | 1.1 | 1.0 |
| -002 | E10-2 DUP | % Solids | 94.7 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 61.3 | | MG/KG | 3.5 | 1.0 |
| -003 | 090595ER | Petroleum Hydrocarbons | 1.1 | u | MG/L | 1.1 | 1.0 |
| -004 | BS-2 DUP | % Solids | 94.6 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 77.3 | | MG/KG | 3.5 | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/14/95

CLIENT: USACE-FT DEVENS WESTON BATCH #: 9509L182
WORK ORDER: 03886-118-001-0209-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | B7-2DUP | % Solids | 95.2 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 366 | MG/KG | 70.0 | 20.0 |
| -002 | 09079SRB | Petroleum Hydrocarbons | 1.0 u | MG/L | 1.0 | 1.0 |

508-772-7251

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/95

CLIENT: USACE-FT DEVENS

WESTON BATCH #: 9509L245

WORK ORDER: 03886-119-001-0209-00

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | SBWESTW1A | % Solids | 97.6 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 4.0 | | MG/KG | 3.7 | 1.0 |
| -002 | SBWESTW2A | % Solids | 97.7 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 7.2 | | MG/KG | 3.4 | 1.0 |
| -003 | SBWESTW3A | % Solids | 96.9 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 74.2 | | MG/KG | 3.4 | 1.0 |
| -004 | SBWESTW4A | % Solids | 98.5 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 24.1 | | MG/KG | 3.4 | 1.0 |
| -005 | SBWESTW5A | % Solids | 97.2 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 5.8 | | MG/KG | 3.4 | 1.0 |
| -006 | SBWESTW6A | % Solids | 97.7 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 3.4 | u | MG/KG | 3.4 | 1.0 |
| -007 | SBWESTW7A | % Solids | 99.8 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 10.2 | | MG/KG | 3.3 | 1.0 |
| -008 | SBWESTW8A | % Solids | 99.8 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 8.8 | | MG/KG | 3.3 | 1.0 |
| -009 | SBWESTB1A | % Solids | 97.2 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 7.2 | | MG/KG | 3.4 | 1.0 |
| -010 | SBWESTB2A | % Solids | 99.0 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 11.3 | | MG/KG | 3.4 | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/20/95

CLIENT: USAEC-FT DEVENS
WORK ORDER: 03886-118-001 0209-00

WESTON BATCH #: 9509L207

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | 091195RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |
| -002 | D9-4 DUP | % Solids | 95.4 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 21.2 | | MG/KG | 3.5 | 1.0 |
| 003 | 091295RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |
| -004 | RA 4 DUP | % Solids | 96.6 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 3.4 | u | MG/KG | 3.4 | 1.0 |
| -005 | SBWSSTN1A DUP | % Solids | 98.4 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 18.1 | | MG/KG | 3.4 | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/20/95

CLIENT: USAEC-FT DEVENS  WESTON BATCH #: 9509L207

WORK ORDER: 03886-118-001-0209-00

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| BLANK10 | 95LHC119 MB1 | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |
| BLANK10 | 95LHC120-MB1 | Petroleum Hydrocarbons | 3.3 | u | MG/KG | 3.3 | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 09/20/95

CLIENT: USACE-FT DEVENS WESTON BATCH #: 9509L207

WORK ORDER: 03886-118-001-0209-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| BLANK10 | 95LHC119-MB1 | Petroleum Hydrocarbons | 4.1 | 1.0 u | 4.2 | 97.3 | 1.0 |
| | | Petroleum Hydrocarbons | 4.1 | 1.0 u | 4.2 | 97.5 | 1.0 |
| BLANK10 | 95LHC120-MB1 | Petroleum Hydrocarbons | 135 | 3.3 u | 140 | 96.8 | 1.0 |
| | | Petroleum Hydrocarbons | 135 | 3.3 u | 140 | 96.5 | 1.0 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 09/20/95

CLIENT: USACE-FT DEVENS

WESTON BATCH #: 9509L207

WORK ORDER: 03886-118-001-0209-00

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 95LRC119-MB1 | Petroleum Hydrocarbons | 97.3 | 97.5 | 0.24 |
| BLANK10 | 95LRC120-MB1 | Petroleum Hydrocarbons | 96.8 | 96.5 | 0.26 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 09/20/95

CLIENT: USACE-FT DEVENS

WESTON BATCH #: 9509L207

WORK ORDER: 03886-118-001-0209-00

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR (REP) |
|---|---|---|---|---|---|---|
| -002REP | 09-4 DUP | % Solids | 95.4 | 94.8 | 0.69 | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 03886-118-001-0209-00

WESTON BATCH #: 9509L246

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | B4-4 DUP | % Solids | 96.5 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 57.3 | | MG/KG | 3.5 | 1.0 |
| -002 | 091395 RB | Petroleum Hydrocarbons | 1.0 | u | MG/L | 1.0 | 1.0 |

508-772-7251

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/10/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 03886-118-001-0209-00

WESTON BATCH #: 9510L478

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | 06XXN2 | % Solids | 88.0 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 22.2 | MG/KG | 3.8 | 1.0 |
| -002 | 06XXP2 | % Solids | 96.4 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 25.2 | MG/KG | 3.5 | 1.0 |
| -003 | 06XS2 | % Solids | 96.2 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 11.4 | MG/KG | 3.6 | 1.0 |
| -004 | 06XDUP | % Solids | 95.6 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 72.6 | MG/KG | 3.5 | 1.0 |
| -005 | 06XW2 | % Solids | 96.3 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 17.1 | MG/KG | 3.5 | 1.0 |
| [illegible] | 06XB2 | % Solids | 92.3 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 70.0 | MG/KG | 3.6 | 1.0 |
| -007 | 10XNW1 | % Solids | 93.0 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 17.7 | MG/KG | 3.6 | 1.0 |
| -008 | 10XWW1 | % Solids | 94.9 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 20.6 | MG/KG | 3.5 | 1.0 |
| -009 | 10XNWW1 | % Solids | 94.7 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 15.8 | MG/KG | 3.6 | 1.0 |
| -010 | 10XSWW1 | % Solids | 94.9 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 6.8 | MG/KG | 3.5 | 1.0 |
| -011 | 10XWB1 | % Solids | 93.6 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 42.0 | MG/KG | 3.5 | 1.0 |
| -012 | 10XNEW1 | % Solids | 96.2 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 33.5 | MG/KG | 3.5 | 1.0 |
| -013 | 10XSEW1 | % Solids | 95.4 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 12.5 | MG/KG | 3.5 | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/10/95

CLIENT: USACE-FT DEVENS
WORK ORDER: 03886-118-001-0209-00

WESTON BATCH #: 9510L478

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -014 | 10XSB1 | % Solids | 94.0 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 91.9 | | MG/KG | 3.5 | 1.0 |
| -015 | 10XCB1 | % Solids | 96.3 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 88.3 | | MG/KG | 3.7 | 1.0 |
| -016 | 10XCWW1 | % Solids | 95.6 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 29.5 | | MG/KG | 3.5 | 1.0 |
| -017 | 10XCEW1 | % Solids | 89.5 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 30.8 | | MG/KG | 3.3 | 1.0 |
| -018 | 10XSW1 | % Solids | 94.1 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 3.3 | u | MG/KG | 3.3 | 1.0 |
| -019 | 10XEW1 | % Solids | 95.7 | | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 229 | | MG/KG | 3.3 | 1.0 |

RELIMINARY

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/01/95

ENT: USACE-FT DEVENS

K ORDER: 03886-118-001-0209-00

WESTON BATCH #: 9510L759

| PLE # | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| 1 | C6-4 DUP | % Solids | 97.7 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 33.7 | MG/KG | 5.4 | 1.0 |
| 2 | D6-3 DUP | % Solids | 93.1 | % | 0.10 | 1.0 |
| | | Petroleum Hydrocarbons | 15.6 | MG/KG | 5.6 | 1.0 |
| 3 | BR1023 | Petroleum Hydrocarbons | 1.1 u | MG/L | 1.1 | 1.0 |
| 4 | BR1024 | Petroleum Hydrocarbons | 1.0 u | MG/L | 1.0 | 1.0 |

OC

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AMERICAN
RECLAMATION
CORPORATION
AMREC

# REPORT ON RECYCLING OF CONTAMINATED SOILS AT THE BARNUM ROAD MAINTENANCE YARDS FORT DEVENS, MA

PREPARED FOR:

Roy F. Weston, Inc.
1 Weston Way
West Chester, PA 19380-1499

PREPARED BY:

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November 1995

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# CONTENTS

## 1. Introduction

This report is on the recycling of soil at the Barnum Road Maintenance Yards at Fort Devens, MA. The soil was recycled by the American Reclamation Corporation (AmRec) as subcontractor to Roy F. Weston, Inc (Weston), the contractor for the United States Army Corp of Engineers. The soil was recycled by the asphalt-emulsion technology into a reusable asphalt stabilized base paving product at the site (see Attachment A for a flow diagram of the recycling process).

The recycling activities took place during the months of September and October of 1995. This report is intended to document the recycling activities and related information.

## 2. Background Information

Work at the site included identification and excavation of contaminated soil, recycling of the contaminated soil, resurfacing of the site with the recycled materials and bituminous paving, and placement of structures associated with parking areas (drainage structures, fencing, etc.). AmRec was contracted to perform the recycling of the contaminated soil into an asphalt-stabilized base paving material.

The soil at the site was contaminated with low-levels of total petroleum hydrocarbons (TPHs) from previous use. Testing of the soil was conducted by others under the direction of Weston. Soil meeting specific contamination limits was designated for recycling by AmRec.

The objectives of AmRec were as follows:

- Design appropriate job mix formula for recycled product
- Process soil by screening and crushing
- Batch processed soil with asphalt emulsion
- Apply appropriate quality control measures

The services provided by AmRec followed a Work Plan previously submitted (September 1995) prior to work at the site.

## 3. Job Mix Formula Design

The job mix formula was designed with consideration towards the grain-size distribution of the soil and the concentration of contaminants in the soil. The job mix formula was also designed with consideration towards its intended use as a base paving product.

The soil was sampled by AmRec prior to operations. It was determined that the soil was a well-graded material with little clay or fine aggregate.

The intended reuse of the material was as a base paving material as support to subsequent lifts of bituminous paving. Based on the initial test results and the intended reuse, AmRec, in consultation with Weston and the Army Corp of Engineers, proposed the following job mix formula:

**Job Mix Formula Design Table**

| Property | Specification |
|---|---|
| Grain-size Distribution:<br>(ASTM C117 & C136) | Percent Passing by Weight: |
| 3-inch | 100 |
| 11/2-inch | 75-100 |
| 3/4-inch | 55-90 |
| #4 | 35-70 |
| #40 | 10-30 |
| #200 | 3-12 |
| Bitumen Content<br>(ASTM D2172) | 1.5% min.<br>2.5% max. |
| CBR<br>(ASTM D1883) | 50% min. |

The grain-size distribution for the job mix formula resembles the aggregate base course specification (P-208) of the Federal Aviation Administration.

## 4. Soil Processing

The site was prepared for work by others. In addition, the soil designated for recycling was excavated and tested by others.

An area within the site was designated for use by AmRec for its recycling activities. AmRec prepared its working area by mobilization and set-up of equipment and relocation of materials (concrete rubble) located within the area.

Soil designated for recycling was processed by mechanical screening and crushing operations. The soil was screened to remove objects and stones larger than 3-inches in diameter. Remaining soil and stone larger than 3-inches in diameter were crushed to sizes less than 3-inches. Also, small quantities of concrete rubble were crushed and blended in with the processed soils.

Throughout the screening and crushing processes, quality control measures were applied. Composite samples of screened soil and crushed soil were obtained at a rate of approximately 1 sample per 1,000 cubic yards of processed soil. These samples were analyzed for physical properties, including grain-size distribution, moisture content, and unit weight.

The results of the analyses were used to assure compliance with the job mix formula design. See also Section 6 for further details.

## 5. Asphalt Batching

Processed soil was subsequently batched with an asphalt emulsion. The processed soil was batched through a pugmill capable of applying and mixing an asphalt emulsion with the soil at a controlled rate.

At the pugmill, asphalt emulsion was added at a rate of 2.5% by weight of the processed soil. Also, water was added for enhanced coating and subsequent compaction properties. The material was capable of immediate spreading and compaction.

Quality control procedures were applied during the batching of materials. Throughout batching operations, the rate of emulsion was monitored and adjusted as needed. Also the coating of aggregates was visually monitored.

Composite samples were obtained for each 1,000 cubic yards of asphalt batched material. Each sample was submitted for evaluation by the California Bearing Ratio (CBR) procedure. Also, composite samples were submitted for chemical testing. This chemical testing included analyses of each sample's TCLP extract for TPHs and PAHs.

See also Section 6 for details on quality control.

## 6. Quality Control

Quality control applied during the recycling operations included visual observations as well as chemical and physical testing of materials. Quality control was applied to the processed soil and the asphalt batched material.

Processed soil was analyzed for physical properties, including grain-size distribution. Results of this testing indicated that the materials met the gradation specifications, as presented in the job mix design. During the recycling operations, all samples of processed soil maintained gradations within the limits of the mix design. The results of the grain-size distributions are presented as Attachment B.

Asphalt batched material was analyzed for hydrocarbon stabilization and physical strength. Chemical testing was performed on the material to ensure the material would not leach the hydrocarbon contaminants of concern. This was achieved by submitting composite samples of the material to the EPA Toxicity Characteristic Leaching Procedure (TCLP, EPA Method 1311). The leachate from each sample was then analyzed for TPHs and PAHs. No sample's leachate contained TPHs or PAHs above detection levels. Results of chemical testing are presented as Attachment C.

Physical testing on the asphalt batched material included testing by the California Bearing Ratio (CBR) procedure. This procedure presented load bearing capacities for the samples. All samples resulted in a bearing ratio above the project specification of 50%. Results of the CBR testing are presented as Attachment D.

## 7. Demobilization of Equipment

Prior to transport off site, all equipment was decontaminated. Decon procedures consisted of scraping and brushing soil from equipment. When necessary, a water spray was used to remove additional materials. The water spray was only used on areas designated by Weston. All residual soils from decon procedures were subsequently asphalt batched.

## 8. Site Safety

At the site, AmRec coordinated with Weston personnel on specific site safety procedures. Task specific and daily group safety sessions were held at the site throughout recycling operations. As a result of safety planning and safe working practices, no hazardous incidents or injuries occurred at the site during recycling operations.

## 9. Discussion

The recycling objectives were achieved at the site. Throughout the recycling operations, approximately 11,800 cubic yards of soil were processed and batched with asphalt emulsion. Appropriate ratios of asphalt emulsion and water were used to stabilize the contaminants and to allow for immediate reuse as a base paving product.

Results of quality control applied during operations assured compliance with the proposed mix design and performance standards.

The soil was successfully recycled and reused at the site.

# REFERENCES

American Reclamation Corporation. Asphalt Batching Work Plan for the Remediation of Barnum Road Maintenance Yards at Fort Devens. Northborough, MA.

American Society for Testing and Materials, (ASTM). C 117. Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing. Philadelphia, PA.

American Society for Testing and Materials, (ASTM). C 136. Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates. Philadelphia, PA.

American Society for Testing and Materials, (ASTM). D 75. Standard Practice for Sampling Aggregates. Philadelphia, PA.

American Society for Testing and Materials, (ASTM). D 140. Standard Practice for Sampling Bituminous Materials. Philadelphia, PA.

American Society for Testing and Materials, (ASTM). D 1883. Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils. Philadelphia, PA.

Method References: TCLP Method 1311 Zero Headspace Extraction and Method 8240-GC/MS for Volatile Organics, Test Methods for Evaluating Solid Waste, US EPA SW-846, Third Edition (1986).

# ATTACHMENTS

## LIST OF ATTACHMENTS

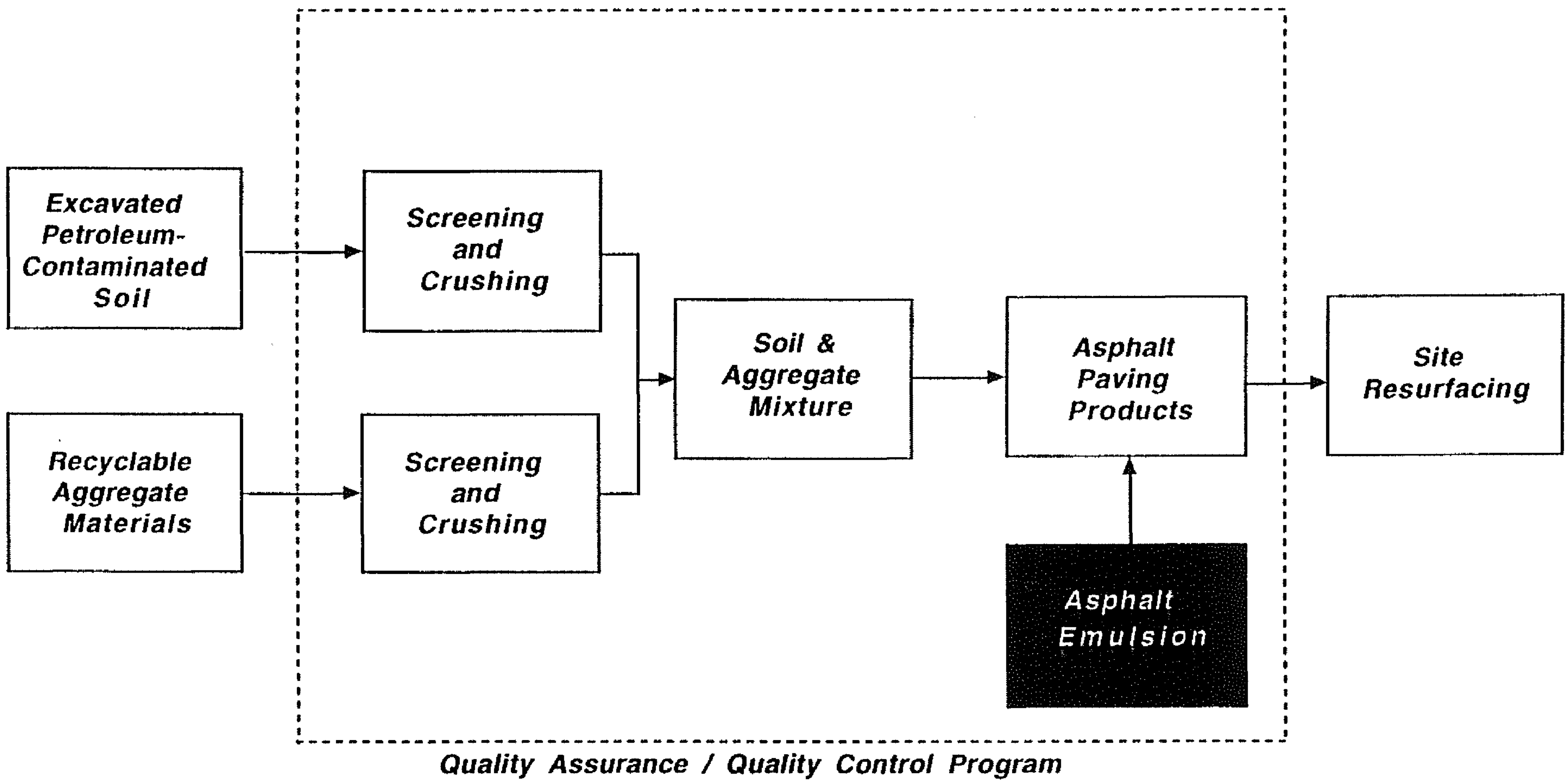
A. Flow Diagram of the Recycling Process

B. Results of Processed Soil Analyses

C. Results of CBR Procedures on Asphalt Batched Soil

D. Results of Chemical Testing on Asphalt Batched Soil

# Diagram of the AmRec Process for On-Site Recycling



## ATTACHMENT B

## RESULTS OF PROCESSED SOIL ANALYSES

# Summary of Grain Size Distribution Analyses

**Project:** Fort Devens, Barnum Road - Asphalt Batching
**Material:** Screened Soil
**Date:** 9/25/95 - 10/2/95

| | | SCREENED SOIL SAMPLES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sieve** | **AVG.** | SC.01.92595 | SC.02.92695 | SC.03.92695 | SC.04.92795 | SC.05.10295 | | | |
| **3"** | **100** | 100 | 100 | 100 | 100 | 100 | | | |
| **1.5"** | **81** | 81 | 80 | 74 | 83 | 88 | | | |
| **3/4"** | **71** | 72 | 68 | 63 | 73 | 77 | | | |
| **3/8"** | **63** | 64 | 60 | 57 | 66 | 69 | | | |
| **#4** | **57** | 58 | 55 | 50 | 58 | 64 | | | |
| **#8** | **52** | 52 | 50 | 44 | 53 | 59 | | | |
| **#40** | **29** | 28 | 28 | 22 | 35 | 32 | | | |
| **#50** | **21** | 21 | 22 | 17 | 21 | 24 | | | |
| **#100** | **13** | 13 | 12 | 11 | 14 | 15 | | | |
| **#200** | **9.0** | 9 | 8.7 | 7.5 | 9.4 | 10.4 | | | |
| **Moist.** | **4.5** | 4.0 | 5.4 | 4.4 | 4.0 | 4.9 | | | |
| **T/Y(W)** | **1.61** | 1.60 | 1.64 | 1.63 | 1.60 | 1.56 | | | |

Comments: Samples are representative ofscreened soil.
Samples were taken from the output of the screener.
Sieve analyses were performed according to ASTM C117 & C136.

AMERICAN RECLAMATION CORPORATION

# Summary of Grain Size Distribution Analyses

**Project:** Fort Devens, Barnum Road - Asphalt Batching

**Material:** Crushed Soil

**Date:** 10/4/95 - 10/26/95

| | | CRUSHED SOIL SAMPLES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sieve** | **AVG.** | CS.1.10495 | CS.2.10595 | CS.3.101095 | CS.4.101195 | CS.5.101295 | CS.6.101395 | CS.7.102495 | CS.8.102695 |
| **3"** | **100** | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **1.5"** | **86** | 92 | 80 | 83 | 86 | 83 | 89 | 89 | 87 |
| **3/4"** | **70** | 77 | 63 | 75 | 70 | 65 | 69 | 70 | 73 |
| **3/8"** | **59** | 67 | 55 | 64 | 57 | 53 | 55 | 58 | 64 |
| **#4** | **52** | 59 | 49 | 58 | 49 | 45 | 48 | 50 | 56 |
| **#8** | **45** | 52 | 43 | 47 | 44 | 39 | 41 | 43 | 48 |
| **#40** | **22** | 26 | 22 | 24 | 22 | 19 | 20 | 22 | 24 |
| **#50** | **18** | 21 | 17 | 19 | 17 | 15 | 16 | 17 | 19 |
| **#100** | **12** | 14 | 11 | 13 | 11 | 10 | 10 | 11 | 13 |
| **#200** | **8.1** | 10 | 8.2 | 8.7 | 7.5 | 7 | 7.3 | 7.7 | 8.7 |
| **Moist.** | **4.8** | 4.5 | 4.2 | 5.4 | 4.8 | 4.3 | 4.1 | 5.4 | 5.8 |
| **T/Y(W)** | **1.65** | 1.61 | 1.59 | 1.66 | 1.67 | 1.68 | 1.67 | 1.64 | 1.65 |

Comments: Samples are representative of crushed soil and stone.
Samples were taken from the output of the crusher.
Sieve analyses were performed according to ASTM C117 & C136.

AMERICAN RECLAMATION CORPORATION

# ATTACHMENT C

## RESULTS OF CHEMICAL TESTING ON ASPHALT PRODUCT

## SUMMARY OF RESULTS
## CHEMICAL ANALYSES ON ASPHALT PRODUCT

| Sample No. | Sample ID | Sampling Date | TCLP-TPH Results | TCLP-PAH Results |
|---|---|---|---|---|
| 1 | FD.MX.01 | 9/29/95 | ND | All ND |
| 2 | FD.MX.02 | 10/2/95 | ND | All ND |
| 3 | FD.MX.03 | 10/3/95 | ND | All ND |
| 4 | FD.MX.4.10595 | 10/5/95 | ND | All ND |
| 5 | FD.MX.5.101095 | 10/10/95 | ND | All ND |
| 6 | FD.CMX.610 | 10/11-10/18/95 | ND | All ND |
| 7 | FD.CMX.1112 | 10/26-10/30/95 | ND | All ND |

All figures expressed as ppm.
ND = Not detected at method detection limits.

# GeoLabs, Inc.

*Environmental Laboratories*

Phone: (617) 878-1346 Fax: (617) 871-7069


## FINAL REPORT

PREPARED FOR: AMREC
100 West Main St.
Northborough, MA 01532

Att: Fred Hooper

PROJECT ID: Ft. Deven's

GEOLABS CLIENT #: 1179-95

SAMPLE NUMBER: 37256-37258

DATE PREPARED: October 13, 1995

APPROVED BY: Jim Chen

Jim Chen.
Laboratory Director


**Location:** 400 Hingham Street
Rockland, MA 02370

**Mailing Address:** PO Box 254
Accord, MA 02018

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018
(617) 878-1346

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | FT. DEVEN'S |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 10/13/95 |
| SAMPLE DATE: | SEE BELOW | ANALYZED BY: | DG 10/08/95 |
| DATE RECEIVED: | 10/06/95 | COLLECTED BY: | CLIENT |

TOTAL PETROLEUM HYDROCARBONS

| SAMPLE NUMBER | SAMPLE DATE | SAMPLE LOCATION | TPH (mg/L) | MDL (mg/L) |
|---|---|---|---|---|
| 37256 | 09/29/95 | FD.MX.01 | ND | 1.0 |
| 37257 | 10/02/95 | FD.MX.02 | ND | 1.0 |
| 37258 | 10/03/95 | FD.MX.03 | ND | 1.0 |

ND = NOT DETECTED

TCLP EXTRACTION DATE: 10/07/95

METHOD REFERENCE:

| | |
|---|---|
| TCLP Extraction | 1311 [1] |
| Total Petroleum Hydrocarbons | 418.1 [2] |

1) US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

2) U.S. EPA 1983. "Methods for Chemical Analysis of Water and Wastes." EPA-600/4-79-020, EPA, EMSL, Cincinnati, OH.

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# POLYNUCLEAR AROMATIC HYDROCARBONS
## EPA METHOD 610

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | FT. DEVEN'S |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 10/13/95 |
| SAMPLE DATE: | SEE BELOW | ANALYZED BY: | NER 10/13/95 |
| DATE RECEIVED: | 10/06/95 | COLLECTED BY: | CLIENT |

| SAMPLE NUMBER: | 37256 | 37257 | 37258 | MDL |
|---|---|---|---|---|
| SAMPLE LOCATION: | FD.MX.01 | FD.MX.02 | FD.MX.03 | (mg/L) |
| SAMPLE DATE: | 09/29/95 | 10/02/95 | 10/03/95 | |
| | | RESULT (mg/L) | | |
| Acenaphthene | ND | ND | ND | 0.01 |
| Acenaphthylene | ND | ND | ND | 0.01 |
| Anthracene | ND | ND | ND | 0.01 |
| Benzo(A)Anthracene | ND | ND | ND | 0.01 |
| Benzo(A)Pyrene | ND | ND | ND | 0.01 |
| Benzo(B)Fluoranthene | ND | ND | ND | 0.01 |
| Benzo(G,H,I)Perylene | ND | ND | ND | 0.01 |
| Benzo(K)Fluoranthene | ND | ND | ND | 0.01 |
| Chrysene | ND | ND | ND | 0.01 |
| Dibenzo(A,H)Anthracene | ND | ND | ND | 0.01 |
| Fluoranthene | ND | ND | ND | 0.01 |
| Fluorene | ND | ND | ND | 0.01 |
| Ideno(1,2,3-CD)Pyrene | ND | ND | ND | 0.01 |
| Naphthalene | ND | ND | ND | 0.01 |
| Phenanthrene | ND | ND | ND | 0.01 |
| Pyrene | ND | ND | ND | 0.01 |

ND = NOT DETECTED

TCLP EXTRACTION DATE: 10/07/95

EXTRACTION DATE: 10/13/95

**Method Reference:**

| | |
|---|---|
| TCLP Extraction | 1311 (1) |
| Semi Volatile Organic Compounds | 610 (2) |

1) US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

2) Code of Federal Regulations 40CFR, Part 136, Appendix A.

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018

## LIMITATIONS & EXCLUSIONS

All the professional opinions presented in this report are based solely on the scope of work conducted and sources referred to in our report. The data presented by GeoLabs in this report was collected and analyzed using generally accepted industry methods and practices at the time the report was generated. This report represents the conditions, locations and materials that were observed at the time the work was conducted. No inferences regarding other conditions, locations or materials, at a later or earlier time may be made based on the contents of the report. No other warranty, express or implied is made.

This report was prepared for the sole use of our client. Portions of the report may not be used independent of the entire report.

All analyses were performed within required holding times, in accordance with EPA protocols and using accepted QA/QC procedures. The information contained in this report is, to the best of my knowledge, accurate and complete.

# GeoLabs, Inc.

*Environmental Laboratories*

Phone: (617) 878-1346 Fax: (617) 871-7069


## FINAL REPORT

PREPARED FOR: AMREC
100 West Main St.
Northborough, MA 01532

Att: Fred Hooper

PROJECT ID: Fort Devens

GEOLABS CLIENT #: 1179-95

SAMPLE NUMBER: 37490-37491

DATE PREPARED: October 19, 1995

APPROVED BY:

Jim Chen
Laboratory Director

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018
(617) 878-1346

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | FORT DEVENS |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 10/19/95 |
| SAMPLE DATE: | 10/09 & 10/95 | ANALYZED BY: | DG 10/17/95 |
| DATE RECEIVED: | 10/13/95 | COLLECTED BY: | CLIENT |

## TCLP TOTAL PETROLEUM HYDROCARBONS

| SAMPLE NUMBER | SAMPLE LOCATION | TCLP TPH (mg/L) | MDL (mg/L) |
|---|---|---|---|
| 37490 | FD.MX.4.10595 | ND | 1.0 |
| 37491 | FD.MX.5.101095 | ND | 1.0 |

ND = NOT DETECTED

TCLP EXTRACTION DATE: 10/16/95

**Method Reference:**

| | |
|---|---|
| TPH | 418.1 (1) |
| TCLP Extraction | 1311 (1) |

1) U.S. EPA 1983. "Methods for Chemical Analysis of Water and Wastes." EPA-600/4-79-020, EPA, EMSL, Cincinnati, OH.

2) US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

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# POLYNUCLEAR AROMATIC HYDROCARBONS
## EPA 8100

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | FORT DEVENS |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 10/19/95 |
| SAMPLE DATE: | 10/09 & 10/95 | ANALYZED BY: | NER 10/18/95 |
| DATE RECEIVED: | 10/13/95 | COLLECTED BY: | CLIENT |

| SAMPLE NUMBER: | 37490 | 37491 | MDL |
|---|---|---|---|
| SAMPLE LOCATION: | FD.MX.4.10595 | FD.MX.5.101095 | (mg/L) |
| PARAMETER | RESULTS (mg/L) | | |
| Acenaphthene | ND | ND | 0.01 |
| Acenaphthylene | ND | ND | 0.01 |
| Anthracene | ND | ND | 0.01 |
| Benzo(A)Anthracene | ND | ND | 0.01 |
| Benzo(A)Pyrene | ND | ND | 0.01 |
| Benzo(B)Fluoranthene | ND | ND | 0.01 |
| Benzo(G,H,I)Perylene | ND | ND | 0.01 |
| Benzo(K)Fluoranthene | ND | ND | 0.01 |
| Chrysene | ND | ND | 0.01 |
| Dibenzo(A,H)Anthracene | ND | ND | 0.01 |
| Fluoranthene | ND | ND | 0.01 |
| Fluorene | ND | ND | 0.01 |
| Ideno(1,2,3-CD)Pyrene | ND | ND | 0.01 |
| Naphthalene | ND | ND | 0.01 |
| Phenanthrene | ND | ND | 0.01 |
| Pyrene | ND | ND | 0.01 |

ND = NOT DETECTED

EXTRACTION DATE: 10/18/95

TCLP EXTRACTION DATE: 10/16/95

**Method Reference:**

| | |
|---|---|
| TCLP Extraction | 1311 [1] |
| Semi Volatile Organic Compounds | 8100 [1] |

1) US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018

## LIMITATIONS & EXCLUSIONS

All the professional opinions presented in this report are based solely on the scope of work conducted and sources referred to in our report. The data presented by GeoLabs in this report was collected and analyzed using generally accepted industry methods and practices at the time the report was generated. This report represents the conditions, locations and materials that were observed at the time the work was conducted. No inferences regarding other conditions, locations or materials, at a later or earlier time may be made based on the contents of the report. No other warranty, express or implied is made.

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All analyses were performed within required holding times, in accordance with EPA protocols and using accepted QA/QC procedures. The information contained in this report is, to the best of my knowledge, accurate and complete.

# GeoLabs, Inc.

*Environmental Laboratories*

Phone: (617) 878-1346 Fax: (617) 871-7069


## FINAL REPORT

PREPARED FOR: AMREC
170 Megunko Rd.
Ashland, MA 01721

Attn: Fred Hooper

PROJECT ID: SRS034
Ft. Deven's

GEOLABS CLIENT #: 1179-95

SAMPLE NUMBER: 38005-38006

DATE PREPARED: November 03, 1995

APPROVED BY: Jim Chen

Jim Chen
Laboratory Director


**Location:** 400 Hingham Street
Rockland, MA 02370

**Mailing Address:** PO Box 254
Accord, MA 02018

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018
(617) 878-1346

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | SRS034 |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 11/03/95 |
| SAMPLE DATE: | 10/31/95 | ANALYZED BY: | DG 11/02/95 |
| DATE RECEIVED: | 11/01/95 | COLLECTED BY: | CLIENT |

## TCLP TOTAL PETROLEUM HYDROCARBONS

| SAMPLE NUMBER | SAMPLE LOCATION | TCLP TPH (mg/L) | MDL (mg/L) |
|---|---|---|---|
| 38005 | FD.CMX.610 | ND | 1.0 |
| 38006 | FD.CMX.1112 | ND | 1.0 |

ND = NOT DETECTED

TCLP EXTRACTION DATE: 11/01/95

**Method Reference:**

| | | |
|---|---|---|
| TPH | 418.1 | (1) |
| TCLP Extraction | 1311 | (2) |

1) U.S. EPA 1983. "Methods for Chemical Analysis of Water and Wastes." EPA-600/4-79-020, EPA, EMSL, Cincinnati, OH.

1) US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

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# POLYNUCLEAR AROMATIC HYDROCARBONS

| | | | |
|---|---|---|---|
| CLIENT NAME: | AMREC | PROJECT ID: | SRS034 |
| SAMPLE TYPE: | TCLP EXTRACT | REPORT DATE: | 11/03/95 |
| SAMPLE DATE: | 10/31/95 | ANALYZED BY: | NER 11/03/95 |
| DATE RECEIVED: | 11/01/95 | COLLECTED BY: | CLIENT |

| SAMPLE NUMBER: | 38005 | 38006 | MDL |
|---|---|---|---|
| SAMPLE LOCATION: | FD.CMX.610 | FD.CMX.1112 | (mg/L) |
| PARAMETER | RESULT (mg/L) | | |
| Acenaphthene | ND | ND | 0.01 |
| Acenaphthylene | ND | ND | 0.01 |
| Anthracene | ND | ND | 0.01 |
| Benzo(A)Anthracene | ND | ND | 0.01 |
| Benzo(A)Pyrene | ND | ND | 0.01 |
| Benzo(B)Fluoranthene | ND | ND | 0.01 |
| Benzo(G,H,I)Perylene | ND | ND | 0.01 |
| Benzo(K)Fluoranthene | ND | ND | 0.01 |
| Chrysene | ND | ND | 0.01 |
| Dibenzo(A,H)Anthracene | ND | ND | 0.01 |
| Fluoranthene | ND | ND | 0.01 |
| Fluorene | ND | ND | 0.01 |
| Ideno(1,2,3-CD)Pyrene | ND | ND | 0.01 |
| Naphthalene | ND | ND | 0.01 |
| Phenanthrene | ND | ND | 0.01 |
| Pyrene | ND | ND | 0.01 |

ND = NOT DETECTED

TCLP EXTRACTION DATE: 11/01/95

EXTRACTION DATE: 11/02/95

**Method Reference:**

Semi Volatile Organic Compounds 610 [1]

1) Code of Federal Regulations 40CFR, Part 136, Appendix A.

GEOLABS, INC.
P.O. BOX 254
ACCORD, MA 02018

## LIMITATIONS & EXCLUSIONS

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This report was prepared for the sole use of our client. Portions of the report may not be used independent of the entire report.

All analyses were performed within required holding times, in accordance with EPA protocols and using accepted QA/QC procedures. The information contained in this report is, to the best of my knowledge, accurate and complete.

# ATTACHMENT D

## RESULTS OF CBR TESTING ON ASPHALT PRODUCTS

## SUMMARY OF RESULTS
## CBR ANALYSES ON ASPHALT PRODUCT

| Sample ID | Sampling Date | CBR, % |
|---|---|---|
| FD.MX.01.092995 | 9/29/95 | 91 |
| FD.MX.02.100295 | 10/2/95 | 125 |
| FD.MX.03.100395 | 10/3/95 | 103 |
| FD.MX.04.100595 | 10/5/95 | 76 |
| FD.MX.05.101095 | 10/10/95 | 90 |
| FD.MX.06.101195 | 10/11/95 | 74 |
| FD.MX.07.101295 | 10/12/95 | 93 |
| FD.MX.08.101395 | 10/13/95 | 93 |
| FD.MX.09.101695 | 10/16/95 | 63 |
| FD.MX.10.101895 | 10/18/95 | 73 |
| FD.MX.11.102695 | 10/26/95 | 77 |
| FD.MX.12.103095 | 10/30/95 | 79 |

Notes: The CBR value is a ratio of the corrected load and the standard load at a penetration of 0.2 inches as specified in ASTM D1883.

# The Haller Testing Laboratories

*of Massachusetts, Inc.*

11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.01.092995 **Sampling Date:** 29-Sep-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 2-Oct-95 Penetration Date: 4-Oct-95

Preparation Procedure: Modified CBR

Compacted at (Percent of Theoretical Density): 131.2 PCF 96.5%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 10988 |
| B. Tare Weight of Mold & Base Plate (kg): | 6427 |
| C. Weight of Sample (kg): | 4561 |
| D. Volume of Sample (cf): | 0.075 |
| E. Unit Wet Weight (lbs/cf): | 134.0 |
| F. Percent Moisture @ Compaction: | 5.8% |
| G. Unit Dry Weight (lbs./cf.): | 126.6 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 38 | 127 |
| .050 | 100 | 327 |
| .075 | 166 | 540 |
| .100 | 225 | 730 |
| .125 | 284 | 917 |
| .150 | 332 | 1070 |
| .175 | 372 | 1197 |
| .200 | 402 | 1293 |
| .250 | 476 | 1527 |
| .300 | 543 | 1737 |
| .400 | 638 | 2036 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 840 | 1000 | 84 |
| 5.00mm(0.200in.): | 1370 | 1500 | 91 |
| 7.50mm(0.300in.): | 1780 | 1900 | 94 |
| 10.0mm(0.400in.): | 2065 | 2300 | 90 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: *[signature]*

*The Haller Testing Laboratories*

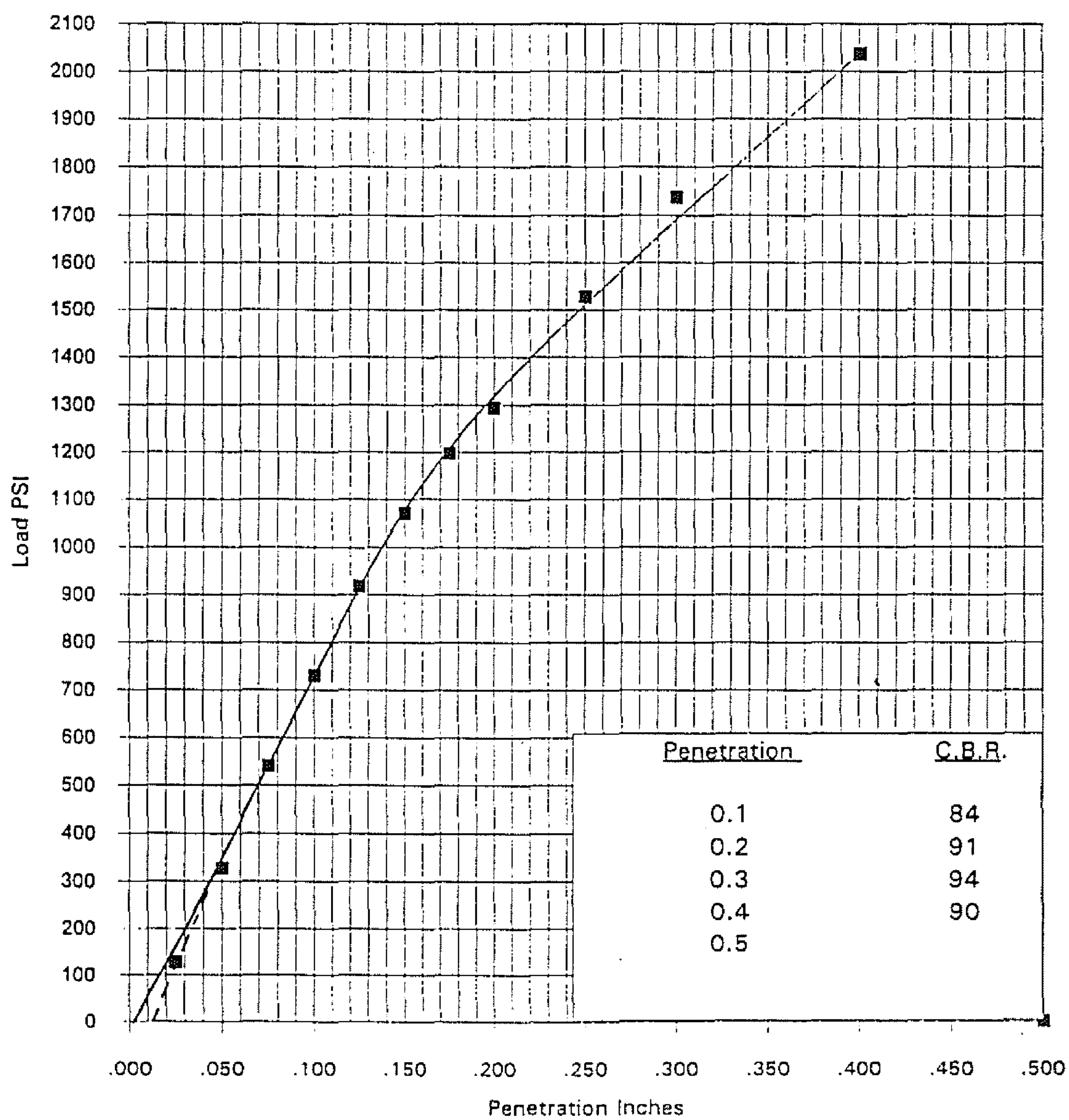
*of Massachusetts, Inc.*

11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

**Project:** Fort Devens, Ayer, Massachusetts **Date:** 9/29/95

Sample Identification No. FD.MX.01.092995

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 84 |
| 0.2 | 91 |
| 0.3 | 94 |
| 0.4 | 90 |
| 0.5 | |

*The Haller Testing Laboratories*
*of Massachusetts, Inc.*
11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

# California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.02.100295 **Sampling Date:** 2-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

## Sample Preparation Data

Molding Date: 4-Oct-95 Penetration Date: 6-Oct-95
Preparation Procedure: Modified CBR
Compacted at (Percent of Theoretical Density): 131.2 PCF 99.5%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 11215 |
| B. Tare Weight of Mold & Base Plate (kg): | 6403 |
| C. Weight of Sample (kg): | 4812 |
| D. Volume of Sample (cf): | 0.075 |
| E. Unit Wet Weight (lbs/cf): | 141.3 |
| F. Percent Moisture @ Compaction: | 8.3% |
| G. Unit Dry Weight (lbs./cf.): | 130.5 |

## Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 40 | 133 |
| .050 | 96 | 313 |
| .075 | 166 | 540 |
| .100 | 245 | 793 |
| .125 | 322 | 1039 |
| .150 | 404 | 1300 |
| .175 | 478 | 1533 |
| .200 | 552 | 1767 |
| .250 | 616 | 1967 |
| .300 | 660 | 2103 |
| .400 | | |
| .500 | | |

## Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 960 | 1000 | 96 |
| 5.00mm(0.200in.): | 1870 | 1500 | 125 |
| 7.50mm(0.300in.): | 2140 | 1900 | 113 |
| 10.0mm(0.400in.): | | 2300 | |
| 12.5mm(0.500in.): | | 2600 | |

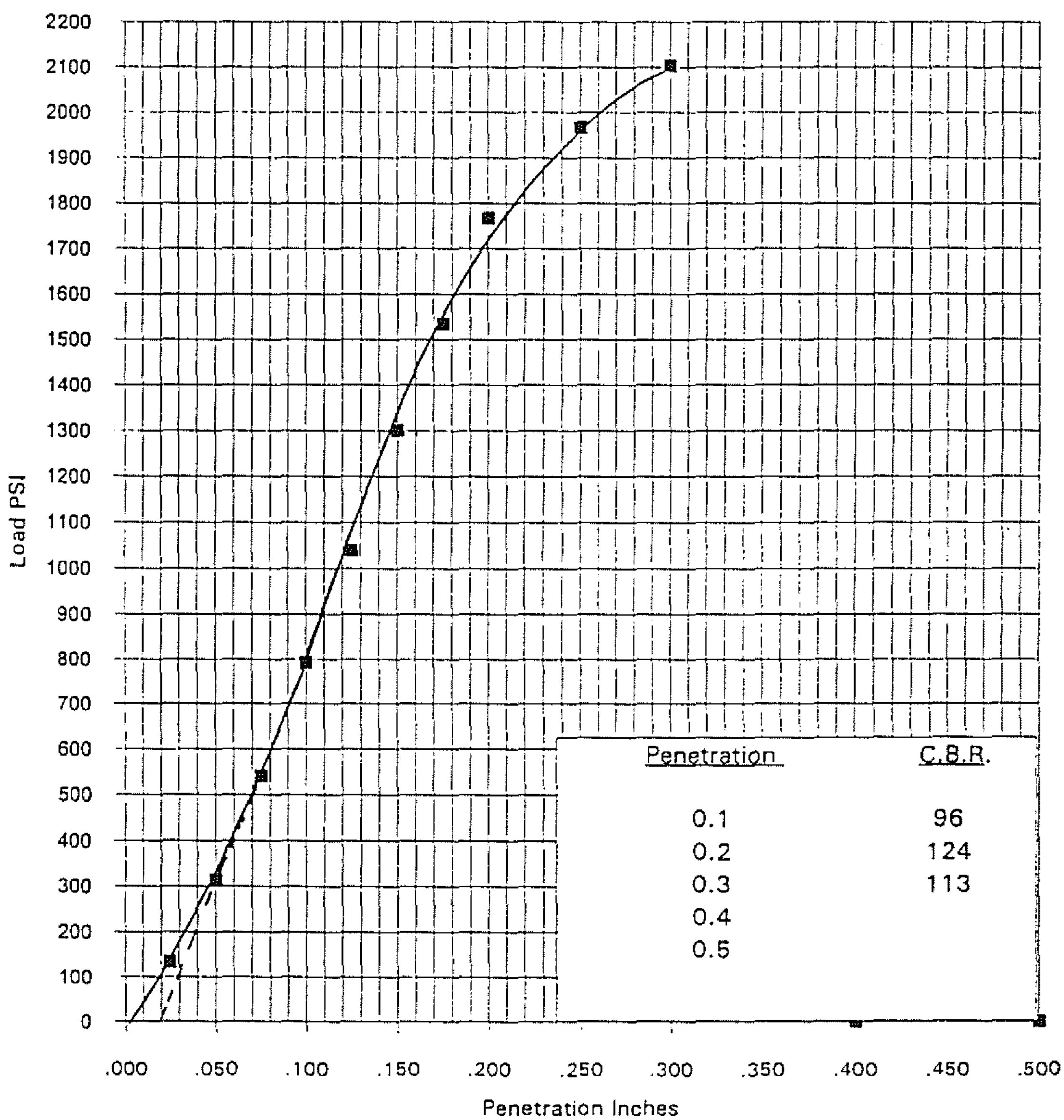
Reviewed By: Peter Thayer

*The Haller Testing Laboratories*
*of Massachusetts, Inc.*
11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/2/95

Sample Identification No. FD.MX.02.100295

## California Bearing Ratio



*The Haller Testing Laboratories*

*of Massachusetts, Inc.*

11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

# California Bearing Ratio Test
# Data Sheet

**Sample Identification No.** FD.MX.03.100395 **Sampling Date:** 3-Oct-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

## Sample Preparation Data

Molding Date: 4-Oct-95 Penetration Date: 6-Oct-95

Preparation Procedure: Modified CBR

Compacted at (Percent of Theoretical Density): 132.0 PCF 95.0%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12684 |
| B. Tare Weight of Mold & Base Plate (kg): | 8206 |
| C. Weight of Sample (kg): | 4478 |
| D. Volume of Sample (cf): | 0.075 |
| E. Unit Wet Weight (lbs/cf): | 131.5 |
| F. Percent Moisture @ Compaction: | 4.9% |
| G. Unit Dry Weight (lbs./cf.): | 125.4 |

## Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 40 | 133 |
| .050 | 100 | 327 |
| .075 | 168 | 547 |
| .100 | 236 | 763 |
| .125 | 306 | 987 |
| .150 | 354 | 1140 |
| .175 | 402 | 1293 |
| .200 | 447 | 1433 |
| .250 | 528 | 1690 |
| .300 | 606 | 1933 |
| .400 | 680 | 2167 |
| .500 | | |

## Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 880 | 1000 | 88 |
| 5.00mm(0.200in.): | 1540 | 1500 | 103 |
| 7.50mm(0.300in.): | 1980 | 1900 | 104 |
| 10.0mm(0.400in.): | 2200 | 2300 | 96 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert Sprague

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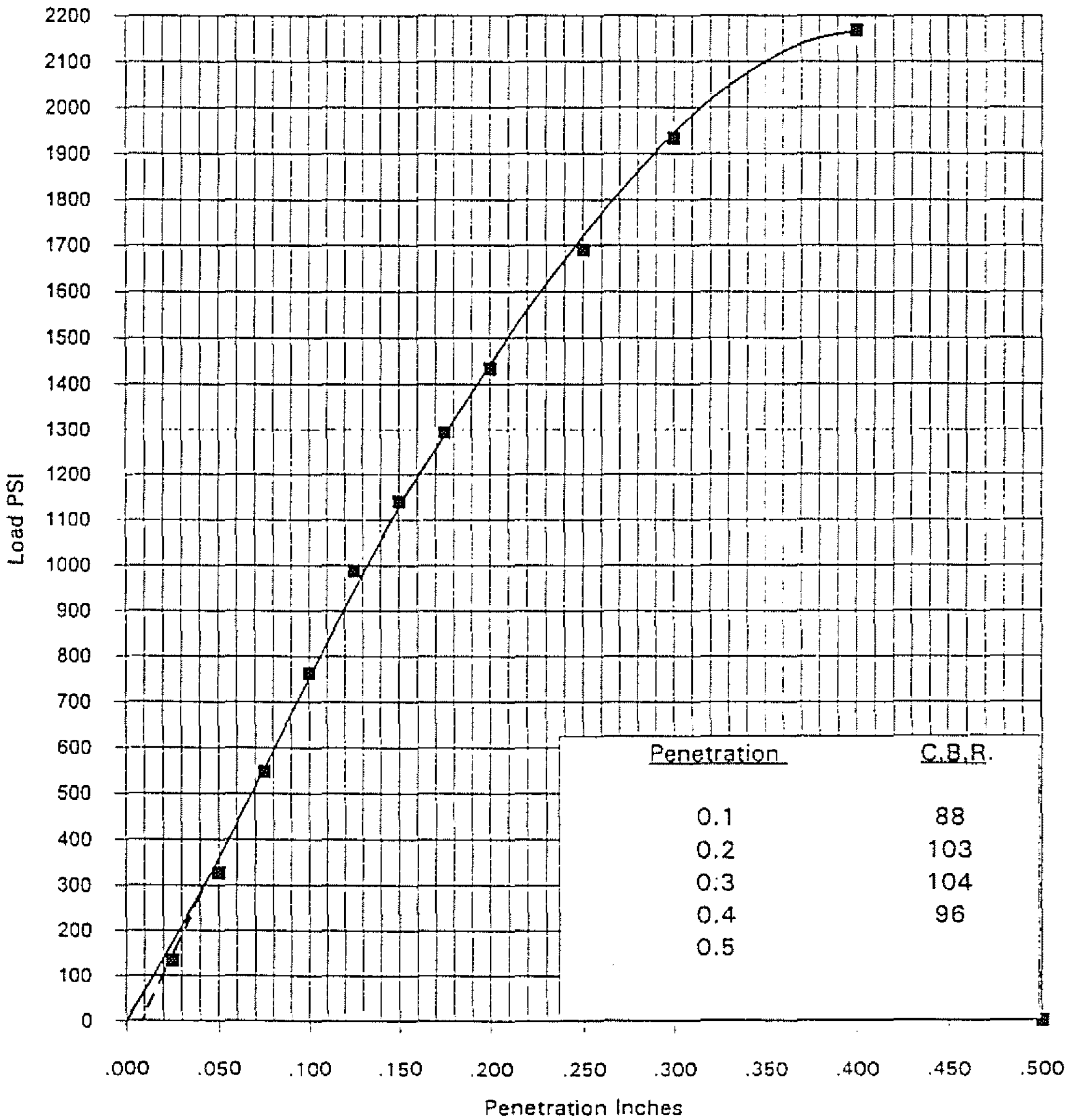
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/3/95

Sample Identification No. FD.MX.03.100395

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 88 |
| 0.2 | 103 |
| 0.3 | 104 |
| 0.4 | 96 |
| 0.5 | |

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# California Bearing Ratio Test
# Data Sheet

**Sample Identification No.** FD.MX.04.100595 **Sampling Date:** 5-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

## Sample Preparation Data

Molding Date: 9-Oct-95 Penetration Date: 11-Oct-95
Preparation Procedure: Modified CBR
Compacted at (Percent of Theoretical Density): 132.0 PCF 95.7%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12764 |
| B. Tare Weight of Mold & Base Plate (kg): | 8206 |
| C. Weight of Sample (kg): | 4558 |
| D. Volume of Sample (cf): | 0.075 |
| E. Unit Wet Weight (lbs/cf): | 133.9 |
| F. Percent Moisture @ Compaction: | 6.0% |
| G. Unit Dry Weight (lbs./cf.): | 126.3 |

## Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 31 | 103 |
| .050 | 57 | 186 |
| .075 | 95 | 310 |
| .100 | 141 | 460 |
| .125 | 184 | 597 |
| .150 | 240 | 777 |
| .175 | 291 | 940 |
| .200 | 343 | 1106 |
| .250 | 430 | 1381 |
| .300 | 525 | 1680 |
| .400 | 666 | 2122 |
| .500 | | |

## Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 520 | 1000 | 52 |
| 5.00mm(0.200in.): | 1140 | 1500 | 76 |
| 7.50mm(0.300in.): | 1775 | 1900 | 93 |
| 10.0mm(0.400in.): | 2120 | 2300 | 92 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert Sprague

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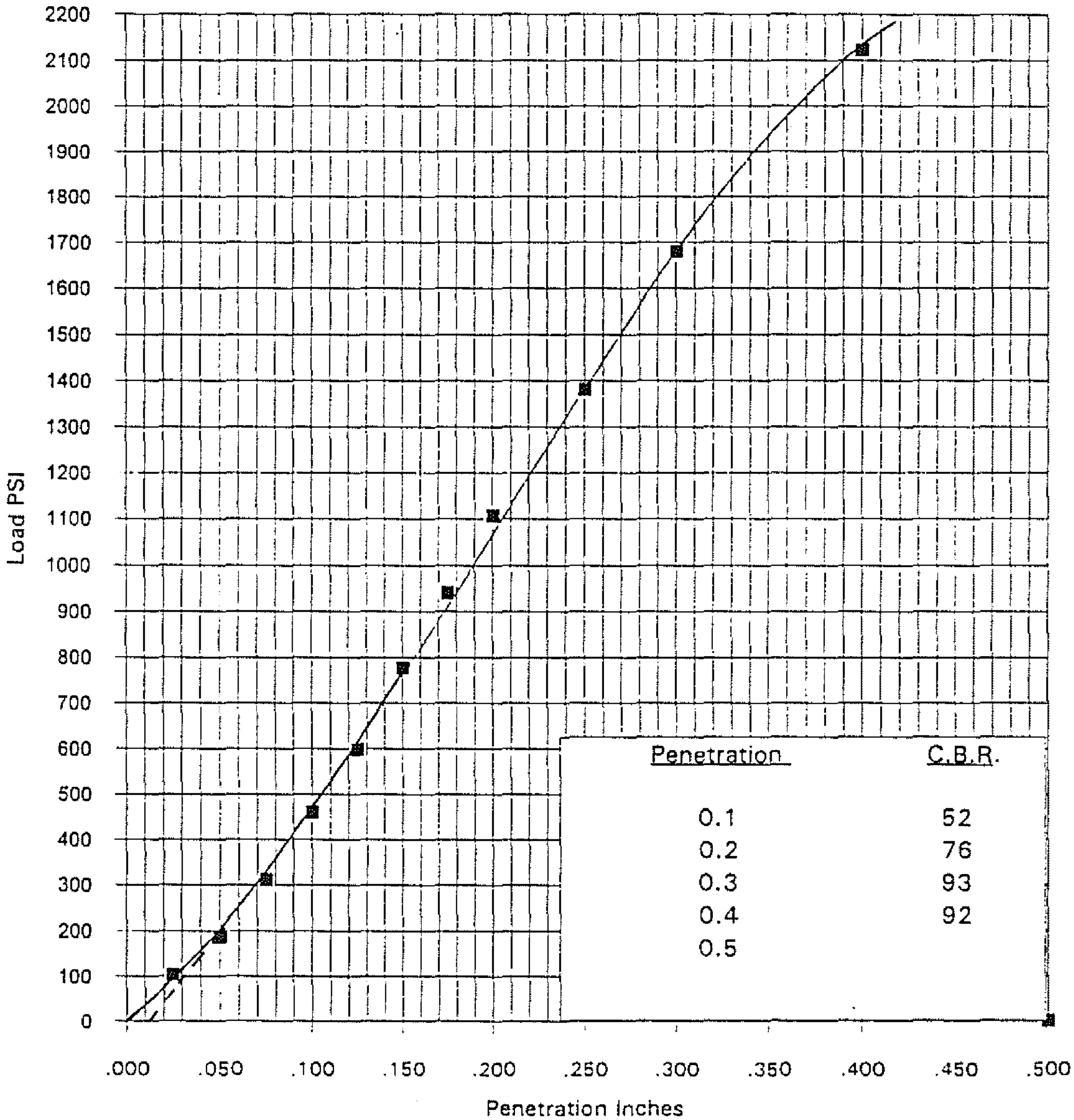
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/5/95

Sample Identification No. FD.MX.04.100595

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 52 |
| 0.2 | 76 |
| 0.3 | 93 |
| 0.4 | 92 |
| 0.5 | |

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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.05.101095 — **Sampling Date:** 10-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 13-Oct-95 — Penetration Date: 17-Oct-95
Preparation Procedure: Modified CBR
Compacted at (Percent of Theoretical Density): 131.5 PCF 98.8%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12262 |
| B. Tare Weight of Mold & Base Plate (kg): | 8206 |
| C. Weight of Sample (kg): | 4056 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 137.4 |
| F. Percent Moisture @ Compaction: | 5.8% |
| G. Unit Dry Weight (lbs./cf.): | 129.9 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 67 | 220 |
| .050 | 99 | 323 |
| .075 | 141 | 460 |
| .100 | 200 | 650 |
| .125 | 252 | 814 |
| .150 | 302 | 973 |
| .175 | 343 | 1106 |
| .200 | 390 | 1253 |
| .250 | 475 | 1523 |
| .300 | 551 | 1763 |
| .400 | 670 | 2133 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 780 | 1000 | 78 |
| 5.00mm(0.200in.): | 1350 | 1500 | 90 |
| 7.50mm(0.300in.): | 1900 | 1900 | 100 |
| 10.0mm(0.400in.): | 2280 | 2300 | 99 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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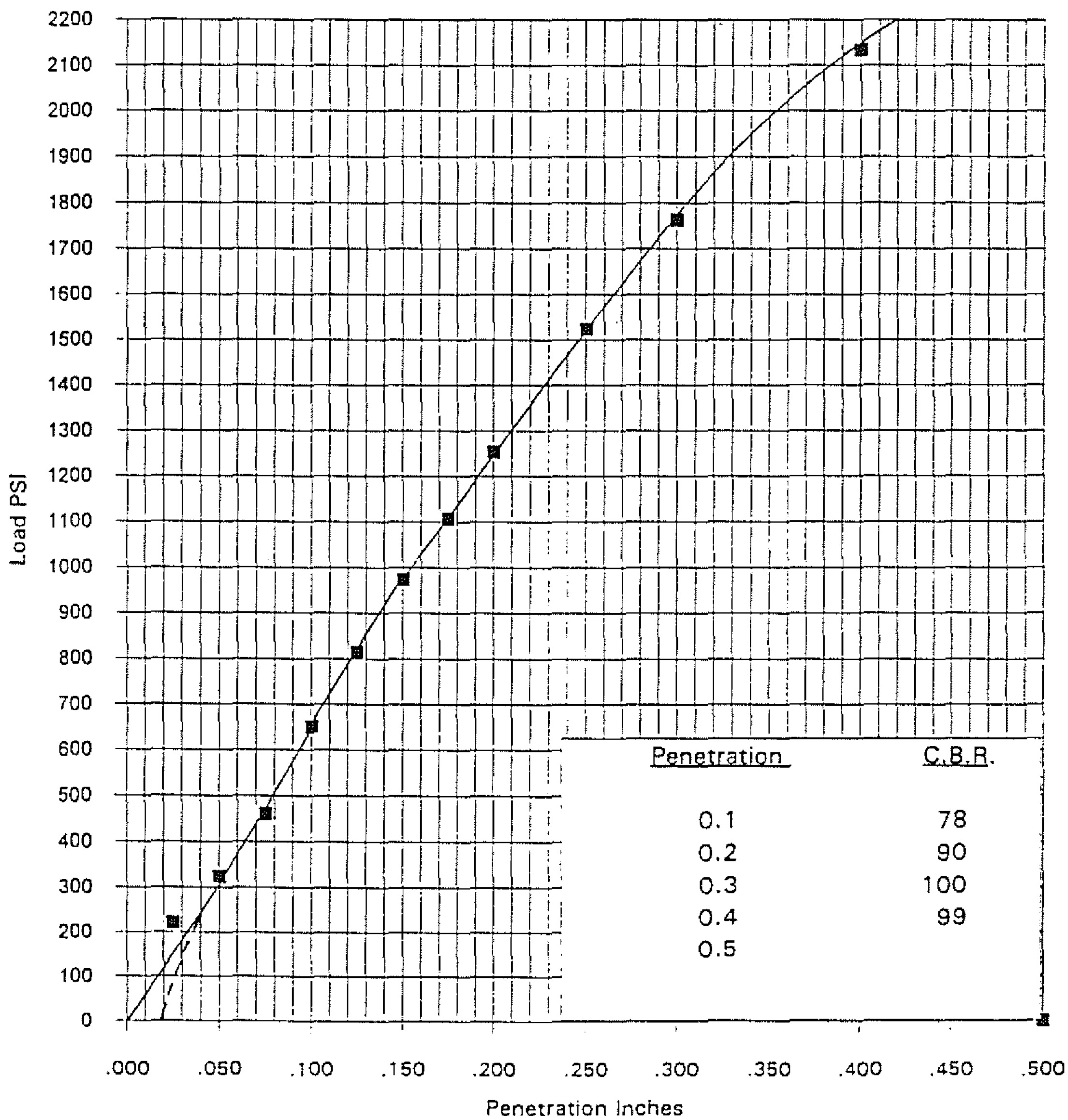
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/10/95

Sample Identification No. FD.MX.05.101095

## California Bearing Ratio



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# California Bearing Ratio Test
# Data Sheet

**Sample Identification No.** FD.MX.06.101195 **Sampling Date:** 11-Oct-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

## Sample Preparation Data

Molding Date: 16-Oct-95 Penetration Date: 18-Oct-95

Preparation Procedure: Modified CBR

Compacted at (Percent of Theoretical Density): 132.0 PCF 98.3%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12235 |
| B. Tare Weight of Mold & Base Plate (kg): | 8182 |
| C. Weight of Sample (kg): | 4053 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 137.3 |
| F. Percent Moisture @ Compaction: | 5.8% |
| G. Unit Dry Weight (lbs./cf.): | 129.8 |

## Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 37 | 123 |
| .050 | 80 | 263 |
| .075 | 130 | 423 |
| .100 | 184 | 597 |
| .125 | 228 | 739 |
| .150 | 265 | 857 |
| .175 | 304 | 980 |
| .200 | 336 | 1083 |
| .250 | 392 | 1260 |
| .300 | 456 | 1463 |
| .400 | 556 | 1778 |
| .500 | | |

## Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 620 | 1000 | 62 |
| 5.00mm(0.200in.): | 1110 | 1500 | 74 |
| 7.50mm(0.300in.): | 1500 | 1900 | 79 |
| 10.0mm(0.400in.): | 1800 | 2300 | 78 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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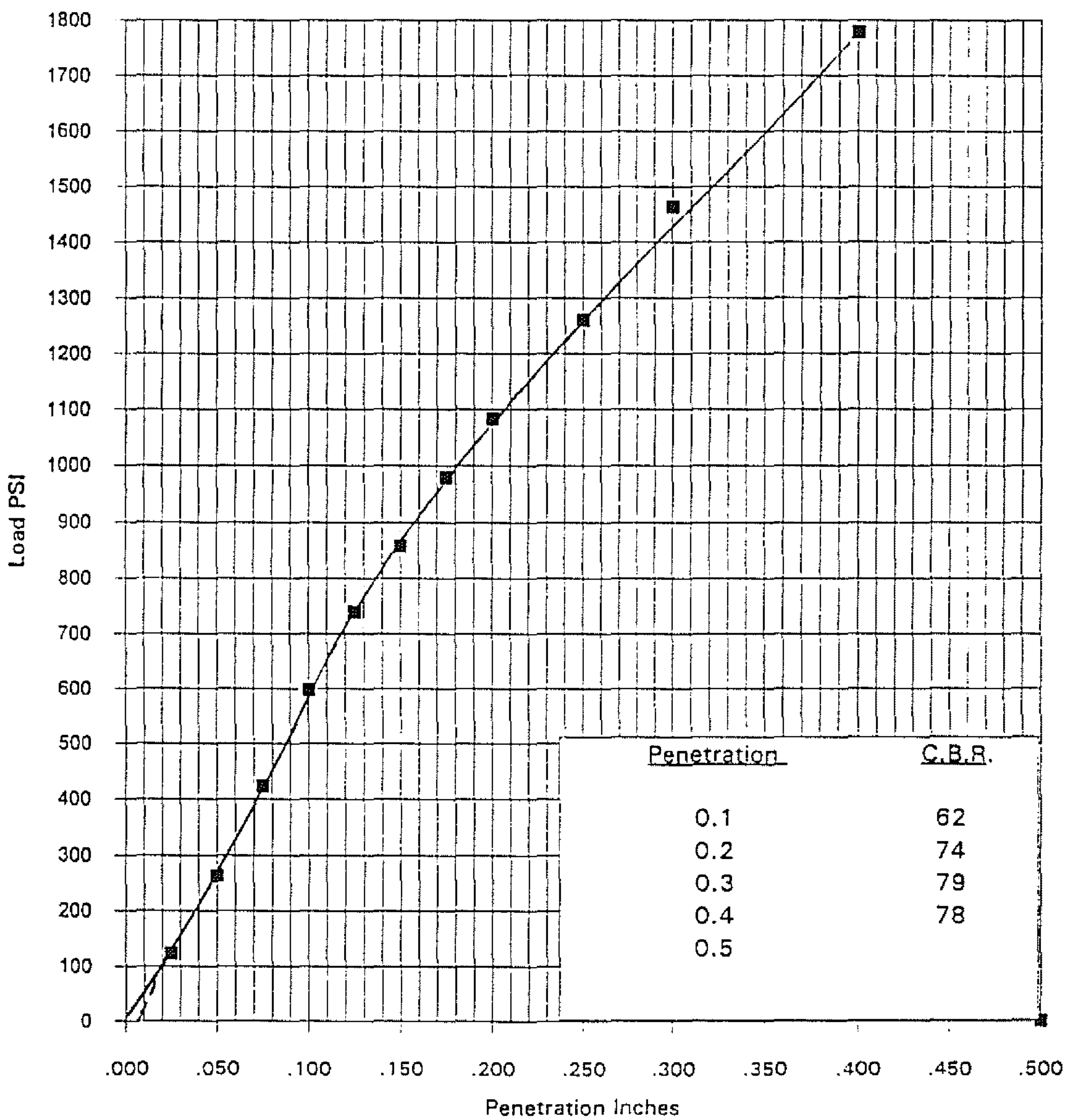
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/11/95

Sample Identification No. FD.MX.06.101195

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 62 |
| 0.2 | 74 |
| 0.3 | 79 |
| 0.4 | 78 |
| 0.5 | |

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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.07.101295 **Sampling Date:** 12-Oct-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 24-Oct-95 Penetration Date: 27-Oct-95

Preparation Procedure: Modified CBR

Compacted at (Percent of Theoretical Density): 132.0 PCF 100.0%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12307 |
| B. Tare Weight of Mold & Base Plate (kg): | 8178 |
| C. Weight of Sample (kg): | 4129 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 139.9 |
| F. Percent Moisture @ Compaction: | 6.0% |
| G. Unit Dry Weight (lbs./cf.): | 132.0 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 62 | 203 |
| .050 | 130 | 423 |
| .075 | 194 | 630 |
| .100 | 249 | 806 |
| .125 | 291 | 940 |
| .150 | 339 | 1093 |
| .175 | 382 | 1230 |
| .200 | 419 | 1347 |
| .250 | 485 | 1556 |
| .300 | 545 | 1743 |
| .400 | 656 | 2092 |
| .500 | 719 | 2287 |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 850 | 1000 | 85 |
| 5.00mm(0.200in.): | 1390 | 1500 | 93 |
| 7.50mm(0.300in.): | 1800 | 1900 | 95 |
| 10.0mm(0.400in.): | 2125 | 2300 | 92 |
| 12.5mm(0.500in.): | 2310 | 2600 | 89 |

Reviewed By: Robert L. Magee

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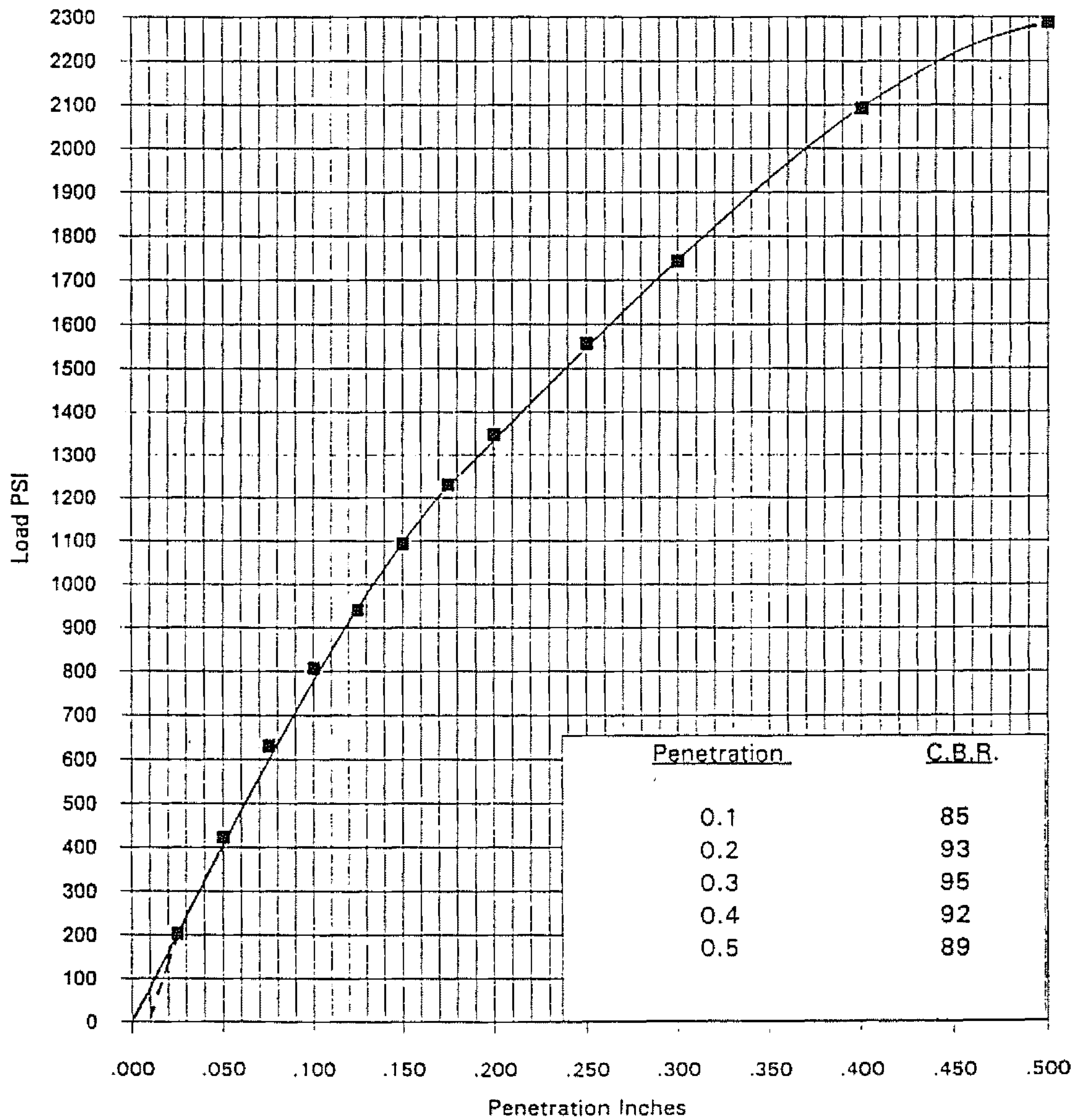
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/12/95

Sample Identification No. FD.MX.07.101295

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 85 |
| 0.2 | 93 |
| 0.3 | 95 |
| 0.4 | 92 |
| 0.5 | 89 |

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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.08.101395 **Sampling Date:** 13-Oct-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 24-Oct-95 Penetration Date: 27-Oct-95

Preparation Procedure: Modified CBR

Compacted at (Percent of Theoretical Density): 132.0 PCF 97.9%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12262 |
| B. Tare Weight of Mold & Base Plate (kg): | 8200 |
| C. Weight of Sample (kg): | 4062 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 137.6 |
| F. Percent Moisture @ Compaction: | 6.5% |
| G. Unit Dry Weight (lbs./cf.): | 129.2 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 58 | 189 |
| .050 | 111 | 363 |
| .075 | 170 | 553 |
| .100 | 234 | 757 |
| .125 | 288 | 930 |
| .150 | 335 | 1080 |
| .175 | 380 | 1223 |
| .200 | 418 | 1343 |
| .250 | 486 | 1558 |
| .300 | 551 | 1763 |
| .400 | 641 | 2044 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 870 | 1000 | 87 |
| 5.00mm(0.200in.): | 1400 | 1500 | 93 |
| 7.50mm(0.300in.): | 1810 | 1900 | 95 |
| 10.0mm(0.400in.): | 2050 | 2300 | 89 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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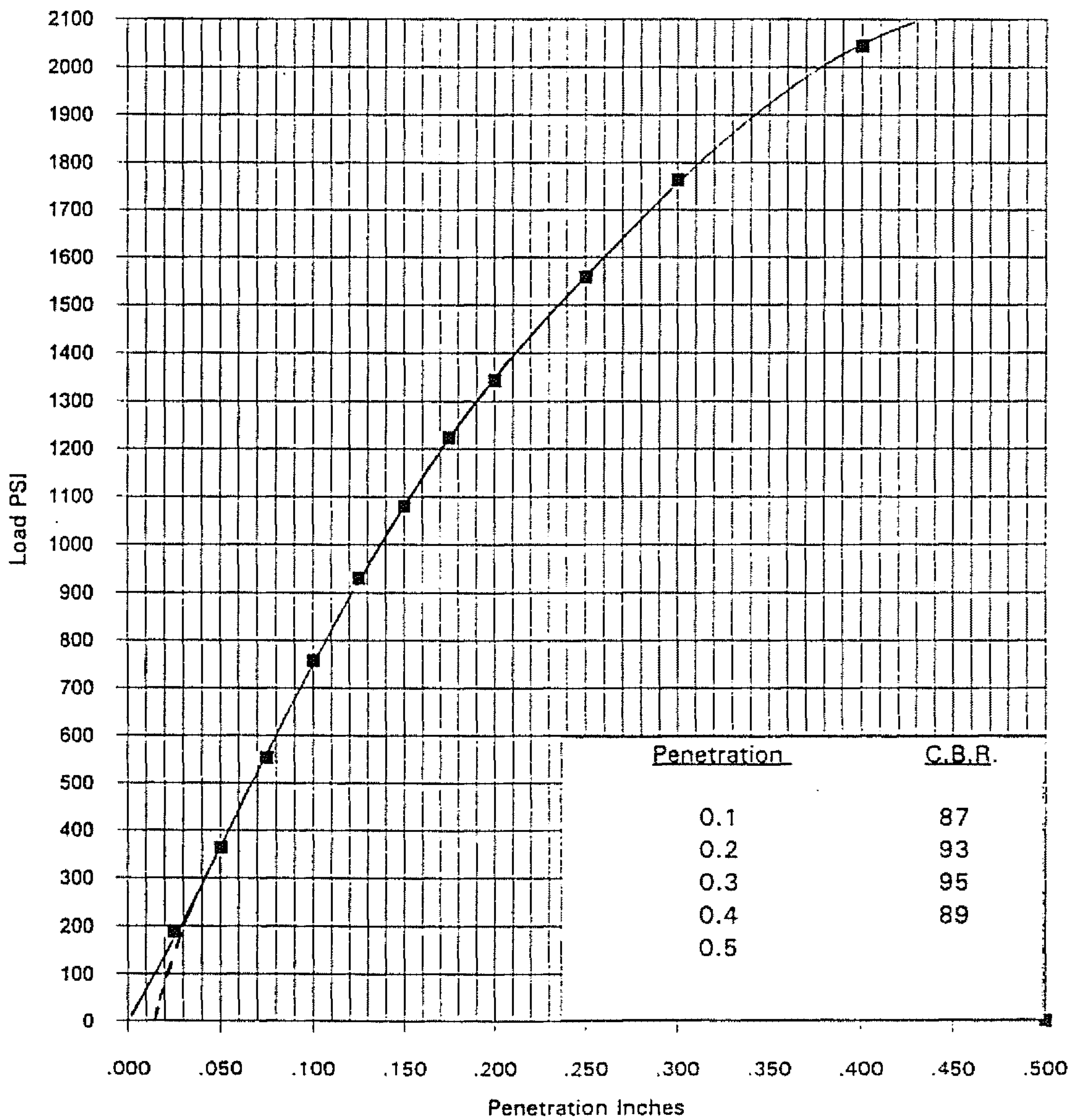
11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/13/95

Sample Identification No. FD.MX.08.101395

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 87 |
| 0.2 | 93 |
| 0.3 | 95 |
| 0.4 | 89 |
| 0.5 | |

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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.09.101695 **Sampling Date:** 16-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 30-Oct-95 Penetration Date: 1-Nov-95
Preparation Procedure: Modified CBR

| | | |
|---|---|---|
| Compacted at (Percent of Theoretical Density): | 132.0 PCF | 97.8% |
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | | 12243 |
| B. Tare Weight of Mold & Base Plate (kg): | | 8176 |
| C. Weight of Sample (kg): | | 4067 |
| D. Volume of Sample (cf): | | 0.065 |
| E. Unit Wet Weight (lbs/cf): | | 137.8 |
| F. Percent Moisture @ Compaction: | | 6.8% |
| G. Unit Dry Weight (lbs./cf.): | | 129.0 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 28 | 93 |
| .050 | 72 | 237 |
| .075 | 117 | 380 |
| .100 | 153 | 497 |
| .125 | 189 | 613 |
| .150 | 221 | 717 |
| .175 | 252 | 814 |
| .200 | 280 | 903 |
| .250 | 334 | 1077 |
| .300 | 384 | 1236 |
| .400 | 465 | 1492 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 585 | 1000 | 59 |
| 5.00mm(0.200in.): | 950 | 1500 | 63 |
| 7.50mm(0.300in.): | 1270 | 1900 | 67 |
| 10.0mm(0.400in.): | 1525 | 2300 | 66 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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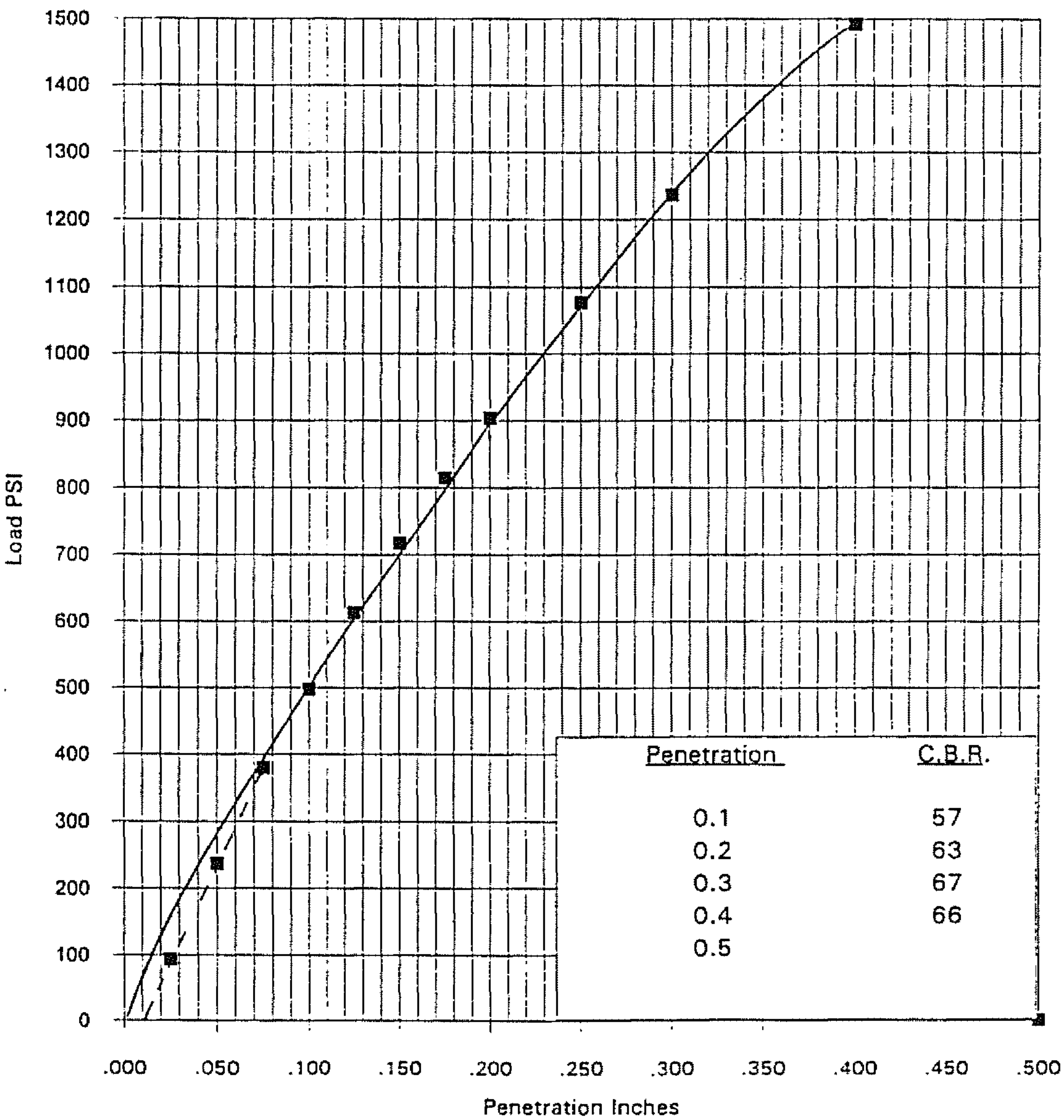
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/16/95

Sample Identification No. FD.MX.09.101695

## California Bearing Ratio



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# California Bearing Ratio Test
# Data Sheet

**Sample Identification No.** FD.MX.10.101795 **Sampling Date:** 17-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

## Sample Preparation Data

Molding Date: 30-Oct-95 Penetration Date: 1-Nov-95
Preparation Procedure: Modified CBR
Compacted at (Percent of Theoretical Density): 132.0 PCF 98.4%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12319 |
| B. Tare Weight of Mold & Base Plate (kg): | 8213 |
| C. Weight of Sample (kg): | 4106 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 139.1 |
| F. Percent Moisture @ Compaction: | 7.1% |
| G. Unit Dry Weight (lbs./cf.): | 129.9 |

## Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 65 | 213 |
| .050 | 122 | 397 |
| .075 | 165 | 537 |
| .100 | 208 | 673 |
| .125 | 244 | 790 |
| .150 | 275 | 889 |
| .175 | 304 | 980 |
| .200 | 328 | 1057 |
| .250 | 384 | 1236 |
| .300 | 427 | 1372 |
| .400 | 512 | 1640 |
| .500 | | |

## Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 700 | 1000 | 70 |
| 5.00mm(0.200in.): | 1100 | 1500 | 73 |
| 7.50mm(0.300in.): | 1390 | 1900 | 73 |
| 10.0mm(0.400in.): | 1660 | 2300 | 72 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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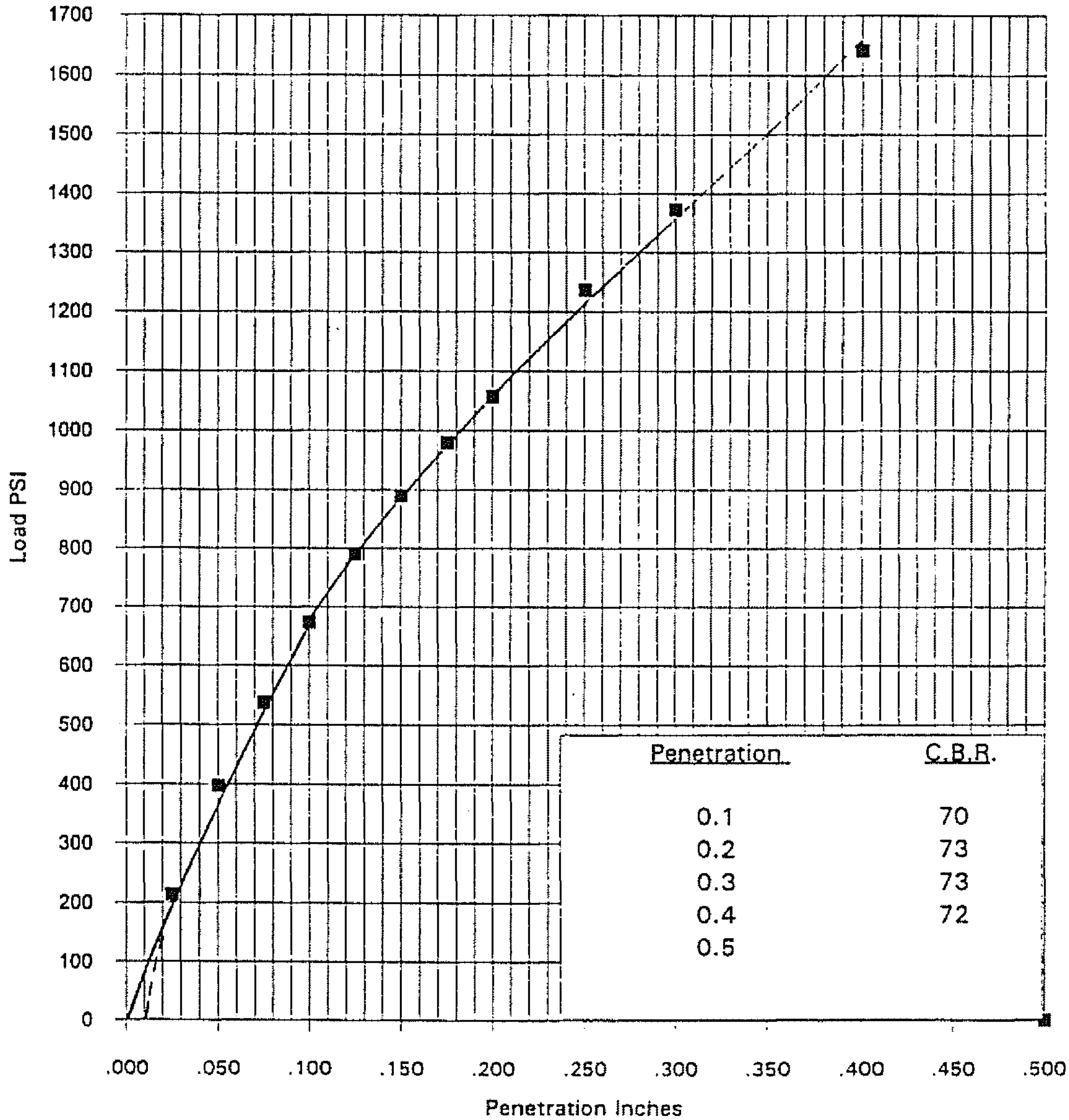
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/17/95

Sample Identification No. FD.MX.10.101795

## California Bearing Ratio



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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.11.102695 **Sampling Date:** 26-Oct-95
**Sampled By:** Materials Technology Center
**Project:** Fort Devens, Ayer, Massachusetts
**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 31-Oct-95 Penetration Date: 2-Nov-95
Preparation Procedure: Modified CBR
Compacted at (Percent of Theoretical Density): 132.0 PCF 99.3%

| | |
|---|---|
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | 12331 |
| B. Tare Weight of Mold & Base Plate (kg): | 8199 |
| C. Weight of Sample (kg): | 4132 |
| D. Volume of Sample (cf): | 0.065 |
| E. Unit Wet Weight (lbs/cf): | 140.0 |
| F. Percent Moisture @ Compaction: | 6.8% |
| G. Unit Dry Weight (lbs./cf.): | 131.1 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 68 | 223 |
| .050 | 118 | 383 |
| .075 | 164 | 533 |
| .100 | 207 | 670 |
| .125 | 251 | 811 |
| .150 | 277 | 894 |
| .175 | 309 | 997 |
| .200 | 331 | 1067 |
| .250 | 390 | 1253 |
| .300 | 431 | 1383 |
| .400 | 506 | 1620 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 780 | 1000 | 78 |
| 5.00mm(0.200in.): | 1150 | 1500 | 77 |
| 7.50mm(0.300in.): | 1425 | 1900 | 75 |
| 10.0mm(0.400in.): | 1660 | 2300 | 72 |
| 12.5mm(0.500in.): | | 2600 | |

Reviewed By: Robert L. Magee

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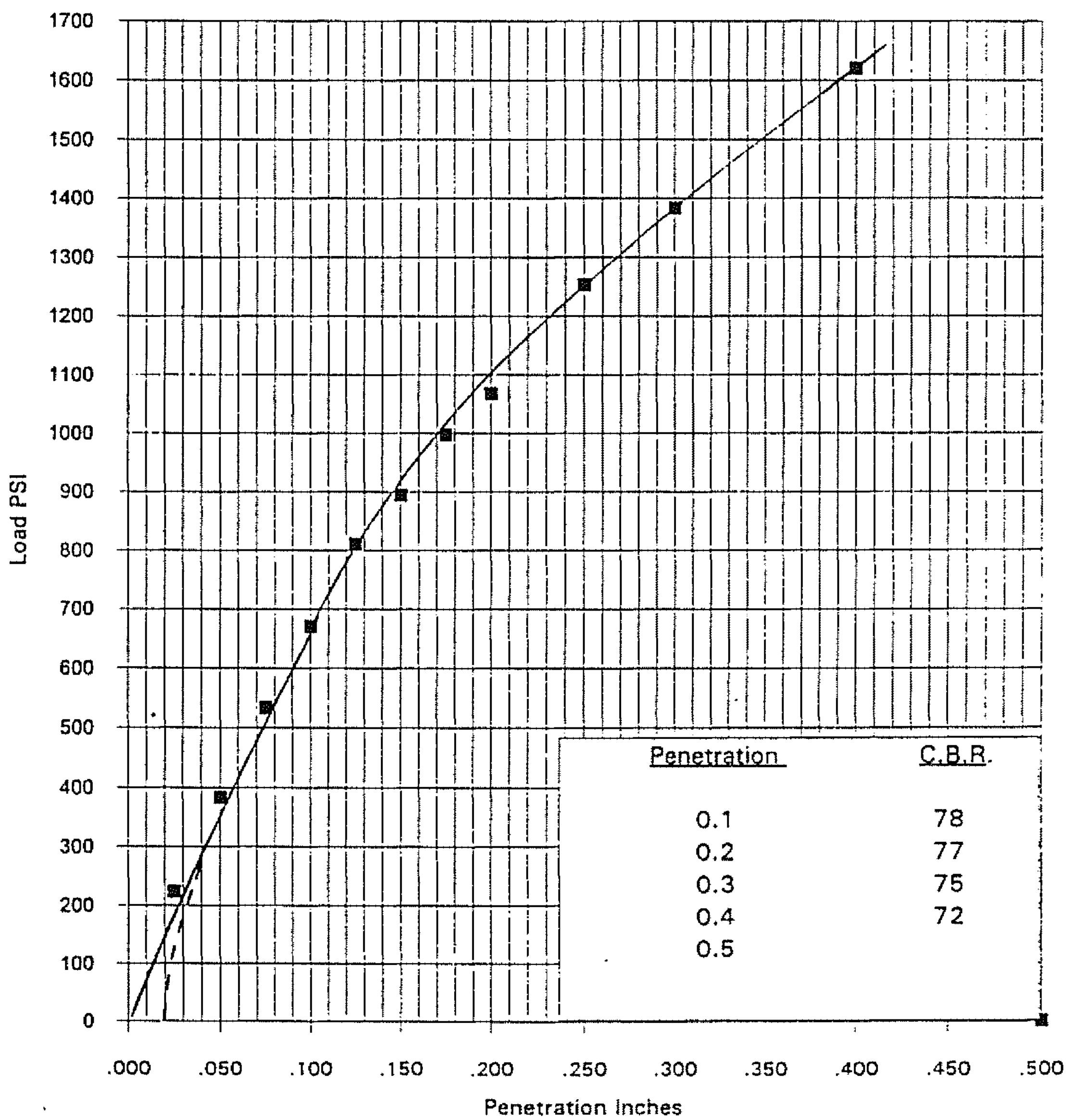
**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/26/95

Sample Identification No. FD.MX.11.102695

## California Bearing Ratio



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## California Bearing Ratio Test
## Data Sheet

**Sample Identification No.** FD.MX.12.103095 **Sampling Date:** 30-Oct-95

**Sampled By:** Materials Technology Center

**Project:** Fort Devens, Ayer, Massachusetts

**Sample Type:** Asphalt Stabilized Soil

### Sample Preparation Data

Molding Date: 31-Oct-95 Penetration Date: 3-Nov-95

Preparation Procedure: Modified CBR

| | | |
|---|---|---|
| Compacted at (Percent of Theoretical Density): | 132.0 PCF | 98.6% |
| A. Weight of Compacted Sample, Mold & Base Plate (kg): | | 12207 |
| B. Tare Weight of Mold & Base Plate (kg): | | 8182 |
| C. Weight of Sample (kg): | | 4025 |
| D. Volume of Sample (cf): | | 0.065 |
| E. Unit Wet Weight (lbs/cf): | | 136.4 |
| F. Percent Moisture @ Compaction: | | 4.8% |
| G. Unit Dry Weight (lbs./cf.): | | 130.1 |

### Penetration Data

| Penetration Inches | Dial Reading | Load (PSI) |
|---|---|---|
| .025 | 76 | 250 |
| .050 | 133 | 433 |
| .075 | 177 | 573 |
| .100 | 219 | 710 |
| .125 | 255 | 823 |
| .150 | 300 | 967 |
| .175 | 318 | 1027 |
| .200 | 346 | 1114 |
| .250 | 401 | 1290 |
| .300 | 431 | 1383 |
| .400 | 520 | 1664 |
| .500 | | |

### Corrected C.B.R.

| Penetration | Corrected Load(PSI) | Standard Load(PSI) | C.B.R. |
|---|---|---|---|
| 2.50mm(0.100in.): | 790 | 1000 | 79 |
| 5.00mm(0.200in.): | 1185 | 1500 | 79 |
| 7.50mm(0.300in.): | 1450 | 1900 | 76 |
| 10.0mm(0.400in.): | 1725 | 2300 | 75 |
| 12.5mm(0.500in.): | | 2600 | |

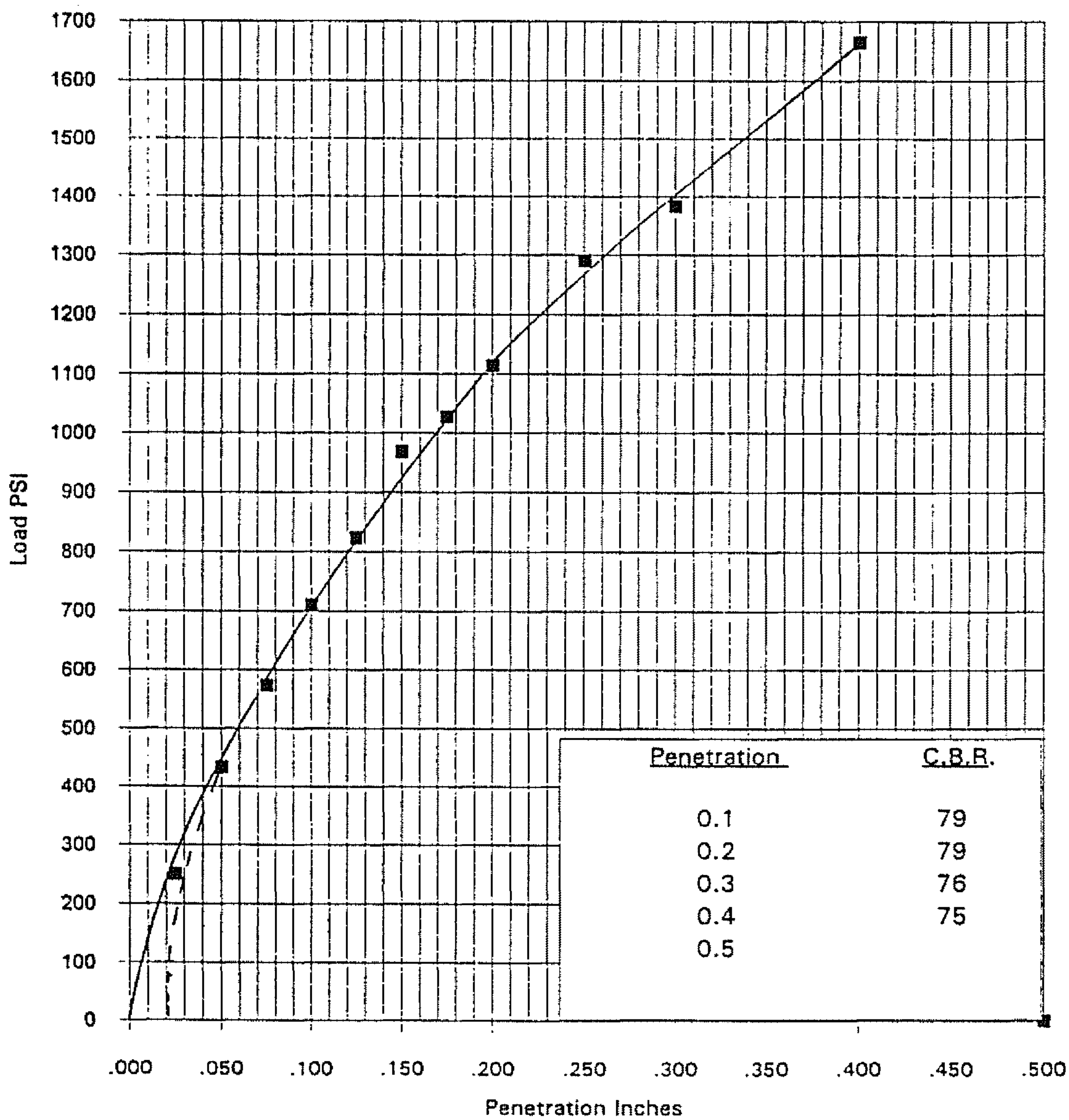
Reviewed By: Robert L. Magee

*The Haller Testing Laboratories*
*of Massachusetts, Inc.*
11A Walkup Drive, P.O. Box 1191, Westborough, Massachusetts 01581

**Project:** Fort Devens, Ayer, Massachusetts **Date:** 10/30/95

Sample Identification No. FD.MX.12.103095

## California Bearing Ratio




| Penetration | C.B.R. |
|---|---|
| 0.1 | 79 |
| 0.2 | 79 |
| 0.3 | 76 |
| 0.4 | 75 |
| 0.5 | |

Roy F. Weston, Inc.
Ft. Devens - Maintenance Yard Remediation
No. DACW33-95-D-0004

01/30/96

# PAVING QUANTITIES

| DATE | MATERIAL | PLACEMENT AREA (sy) | PLAN QTY (ton) | PLACED QTY (ton) | PERCENT COMPLETE |
|---|---|---|---|---|---|
| 11/9/95 | Binder Course | 2687 | 296 | 444 | 7% |
| 11/10/95 | Binder Course | 10652 | 1172 | 1108 | 37% |
| 11/11/95 | Binder Course | 5787 | 637 | 677 | 53% |
| 11/17/95 | Binder Course | 8404 | 924 | 933 | 76% |
| 11/20/95 | Binder Course | 7406 | 815 | 901 | 96% |
| 12/5/95 | Binder Course | 1381 | 152 | 192 | 100% |
| BINDER COURSE SUBTOTALS | | 36317 | 3995 | 4255 | 100% |

| DATE | MATERIAL | PLACEMENT AREA (sy) | PLAN QTY (ton) | PLACED QTY (ton) | PERCENT COMPLETE |
|---|---|---|---|---|---|
| 11/16/95 | Top Course | 9645 | 1061 | 966 | 27% |
| 11/21/95 | Top Course | 8078 | 889 | 889 | 49% |
| 11/22/95 | Top Course | 8841 | 973 | 1048 | 74% |
| 11/24/95 | Top Course | 7905 | 870 | 865 | 96% |
| 12/5/95 | Top Course | 1600 | 176 | 192 | 100% |
| TOP COURSE SUBTOTALS | | 36069 | 3968 | 3960 | 100% |

| | | | | |
|---|---|---|---|---|
| BINDER/TOP COURSE TOTALS | 72386 | 7963 | 8215 | 100% |

NOTE: Plan quantity is based on conversion factor of .056 ton/in/sy.

M

Roy F Weston
Ft. Devens - M[illegible]ance Yard Remediation
No. DACW 33-[illegible]-0004

11/30/95

# PAVEMENT TESTING QUALITY CONTROL TABLE

| DATE | BITUMINOUS COURSE | LOT NUMBER | SAMPLING TIME | TRUCK NUMBER | SAMPLING FREQUENCY (Tons) | GRADATION | PERCENT PAYMENT | ASPHALT CONTENT | PERCENT PAYMENT | CORE LOCATION | MAT DENSITY | JOINT DENSITY | LOT RESULTS MAT DENSITY | LOT RESULTS MAT % PAYMENT | LOT RESULTS JOINT DENSITY | LOT RESULTS JOINT % PAYMENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/9/95 | BINDER | 1A | 12:00 | 6 | 250 | | | 5.34% | 100% | M1/J1 B1/B2 - B2/B3 | 98.00 | 97.00 | | | | |
| 11/10/95 | BINDER | 1B | 9:05 | 15 | 500 | PASS | 100% | | | M2/J2 B3/C3 - B3/C3 | 94.70 | 97.60 | | | | |
| 11/10/95 | BINDER | 1C | 10:20 | 6 | 750 | | | 5.06% | 100% | M3/J3 D4/E4 - B4/C4 | 99.60 | 97.80 | | | | |
| 11/10/95 | BINDER | 1D | 12:15 | 11 | 1000 | PASS | 100% | | | M4/J4 B6/C6 - D6/E6 | 99.40 | 95.10 | 97.9 | 100.0 | 96.9 | 100.0 |
| 11/10/95 | BINDER | 2A | 14:00 | 19 | 1250 | | | 5.20% | 100% | M5/J5 D7/E7 - A8/B8 | 95.00 | 98.20 | | | | |
| 11/10/95 | BINDER | 2B | 14:50 | 6 | 1500 | PASS | 100% | | | M6/J6 C8/D8 - E8 | 98.30 | 97.80 | | | | |
| 11/11/95 | BINDER | 2C | 9:20 | 6 | 1750 | < SPEC | 98% | | | M7/J7 A9/B9 - D9/E9 | 97.70 | 94.70 | | | | |
| 11/11/95 | BINDER | 2D | 11:10 | 16 | 2000 | | | 5.19% | 100% | M8/J8 B1/C1 - D1/E1 | 99.20 | 98.60 | | | | |
| 11/11/95 | BINDER | 2E | 12:45 | 16 | 2250 | < SPEC | 90% | | | M16/J16 A10 - E9/E10 | 95.90 | 94.40 | 97.2 | 100.0 | 96.7 | 100.0 |
| 11/16/95 | TOP | 3A | 6:42 | 16 | 2500 | | | 5.89% | 100% | M9/J9 B3/B4 - B1/B2 | 100.00 | 93.20 | | | | |
| 11/16/95 | TOP | 3B | 9:58 | 6 | 2750 | | | 5.90% | 100% | M10/J10 B1/C1 - C1/D1 | 99.50 | 94.80 | | | | |
| 11/16/95 | TOP | 3C | 12:40 | 15 | 3000 | < SPEC | 98% | | | M11/J11 C3/D3 - D3/E3 | 97.90 | 91.40 | | | | |
| 11/16/95 | TOP | 3D | 15:10 | 6 | 3250 | < SPEC | 98% | | | M12/J12 E5/E6 - E4/E5 | 96.40 | 93.00 | 98.5 | 100.0 | 93.1 | 78.0 |
| 11/17/95 | BINDER | 4A | 8:20 | 11 | 3500 | < SPEC | 98% | | | M13/J13 G9/G10 - G8/H8 | 95.00 | 93.70 | | | | |
| 11/17/95 | BINDER | 4B | 10:34 | 15 | 3750 | | | 5.19% | 100% | M14/J14 G5/G6 - G6/G7 | 95.50 | 95.90 | | | | |
| 11/17/95 | BINDER | 4C | 12:35 | 6 | 4000 | | | 5.11% | 100% | M15/J15 E1/F1 - F1/G1 | 94.70 | 96.20 | 95.1 | 78.0 | 95.3 | 100.0 |
| 11/20/95 | BINDER | 5A | 9:15 | 11 | 4250 | | | 5.16% | 100% | M17/J17 F7/F8 - H1/H2 | 98.10 | 93.40 | | | | |
| 11/20/95 | BINDER | 5B | 11:15 | 19 | 4500 | PASS | | | | M18/J18 G3/H3 - H4 | 96.40 | 96.80 | | | | |
| 11/20/95 | BINDER | 5C | 13:05 | 6 | 4750 | | | 5.04% | 100% | M19/J19 F5 - F5/G6 | 95.20 | 96.20 | | | | |
| 11/20/95 | BINDER | 5D | 14:20 | 11 | 5000 | < SPEC | 98% | | | M20/J20 E5/E6 - E7/E8 | 96.70 | 95.50 | 96.6 | 99.6 | 95.5 | 100.0 |
| 11/21/95 | TOP | 6A | 8:15 | 19 | 5250 | PASS | | | | M20A/J20A B6/C6 - C6 | 99.00 | 87.20 | | | | |
| 11/21/95 | TOP | 6B | 11:15 | 19 | 5500 | < SPEC | 98% | | | M21/J21 C7/D7 - D7/E7 | 96.80 | 97.40 | | | | |
| 11/21/95 | TOP | 6C | 12:48 | 11 | 5750 | | | 5.60% | 90% | M22/J22 D8E8 - A8/B8 | 98.00 | 98.80 | | | | |
| 11/21/95 | TOP | 6D | 14:35 | 15 | 6000 | | | 5.90% | 100% | M23/J23 B10/C10 - C10 | 97.10 | 96.90 | 97.8 | 100.0 | 95.1 | 100.0 |
| 11/22/95 | TOP | 7A | 7:40 | 6 | 6250 | PASS | | | | M24/J24 H5/H6 - H6 | 101.80 | 100.40 | | | | |
| 11/22/95 | TOP | 7B | 9:31 | 6 | 6500 | | | 5.93% | 100% | M25/J25 G7/G8 - G6/G7 | 97.30 | 92.00 | | | | |
| 11/22/95 | TOP | 7C | 11:55 | 16 | 6750 | | | 5.63% | 90% | M26/J26 F8/F9 - F7/F8 | 93.50 | 95.00 | | | | |
| 11/22/95 | TOP | 7D | 13:45 | 19 | 7000 | < SPEC | 98% | | | M27/J27 F3/F4 - F2/F3 | 98.10 | 95.30 | 97.7 | 100.0 | 95.7 | 100.0 |
| 11/28/95 | TOP | 8A | 7:41 | 11 | 7250 | | | 5.58% | Reject | M28/J28 F10/G10 - G9/G10 | 96.90 | 87.00 | | | | |
| 11/28/95 | TOP | 8B | 9:16 | 6 | 7500 | PASS | | | | M29/J29 H4/H5 - H4 | 97.80 | 98.70 | | | | |
| 11/28/95 | TOP | 8C | 11:01 | 5 | 7750 | PASS | | | | M30/J30 H2/J3 H1/I1 | 96.80 | 85.70 | | | | |
| 11/28/95 | TOP | 8D | 12:58 | 5 | 8000 | | | 5.87% | 100% | M31/J31 E9/E10 - E7/E8 | 96.20 | 90.90 | 96.9 | 100.0 | 90.6 | REJECT |

Note One lot represents 1,000 ton of mix or 4 sublots of 250 ton
Mat acceptance for 100% payment is equal to 96.9% density or greater
Joint acceptance for 100% payment is equal to 94.9% density or greater
Asphalt content acceptance for 100% payment for binder course is 5.1
Asphalt content acceptance for 100% payment for top course is 6.0
< SPEC - Gradation parameters deviated from design mix range per Table D (spec section 02551)
PASS - Gradation parameters meet or exceed design mix range per Table D (spec section 02551)

N

# STORM DRAINAGE-ASBUILT DATA SUMMARY

| LOCUS | DESCRIPTION | ELEVATION DESIGN | FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|---|
| Detention Pond | 24" RCP-I.E. | 230 | 229.93 | -0.07 | at outfall |
| | T/cone headwall | 234.1 | 234.09 | -0.01 | at outfall |
| | 4" hole-C.L. | 236 | 235.98 | -0.02 | at anit-vortex structure |
| | T/riser | 242 | 241.88 | -0.12 | at anti-vortex structure |
| | 36" flare-I.E. | 232.5 * | 232.56 | 0.06 | drainage outlet |
| | | | | | |
| DMH #6 | I.E. 36" in | 233.6 * | 233.79 | 0.19 | |
| | out | 233.6 * | 233.70 | 0.1 | |
| | rim | 245.6 | 244.34 | -1.26 | |
| | | | | | |
| DMH #5 | I.E. 36" in | 234.5 * | 234.52 | 0.02 | |
| | out | 234.5 * | 234.42 | -0.08 | |
| | rim | 246.6 | 246.52 | -0.08 | |
| | | | | | |
| DMH #4 | I.E. 36" in | 235.5 * | 235.47 | -0.03 | |
| | out | 235.5 * | 235.36 | -0.14 | |
| | rim | 244.3 | 244.04 | -0.26 | |
| | | | | | |
| DMH #3 | I.E. 36" in | 236.5 * | 236.32 | -0.18 | |
| | out | 236.5 * | 236.36 | -0.14 | |
| | rim | 245.8 | 245.64 | -0.16 | |
| | | | | | |
| DMH #2 | I.E. 36" in | 236.9 * | 236.68 | -0.22 | |
| | out | 236.9 * | 236.71 | -0.19 | |
| | 2'x4' box | 236.9 * | 236.82 | -0.08 | |
| | rim | 246.3 | 246.41 | 0.11 | |
| | | | | | |
| CB #4 | I.E. 27" in | 237.5 * | 237.45 | -0.05 | from CB #3 |
| | 27" in | 237.5 * | 237.12 | -0.38 | from DMH #1 |
| | 2'x4' box | 236.9 * | 236.85 | -0.05 | |
| | 36" out | 236.9 * | 236.75 | -0.15 | |
| | rim | 246 | 245.94 | -0.06 | |
| | | | | | |
| CB #3 | I.E. 24" in | 240 | 238.98 | -1.02 | |
| | 27" out | 238.65 * | 238.68 | 0.03 | |
| | rim | 248.6 | 248.55 | -0.05 | |
| | | | | | |
| CB #2 | I.E. 18" in | 241.4 | 241.20 | -0.20 | |
| | 24" out | 240.9 | 240.78 | -0.12 | |
| | rim | 249.2 | 249.16 | -0.04 | |
| | | | | | |
| CB #1 | I.E. 18" out | 242.3 | 242.14 | -0.16 | |
| | rim | 250.5 | 250.55 | 0.05 | |
| | | | | | |
| CB #8 | I.E. 18" out | 243 | 243.19 | 0.19 | |

* denotes revised grade

# STORM DRAINAGE-ASBUILT DATA SUMMARY

| LOCUS | DESCRIPTION | ELEVATION DESIGN | ELEVATION FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|---|
| | rim | 250.4 | 250.39 | -0.01 | |
| | | | | | |
| CB #7 | I.E. 18" in | 241.75 | 241.77 | 0.02 | |
| | 24" out | 241.25 | 241.20 | -0.05 | |
| | rim | 249.7 | 249.70 | 0.00 | |
| | | | | | |
| CB #6 | I.E. 24" in | 240.25 | 240.40 | 0.15 | |
| | 24" out | 239.2 * | 239.22 | 0.02 | |
| | rim | 248.8 | 248.77 | -0.03 | |
| | | | | | |
| DMH #1 | I.E. 24" in | 238.5 * | 238.44 | -0.06 | |
| | 18" in | 239.9 | 239.88 | -0.02 | |
| | 27" out | 238.1 * | 238.14 | 0.04 | |
| | rim | 247 | 247.65 | 0.65 | design elev. incorrect |
| | | | | | |
| CB #5 | I.E. 18" out | 240.5 | 240.53 | 0.03 | |
| | rim | 246.7 | 246.72 | 0.02 | |
| | | | | | |

c:\ftdv\stdrain.xls

* denotes revised grade

Roy F. Weston, Inc.
Ft. Devens - Maintenance Yard Remediation
No. DACW33-95-D-0004

12/21/95

# BARNUM ROAD MAINTENANCE YARD GRADE SUMMARY

| GRID LOCUS | ELEVATION DESIGN | ELEVATION FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|
| A6 | 251.7 | 251.82 | 0.12 | vic. corner of fence |
| A6/7 | 251.8 | 251.71 | -0.09 | vic. fence |
| A7/8 | 251.9 | 251.78 | -0.12 | |
| A8/9 | 252 | 252.01 | 0.01 | |
| A9/10 | 252.1 | 252.06 | -0.04 | |
| A10 | 252.2 | 252.17 | -0.03 | vic. corner of fence |
| A/B1 | 251.6 | 251.59 | -0.01 | vic. corner of fence |
| A/B 1/2 | 251.6 | 251.51 | -0.09 | vic. fence |
| A/B 2/3 | 251.6 | 251.59 | -0.01 | |
| A/B 3/4 | 251.7 | 251.62 | -0.08 | |
| A/B 4/5 | 251.7 | 251.56 | -0.14 | |
| A/B 5/6 | 251.7 | 251.56 | -0.14 | |
| A/B 6 | 251.7 | 251.47 | -0.23 | vic. corner of fence |
| A/B 6/7 | 251.3 | 251.24 | -0.06 | grid |
| A/B 7/8 | 251.1 | 251.08 | -0.02 | |
| A/B 8/9 | 251.2 | 251.16 | -0.04 | |
| A/B 9/10 | 251.5 | 251.49 | -0.01 | |
| A/B 10 | 252 | 252.04 | 0.04 | vic. fence at mid grid |
| B1 | 251.4 | 251.35 | -0.05 | middle of grid |
| B 1/2 | 251.1 | 251.07 | -0.03 | |
| B 2/3 | 251 | 250.97 | -0.03 | |
| B 3/4 | 251 | 250.98 | -0.02 | |
| B 4/5 | 251.2 | 251.11 | -0.09 | |
| B 5/6 | 251.4 | 251.27 | -0.13 | |
| B 6/7 | 251.1 | 250.97 | -0.13 | |
| B 7/8 | 250.6 | 250.58 | -0.02 | |
| B 8/9 | 250.7 | 250.72 | 0.02 | |
| B 9/10 | 251.3 | 251.27 | -0.03 | |
| B 10 | 251.8 | 251.82 | 0.02 | vic. fence |
| B/C 1 | 251.2 | 251.07 | -0.13 | vic. fence |
| B/C 1/2 | 250.9 | 250.85 | -0.05 | grid |
| B/C 2/3 | 250.6 | 250.55 | -0.05 | |
| B/C 3/4 | 250.6 | 250.63 | 0.03 | |
| B/C 4/5 | 250.9 | 250.74 | -0.16 | |
| B/C 5/6 | 251.1 | 251.02 | -0.08 | |
| B/C 6/7 | 250.7 | 250.67 | -0.03 | |
| B/C 7/8 | 250.6 | 250.54 | -0.06 | |
| B/C 8/9 | 250.7 | 250.71 | 0.01 | |
| B/C 9/10 | 251.1 | 251.08 | -0.02 | |
| B/C 10 | 251.6 | 250.83 | N/A | vic. fence at ramp |
| C1 | 250.9 | 250.87 | -0.03 | vic. fence at mid grid |
| C 1/2 | 250.7 | 250.69 | -0.01 | middle of grid |
| C 2/3 | 250.7 | 250.59 | -0.11 | |

* denotes revised grade

# BARNUM ROAD MAINTENANCE YARD GRADE SUMMARY

| GRID LOCUS | ELEVATION DESIGN | FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|
| C 3/4 | 250.7 | 250.65 | -0.05 | |
| C 4/5 | 250.7 | 250.52 | -0.18 | |
| C 5/6 | 250.8 | 250.71 | -0.09 | |
| C 6/7 | 250.7 | 250.65 | -0.05 | |
| C 7/8 | 250.9 | 250.78 | -0.12 | |
| C 8/9 | 251 | 250.93 | -0.07 | |
| C 9/10 | 251.1 | 251.06 | -0.04 | |
| C 10 | 251.4 | 251.40 | 0 | |
| C/D 1 | 250.7 | 250.57 | -0.13 | vic. fence |
| C/D 1/2 | 250.3 | 250.22 | -0.08 | grid |
| C/D 2/3 | 250.3 | 250.16 | -0.14 | |
| C/D 3/4 | 250.2 | 250.10 | -0.1 | |
| C/D 4/5 | 250.2 | 250.06 | -0.14 | |
| C/D 5/6 | 250.5 | 250.35 | -0.15 | |
| C/D 6/7 | 250.4 | 250.33 | -0.07 | |
| C/D 7/8 | 250.5 | 250.36 | -0.14 | |
| C/D 8/9 | 250.6 | 250.47 | -0.13 | |
| C/D 9/10 | 250.7 | 250.68 | -0.02 | |
| C/D 10 | 251.2 | 251.15 | -0.05 | vic. fence |
| D1 | 250.4 | 250.42 | 0.02 | vic. fence at mid grid |
| D 1/2 | 249.9 | 249.82 | -0.08 | middle of grid |
| D 2/3 | 249.4 | 249.40 | 0 | |
| D 3/4 | 249.5 | 249.39 | -0.11 | |
| D 4/5 | 249.9 | 249.69 | -0.21 | |
| D 5/6 | 250.2 | 250.06 | -0.14 | |
| D 6/7 | 250 | 249.88 | -0.12 | |
| D 7/8 | 249.8 | 249.78 | -0.02 | |
| D 8/9 | 250 | 250.00 | 0 | |
| D 9/10 | 250.5 | 250.41 | -0.09 | |
| D 10 | 250.9 | 250.96 | 0.06 | vic. fence |
| D/E 1 | 250.2 | 250.15 | -0.05 | vic. fence |
| D/E 1/2 | 249.7 | 249.64 | -0.06 | grid |
| D/E 2/3 | 249.5 | 249.40 | -0.1 | |
| D/E 3/4 | 249.5 | 249.37 | -0.13 | |
| D/E 4/5 | 249.6 | 249.51 | -0.09 | |
| D/E 5/6 | 249.9 | 249.87 | -0.03 | |
| D/E 6/7 | 249.7 | 249.81 | 0.11 | |
| D/E 7/8 | 249.9 | 249.80 | -0.1 | |
| D/E 8/9 | 250.1 | 250.04 | -0.06 | |
| D/E 9/10 | 250.4 | 250.31 | -0.09 | |
| D/E 10 | 250.7 | 250.71 | 0.01 | vic. fence |
| E 1 | 250 | 250.10 | 0.1 | vic. fence at mid grid |
| E 1/2 | 249.9 | 249.75 | -0.15 | middle of grid |

* denotes revised grade

# BARNUM ROAD MAINTENANCE YARD GRADE SUMMARY

| GRID LOCUS | ELEVATION DESIGN | ELEVATION FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|
| E 2/3 | 249.8 | 249.62 | -0.18 | |
| E 3/4 | 249.7 | 249.54 | -0.16 | |
| E 4/5 | 249.6 | 249.51 | -0.09 | |
| E 5/6 | 249.6 | 249.56 | -0.04 | |
| E 6/7 | 249.8 | 249.67 | -0.13 | |
| E 7/8 | 250 | 249.92 | -0.08 | |
| E 8/9 | 250.2 | 250.09 | -0.11 | |
| E 9/10 | 250.3 | 250.19 | -0.11 | |
| E 10 | 250.5 | 250.39 | -0.11 | vic. fence |
| E 7 | 249.6 | 249.68 | 0.08 | vic. corner of decon pad |
| E 7/8 | 249.6 | 249.72 | 0.12 | vic. decon pad |
| E 8/9 | 249.9 | 249.79 | -0.11 | |
| E 9/10 | 250.1 | 249.94 | -0.16 | |
| E 10 | 250.3 | 250.06 | -0.24 | vic. corner of decon pad |
| E/F 1 | 249.7 | 249.77 | 0.07 | vic. fence |
| E/F 1/2 | 249.3 | 249.26 | -0.04 | grid |
| E/F 2/3 | 249 | 248.92 | -0.08 | |
| E/F 3/4 | 249 | 248.92 | -0.08 | |
| E/F 4/5 | 249.1 | 249.08 | -0.02 | |
| E/F 5/6 | 249.4 | 249.33 | -0.07 | |
| E/F 6/7 | 249.2 | 249.19 | -0.01 | |
| E/F 7 | 249.6 | 249.45 | -0.15 | vic. decon pad |
| F 1 | 249.5 | 249.62 | 0.12 | vic. fence at mid grid |
| F 1/2 | 249.1 | 249.09 | -0.01 | middle of grid |
| F 2/3 | 248.7 | 248.69 | -0.01 | |
| F 3/4 | 248.7 | 248.70 | 0 | |
| F 4/5 | 249 * | 248.97 | 0.07 | |
| F 5/6 | 249.3 * | 249.22 | 0.12 | |
| F 6/7 | 249 | 249.06 | 0.06 | |
| F 7 | 249.7 | 249.62 | -0.08 | vic. decon pad and mid grid |
| F 7 | 249.7 | 249.62 | -0.08 | vic. corner of decon pad |
| F 7/8 | 249.7 | 249.52 | -0.18 | vic. decon pad |
| F 8/9 | 249.6 | 249.57 | -0.03 | |
| F 9/10 | 249.4 | 249.38 | -0.02 | |
| F 10 | 249.3 | 249.42 | 0.12 | vic. corner of decon pad |
| F/G 1 | 249.3 | 249.36 | 0.06 | vic. fence |
| F/G 1/2 | 249.2 * | 249.12 | 0.12 | grid |
| F/G 2/3 | 249.2 * | 249.05 | -0.15 | |
| F/G 3/4 | 249.2 * | 249.03 | -0.17 | |
| F/G 4/5 | 249.2 * | 249.05 | -0.15 | |
| F/G 5/6 | 249.2 * | 249.05 | -0.15 | |
| F/G 6/7 | 249.1 | 249.01 | -0.09 | |
| F/G 7/8 | 249.1 | 249.03 | -0.07 | |

* denotes revised grade

# BARNUM ROAD MAINTENANCE YARD GRADE SUMMARY

| GRID LOCUS | ELEVATION DESIGN | FINAL | DEVIATION | COMMENTS |
|---|---|---|---|---|
| F/G 8/9 | 249 | 248.97 | -0.03 | |
| F/G 9/10 | 248.9 | 249.01 | 0.11 | |
| F/G 10 | 249.1 | 249.11 | 0.01 | vic. fence |
| G 1 | 248.7 | 248.81 | 0.11 | vic. decon pad and mid grid |
| G 1/2 | 248.3 | 248.26 | -0.04 | middle of grid |
| G 2/3 | 248.2 | 248.14 | -0.06 | |
| G 3/4 | 248.1 | 248.04 | -0.06 | |
| G 4/5 | 248.1 | 248.08 | -0.02 | |
| G 5/6 | 248.3 | 248.19 | -0.11 | |
| G 6/7 | 247.9 | 247.83 | -0.07 | |
| G 7/8 | 248 | 247.92 | -0.08 | |
| G 8/9 | 247.8 | 247.88 | 0.08 | |
| G 9/10 | 248.2 | 248.32 | 0.12 | |
| G 10 | 248.3 | 248.39 | 0.09 | vic. fence |
| G/H 1 | 248.1 | 248.29 | 0.19 | vic. fence |
| G/H 1/2 | 247.5 | 247.50 | 0 | grid |
| G/H 2/3 | 247.1 | 247.04 | -0.06 | |
| G/H 3/4 | 247 | 247.05 | 0.05 | |
| G/H 4/5 | 247.2 | 247.21 | 0.01 | |
| G/H 5/6 | 247.5 | 247.45 | -0.05 | |
| G/H 6/7 | 247.2 | 247.17 | -0.03 | |
| G/H 7/8 | 246.8 | 246.90 | 0.1 | |
| G/H 8/9 | 247.2 | 247.27 | 0.07 | |
| G/H 9 | 247.5 | 247.28 | -0.22 | vic. fence |
| H 1 | 247.4 | 247.65 * | 0.25 | vic. fence at mid fence |
| H 1/2 | 246.8 | 246.81 | 0.01 | middle of grid |
| H 2/3 | 246.3 | 246.18 | -0.12 | |
| H 3/4 | 246.14 | 246.26 * | 0.12 | |
| H 4/5 | 246.45 | 246.73 * | 0.28 | |
| H 5/6 | 246.8 | unknown | N/A | vic. fence |
| H/I 1 | 246.8 | 247.09 * | 0.29 | vic. fence |
| I 1 | 246.8 * | 246.99 | 0.19 | vic. corner of fence |
| I 1/2 | 246.6 * | 246.70 | 0.10 | |
| H 2/3 | 246.6 | 246.8 * | 0.2 | vic. fence |
| H 3/4 | 246.6 | 246.94 * | 0.34 | vic. fence |
| H 4/5 | 246.7 | 246.84 * | 0.14 | vic. fence |

* denotes revised grade

P

Test Performed By: Webster Engineering Co., Inc.
Witnessed By: WESTON

# DRAINAGE TEST RECORD

| Test I.D. No. | From M.H. No. | To M.H. No. | Total Length (ft.) | Pipe Dia. (in.) | Time Start | Time Stop | Elapsed Time | Allowed Loss (gal) | Actual Loss (gal) | Date | Test Result | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CB #1 | CB #4 | 576 | 18,24,27 | 8:30 | 10:30 | 2 hours | 53.6 | 42 | 22-Nov | Pass | |
| 2 | CB #6 | CB #8 | 407 | 18,24 | 11:15 | 1:15 | 2 hours | 34 | 320 | 24-Nov | Fail | See tests #3&5 |
| 3 | CB #7 | CB #8 | 213 | 18 | 2:15 | 4:15 | 2 hours | 15.4 | 14.8 | 27-Nov | Pass | Re-test of #2 |
| 4 | CB #7 | DMH #1 | 359 | 24 | 12:30 | 2:30 | 2 hours | 35 | 47 | 6-Dec | Fail | See tests #5&8 |
| 5 | CB #6 | CB #7 | 194 | 24 | 8:30 | 10:30 | 2 hours | 18.6 | 11.6 | 7-Dec | Pass | Re-test of #2&4 |
| 6 | CB #5 | DMH #1 | 132 | 18 | 12:30 | 2:30 | 2 hours | 9.6 | 35.3 | 7-Dec | Fail | See test #7 |
| 7 | CB #5 | DMH #1 | 132 | 18 | 10:30 | 12:30 | 2 hours | 9.6 | 5.6 | 8-Dec | Pass | Re-test of #6 |
| 8 | CB #6 | DMH #1 | 165 | 24 | 2:30 | 4:30 | 2 hours | 15.8 | 7.8 | 8-Dec | Pass | Re-test of #4 |
| 9 | DMH#1 | CB #4 | 122 | 27 | 10:30 | 12:30 | 2 hours | 13.2 | 12.5 | 12-Dec | Pass | |
| 10 | CB #4 | DMH #3 | 20 | 36 | 7:00 | 9:00 | 2 hours | 35.8 | 35.7 | 14-Dec | Pass | |
| 11 | DMH #3 | Flared End | 877 | 36 | 1:00 | 3:00 | 2 hours | 120 | 67.6 | 16-Dec | Fail | Re-test required |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Note:
-Exfiltration test from CB #6 to CB #8 failed due to leakage in bag.
-The 24" line from CB #7 to DMH #1 was reparged following initial test
- An equivalent volume of water displaced by the 2 manholes, 2 box culverts and oil/water seperator between CB #4 and DMH #3 was added to the calculated volume for the 20 ft. section of 36" diameter (2.8 gallons) for a total volume of 35.8 gallons.
-The test from DMH #3 to the flared end section was not witnessed or verified by WESTON QC personnel, a retest will need to be performed.

c:\drntest.xls

508 772-1251 Curt

,TER ENGINEERING CO., INC.
Report

Date: 12/16/95

Day: Saturday

Job Name: Fort Devens

Job No.: 95-12

| (Circle) Weather | | | | | Temperature | |
|---|---|---|---|---|---|---|
| Sunny | Clear | Overcast | Rain | Snow | 0–32 | 33–50 |
| | | | | | 51–70 | 71–90 |
| | | | | | 90+ | |

| | YES | NO |
|---|---|---|
| Were you satisfied with today's total production? | ✓ | • |
| Is all safety equipment available and in use? | ✓ | • |
| Were any injuries reported today? Accident report attached? | • | ✓ |
| Were any materials delivered today? Packing slips attached? | • | ✓ |
| Were there any delays to your work: | | |
| (a) caused by Owner or General Contractor? | • | ✓ |
| (b) caused by field conditions? | • | ✓ |
| Are any material or equipment shortage—related problems anticipated with scheduled work? | • | ✓ |
| Are there any excess materials remaining on site? | • | ✓ |
| Is there any excess labor assigned to project? | • | ✓ |
| Are all subcontractors performing satisfactorily? On schedule? | ✓ | • |
| Any suggestions for production improvements? | • | |
| Did Owner or General Contractor direct any changes in your scope of work? Layout of work? | • | |
| Were changes authorized in writing? Signed slip(s) attached? | | • |
| **If block checked with *, explain on second page.** | | |
| Daily workforce tally: | Number: | 1 |

**What work was accomplished today?**

① Fill line to approximately 2' above top of pipe @ DMH#3.
Run test from 11:00 A.M. to 1:00 P.M. Actual loss 67.6 gals.
allowable loss 110 gals. Pipe passed test.
Test length from DMH#3 to Pond.

Pipe testing not witnessed by WESTON QC or Site Manager
Retest requested. Pipe test passing not approved. CJQ

**Deliveries:**

**Subs on project today:**

**Comments:**

Christopher Q Vee
12-19-95

Q

# OPERATION AND MAINTENANCE OF THE DRAINAGE SYSTEM

**Suggested Maintenance Frequency**:

1) Clean all drain manhole sumps and all catch basin sumps at least twice per year, preferable after spring rains and after the tree leaves have fallen in the autumn.

   A) Check inlet side of hood inside box conduit for branches, leaves, and debris which might catch between the opening.

2) Twice annually at six month intervals, inspect all catch basin frame and covers and all drain manhole frames and covers for cracks, replace as necessary.

3) Twice annually at six month intervals, inspect all brick and mortar joints, repair as necessary.

4) Twice annually at six month intervals, or immediately after severe heavy rainfall or significant snow melt, check the detention pond area as follows:

   A) Condition of the Rip Rap in the brook and the overflow area of the pond;
   B) Condition of the discharge piping and the head wall;
   C) Condition of the embankments;
   D) Condition of the concrete flare end of the collection system piping;
   E) Condition of the Detention pond security fencing.
   F) Maintain Detention pond slopes, area should be mowed at least twice a year to prevent shrubs and small trees from taking root.

**Suggested operations and maintenance of the Oil/Water Separator:**

1) Check after each storm in the inlet section of Oil/Water Separator tank for the presence of sheen on top of the water. If this condition exists, contact a hazardous waste removal contractor to pump the contamination out of the separator.

2) Twice annually at six month intervals, check the outlet portion of the separator for contamination and remove as required. Check the flapper gates for proper operation.

3) Twice annually at six month intervals, inspect the manhole frames and covers for cracks and replace as necessary.

4) Twice annually at six month intervals, inspect the risers, brick work, and mortar joints for condition and repair as necessary.

# RECORD OF TRANSMITTAL

CENED-ED-GL 30 November 1995

FOR Project Engineer, Mr. Mark Applebee
U.S. Army Corps of Engineer,
New England Division
424 Trapelo Rd.
Waltham, MA 02254-9149

SUBJECT: Fort Devens Barnum Rd Maint. Yards, Chemical Quality Assurance Report (CQAR)

1. References:

a. Project No. E0456

b. Contractor Data Report, Received October 25, 1995.

c. Memorandum, CEMRD-ED-GC, 16 Aug 1989, Subject: Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTW Projects.

2. Three QA samples were analyzed, resulting in a total of 17 target analyte determinations. Results from analysis of QA samples were compared with results from analysis of the corresponding primary samples (ref 1b). Results of the comparison are as follows:

a. The contractor's laboratory was Weston Lionville Laboratory, Lionville, PA.

b. Results from the primary and QA samples agreed overall in 15 (88%) of the comparisons.

c. Results from the primary and QA samples agreed quantitatively in 7 out of 9 (78%) of the comparisons.

d. There were 0 (0%) major discrepancies between results from the primary and QA laboratory samples.

e. There were 2 (12%) minor discrepancies between results from the primary and QA laboratory samples.

3. QA analyses were performed at E3I, Somerville, MA.

4. The CENED-ED-GL POC is Gary S. Rogowski, 508-928-4238.

Encl

CF (w/encl):
CEMP-RT Larry Becker
CEMRD-ED-EC Anand Mudambi

## QA Findings

(Ft. Devens Barnum Rd. Maint. Yards)

1. QA sample shipping and chain-of-custody deficiencies.

Two shipments of QA samples were received on September 1 and September 14, 1995. Proper sample handling protocols were followed. The chain-of-custody documents and cooler receipt forms are appended to this report for reference. All shipment information was faxed to Mr. Mark Applebee or Mr. C. Choday within 24 hours of receipt.

2. Data comparison for TPH.

There were three determinations. In 3 determinations TPH was detected by the QA lab or contractor's lab. There was an overall and quantitative agreement of 1 (33%). There were 2 (66%) minor discrepancies between the QA and contractor's laboratory. No major discrepancies were noted.

3. Data comparison for cPAH's.

There were 14 determinations. In 7 of these determinations cPAH's were detected by the QA lab or contractor's laboratory. There was 100% agreement. There were no major or minor discrepancies.

4. Comments.

Contractor's data package was not in full compliance with Minimum Chemistry Data Reporting Requirements as sample receiving information and analysis dates were not provided.

Quality Assurance Split Sample
Data Comparison Summary

Project: Ft. Devens Barnum Rd. Maint. Yards

| Test Parameter | Overall Agreement (1) | | Quantitative Agreement (2) | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| cPAH's | 14/14 | 100 | 7/7 | 100 |
| TPH | 1/3 | 33 | 0/2 | 0 |
| Total | 15/17 | 88 | 7/9 | 78 |

NOTES:

(1) Represents the number and percentage agreement of all determinations including analytes not detected by either laboratory.

(2) Represents the number and percentage agreement of only those determinations where an analyte was detected by at least one laboratory.

U.S. ARMY CORPS OF ENGINEERS - ENVIRONMENTAL LABORATORY

SAMPLE LISTING

November 28, 1995

| LAB | PROJECT | FIELD DESCRIPTION | SAMPLE DATE | MATRIX |
|---|---|---|---|---|
| -32550 | FT. DEVENS REM. OF BARNUM RD MAINT. YARDS | G8-4TRP | 08/31/95 | SAND |
| -32697 | FT. DEVENS REM. OF BARNUM RD MAINT. YARDS | SBWESTWIATRP | 09/12/95 | SOIL |
| -32698 | FT. DEVENS REM. OF BARNUM RD MAINT. YARDS | B4-4TRP | 09/13/95 | SOIL |

**APPENDIX A**

Analytical Methods

| Test Parameter | QA lab | Primary Lab |
|---|---|---|
| cPAH's | 8270 | NR |
| TPH | 418.1 | 418.1 |

## APPENDIX B
## KEY TO COMMENTS ON DATA COMPARISON TABLES

0 - Data agrees if any one of the following apply:

- both values are less than respective detection limit (N<MDL)
- $N_1$<$MDL_1$ and $N_2$>$MDL_2$ but <$MDL_1$
- both values are above respective detection limit (N>MDL) and difference between two values satisfies conditions below

| | |
|---|---|
| Metals | <2x difference for waters, TCLP extracts<br><3x difference for airs<br><10x difference for solids and oils |
| Semivolatiles<br>Volatiles<br>TPH, BTEX | <5x difference for all matrices |
| Pesticides<br>Herbicides<br>PCB's | <5x difference for liquids<br><10x difference for solids |
| Alkalinity<br>Hardness, Ammonia<br>(water quality, etc.) | <2x difference for all matrices |

1 - Minor contamination by laboratory contaminant
2 - Not tested by both laboratories
3 - Minor data discrepancy, disagreement not serious, if any one of the following apply:

- $N_1$<$MDL_1$ and $N_2$>$MDL_2$ and the difference between values $N_2$ and $MDL_1$ does not exceed the upper limit (described below) defining a minor data discrepancy
- both values are above respective detection limit (N>MDL) and conditions described below apply to the difference between the two values

| | |
|---|---|
| Metals | 2x<difference<5x for waters,TCLP extracts<br>10x<difference<20x for solids, oils<br>3x<difference<5x for airs |
| Semivolatiles,<br>VOA, TPH, BTEX | 5x<difference<10x for all matrices |
| Pesticide/PCB<br>Herbicides | 5x<difference<10x for liquids<br>10x<difference<20x for solids |
| Alkalinity<br>Hardness,Ammonia<br>(water quality, etc.) | 2x<difference<5x for all matrices |

4 - Major data discrepancy, disagreement serious, if any one of the following apply:

- $N_1$<$MDL_1$ and $N_2$>$MDL_2$ and the difference between values $N_2$ and $MDL_1$ exceeds the limit (described below) defining a major data discrepancy
- both values are above respective detection limit (N>MDL) and conditions described below apply to the difference between the two values

| | |
|---|---|
| Metals | >5x difference for waters, TCLP extracts, airs<br>>20x difference for solids, oils |
| Semivolatiles, VOA, TPH, BTEX | >10x difference for all matrices |
| Pesticide/PCB Herbicides | >10x difference for liquids<br>>20x difference for solids |
| Alkalinity Hardness, Ammonia (water quality, etc.) | >5x difference for all matrices |

MDL = Method Detection Limit
N = Analytical result

Key to data qualifiers:

B - detected in method blank
J - estimated value, above MDL but below practical quantitation limit
NR - Not reported

COMPARISON OF QA AND CONTRACTOR RESULTS

PROJECT: Ft. Devens Barnum Rd. Maint. Area

ANALYSIS PERFORMED: TPH
UNITS: mg/Kg

| SAMPLE DATE | SAMPLE MATRIX | CONTRACTOR SAMPLE NO. | CONTRACTOR FIELD ID | QA LAB NO. | QA FIELD ID | CONTRACTOR RESULTS | QA LAB RESULTS | C |
|---|---|---|---|---|---|---|---|---|
| 8/13/95 | Sand | -002 | G8-4DUP | 32550 | G8-4TRP | 32.5 | <27 | 3 |
| 9/12/95 | Soil | -001 | SBWESTW1A | 32697 | SBWESTWIATRP | 4.0 | <31 | 0 |
| 9/13/95 | Soil | -001 | B4-4 DUP | 32698 | B4-4TRP | 57.3 | <28 | 3 |

COMPARISON OF QA & CONTRACTOR RESULTS

PROJECT: CONTAMINATED SOIL - FORT DEVENS

QA SAMPLE NO.: 32550
QA FIELD ID: G8-4TRP
QA ANALYSIS DATE: 9/13/95

CONTRACTOR'S SAMPLE NO.: 002
CONTRACTOR'S FIELD ID: G8-4DUP
CONTRACTOR'S ANALYSIS DATE: NR

MATERIAL DESCRIPTION: SAND
DATE SAMPLED: 8/31/95
UNITS: ug/Kg

| PARAMETER | QA LAB MDL | RESULTS QA LAB | CONTRACTOR MDL | RESULTS CONTRACTOR | COMPARISON CODE |
|---|---|---|---|---|---|
| Benzo(a)anthracene | | 470 | | J 260 | 0 |
| Chrysene | | 450 | | 350 | 0 |
| Benzo(b)fluoranthene | | 450 | | J 220 | 0 |
| Benzo(k)fluoranthene | | J 280 | | J 320 | 0 |
| Benzo(a)pyrene | | 390 | | J 220 | 0 |
| Indeno(1,2,3-cd)pyrene | | J 230 | | J 100 | 0 |
| Dibenzo(a,h)anthracene | | J 120 | | <350 | 0 |

SURROGATE RECOVERIES (%)

| | QA | CONTRACTOR |
|---|---|---|
| 2-Fluorophenol (21-110) | 68 | NR |
| Phenol-d6 (10-110) | 69 | NR |
| Nitrobenzene-d5 (35-114) | 62 | 67 |
| 2-Fluorobiphenyl (43-116 | 55 | 85 |
| 2,4,6-Tribromophenol (10-123) | 63 | NR |
| Terphenyl-d14 (33-141) | 58 | 98 |

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

COMPARISON OF QA & CONTRACTOR RESULTS
PROJECT: CONTAMINATED SOIL - FORT DEVENS

QA SAMPLE NO.: 32698
QA FIELD ID: B4-4TRP
QA ANALYSIS DATE: 10/3/95

CONTRACTOR'S SAMPLE NO.: NR
CONTRACTOR'S FIELD ID: B4-4
CONTRACTOR'S ANALYSIS DATE: NR

MATERIAL DESCRIPTION: SOIL
DATE SAMPLED: 9/13/95
UNITS: ug/Kg

| PARAMETER | QA LAB MDL | RESULTS QA LAB | CONTRACTOR MDL | RESULTS CONTRACTOR | COMPARISON CODE |
|---|---|---|---|---|---|
| Benzo(a)anthracene | <370 | | <500 | | 0 |
| Chrysene | <370 | | <500 | | 0 |
| Benzo(b)fluoranthene | <370 | | <500 | | 0 |
| Benzo(k)fluoranthene | <370 | | <500 | | 0 |
| Benzo(a)pyrene | <370 | | <500 | | 0 |
| Indeno(1,2,3-cd)pyrene | <370 | | <500 | | 0 |
| Dibenzo(a,h)anthracene | <370 | | <500 | | 0 |

SURROGATE RECOVERIES (%)

| | QA | CONTRACTOR |
|---|---|---|
| 2-Fluorophenol (21-110) | 65 | NR |
| Phenol-d6 (10-110) | 91 | NR |
| Nitrobenzene-d5 (35-114) | 84 | NR |
| 2-Fluorobiphenyl (43-116 | 103 | NR |
| 2,4,6-Tribromophenol (10-123) | 84 | NR |
| Terphenyl-d14 (33-141) | 75 | NR |

* = SURROGATE RECOVERY OUTSIDE ACCEPTABLE RANGE

SEE APPENDIX B FOR KEY TO COMMENTS

OHM Remediation Services Corp.

E0456

# CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev 08/89

158321

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: WESTON
PROJECT LOCATION: AYER, MA
PROJ NO: 17936
PROJECT CONTACT: BILL MLE
PROJECT TELEPHONE NO.: (508)-772-2019
CLIENT'S REPRESENTATIVE: CHRIS KANE
PROJECT MANAGER/SUPERVISOR: MIKE QUINLAN

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | cPAH | TPH | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G8-4TRP | 8-31-95 | 1105 | X | | Gold brown sand | 1X8oz | X | X | | | | | | |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | William Dale | Federal Express Airbill # | 08/31/95 | 1630 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | [illegible signature] | 9/1/95 | [illegible] |

REMARKS
* Preserved @ 4°C
* temperature blank included

SAMPLER'S SIGNATURE: William Dale

REVISED ON 9-6-

CENED-ED-GL
SAMPLE CONTAINER RECEIPT FORM

ROJECT: [illegible] Project #: [illegible]
Work Order #:

ontainer received on 9.1.95 and inspected on 9.1.95 by: [illegible signature]

. Temperature [illegible] °C. Temperature taken on 9.1.95 (date)

. Shipper Shipper # [illegible]
(USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)

. Container type (Cooler, box, envelope, etc.)

. Were custody seals on outside of container? N/A Yes No
How many & where: [illegible], seal date: 8.31.95, seal name: [illegible]

5. Were custody papers taped to lid inside container? N/A Yes No

6. Custody papers properly filled out? (ink, signed, etc.) Yes No

7. Was project and project # identifiable from custody papers? Yes No

8. Did you sign custody papers in appropriate place? Yes No

9. Did you attach shipper's packing form to this form? N/A Yes No

10. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)

11. Were all samples sealed in separate plastic bags? N/A Yes No

12. Did all samples arrive in good condition? Yes No

13. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No

14. Were correct sample containers used for tests indicated? N/A Yes No

15. Were correct preservatives used? (TM pH___, CN- pH___) N/A Yes No
(TOC pH___, NUTRIENT pH___, TOX pH___, TPH pH___, OTHER pH___)

16. Were VOA vials bubble-free ($H_2O$) or no headspace (soil)? N/A Yes No

17. Was sufficient amount of sample sent in each container? Yes No

18. Did all sample labels agree with custody papers? Yes No

19. Were air volumes noted for air samples? N/A Yes No

20. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies:

OHM Remediation Services Corp.

# CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

158297

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Fort Devens, Ayer, MA
PROJ NO: 17936
PROJECT CONTACT: Bill Dale
PROJECT TELEPHONE NO.: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH

| ITEM NO | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 697 SBWEST W1A TRP | 9-12 95 | 1805 | | X | Gold sand | 1x8oz | X | | | | | | | | Triplicate of SBWEST W1A and SBWEST W1ADUP |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | Matthew Jones | Federal Express Airbill # 2595103721 | 9-13 95 | 1930 |
| 2 | | | | | |
| 3 | | | Cheryl Warren | 9-14-95 | 1200 |
| 4 | | | | | |

REMARKS
- Preserved at 4°C
- Temp blank included
- sample has been screened through a #20 sieve

SAMPLER'S SIGNATURE: Matthew Jones

OHM Remediation Services Corp.

L-4156

# CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev 08/89

158296

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: Weston
PROJECT LOCATION: Ayer, MA
PROJ NO: 17936
PROJECT CONTACT: Mike Quinlan
PROJECT TELEPHONE NO: (508) 772-2019
CLIENT'S REPRESENTATIVE: Chris Kane
PROJECT MANAGER/SUPERVISOR: Mike Quinlan

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH, CPAH

| ITEM NO. | SAMPLE NUMBER | DATE | TIME | COMP | GRAB | SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE) | NUMBER OF CONTAINERS | TPH | CPAH | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B4-4TRP | 9.13.95 | 1608 | ✓ | | Gold Sand Mixture | 1x8oz | X | X | Triplicate of samples B4-4 and B4-4 DUP |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME |
|---|---|---|---|---|---|
| 1 | 1 | Matthew Jones | Federal Express Airbill # 259 5103 721 | 9-13-95 | 1930 |
| 2 | | | | | |
| 3 | | | Cheryl Nasson | 9/14/95 | 1200 |
| 4 | | | | | |

REMARKS
- Preserved at 4°C
- Temp blank included
- Sample has been screened through a #20 sieve.

SAMPLER'S SIGNATURE: Matthew Jones

REVISED ON 9-6-94

CENED-ED-GL

SAMPLE CONTAINER RECEIPT FORM

OJECT: Ft. W Devens - Barnom RA-44852 Project #: EC45
Work Order #: ______

ntainer received on 9.14.95 and inspected on 9.14.95 by: Cheryl Newman

Temperature 5.2 °C. Temperature taken on: 9.14.95 (date)

Shipper ______ Shipper #: 2595903721
(USM, UPS, DHL, FEDEX, P/C, AIR EXP, HAND-DELIVERED)

Container type (Cooler, box, envelope, etc.) ______

. Were custody seals on outside of container? N/A Yes No
How many & where: 2 front/back lid, seal date: 9.13.95, seal name: Signature

. Were custody papers taped to lid inside container? N/A Yes No

. Custody papers properly filled out? (ink, signed, etc.) Yes No

. Was project and project # identifiable from custody papers? Yes No

. Did you sign custody papers in appropriate place? Yes No

. Did you attach shipper's packing form to this form? N/A Yes No

0. Packing material (peanuts, vermiculite, bubble wrap, paper, cans, other)

1. Were all samples sealed in separate plastic bags? N/A Yes No

2. Did all samples arrive in good condition? Yes No

3. Sample labels complete? (#, date, analysis, preservation, sign.) Yes No

4. Were correct sample containers used for tests indicated? N/A Yes No

5. Were correct preservatives used? (TM pH___, CN- pH___) N/A Yes No
(TOC pH___, NUTRIENT pH___, TOX pH___, TPH pH___, OTHER pH___)

6. Were VOA vials bubble-free ($H_2O$) or no headspace (soil)? N/A Yes No

17. Was sufficient amount of sample sent in each container? Yes No

18. Did all sample labels agree with custody papers? Yes No

19. Were air volumes noted for air samples? N/A Yes No

20. Were initial weights noted for pre-weighed filters? N/A Yes No

Discrepancies: ______

S

PHOTO 1. WELL DECOMMISSIONING

PHOTO 2 CUTTING GRID SUBGRADE WITH D8 DOZER

PHOTO 3 CUTTING GRID SUBGRADE WITH 235 EXCAVATOR

PHOTO 4 SCREENING OPERATION - CONTAMINATED SOILS

PHOTO 5 CRUSHING OPERATION CONTAMINATED SOILS

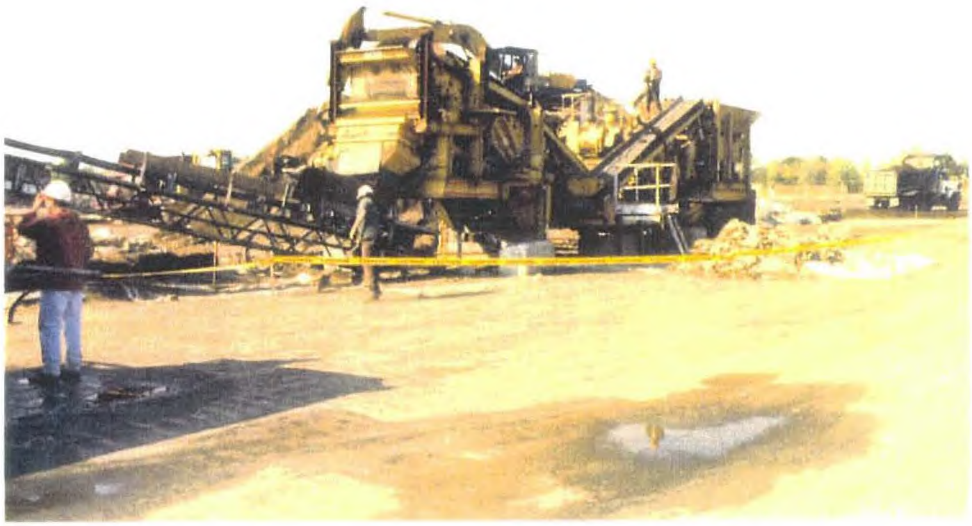


PHOTO 6 CRUSHER STOCKPILE CONTAMINATED SOIL

PHOTO 7 CONTAMINATED STOCKPILE

PHOTO 8 PUG MILL OPERATIONS COLD BATCH MIXING

PHOTO 9 PLACING COLD BATCH MIX

PHOTO 10 PLACING COLD BATCH MIX

PHOTO 11   COMPACTING COLD BATCH MIX

PHOTO 12   COMPACTION TESTING

PHOTO 13. LAYING DRAINAGE PIPE

PHOTO 14 OIL/WATER SEPARATOR INSTALLATION

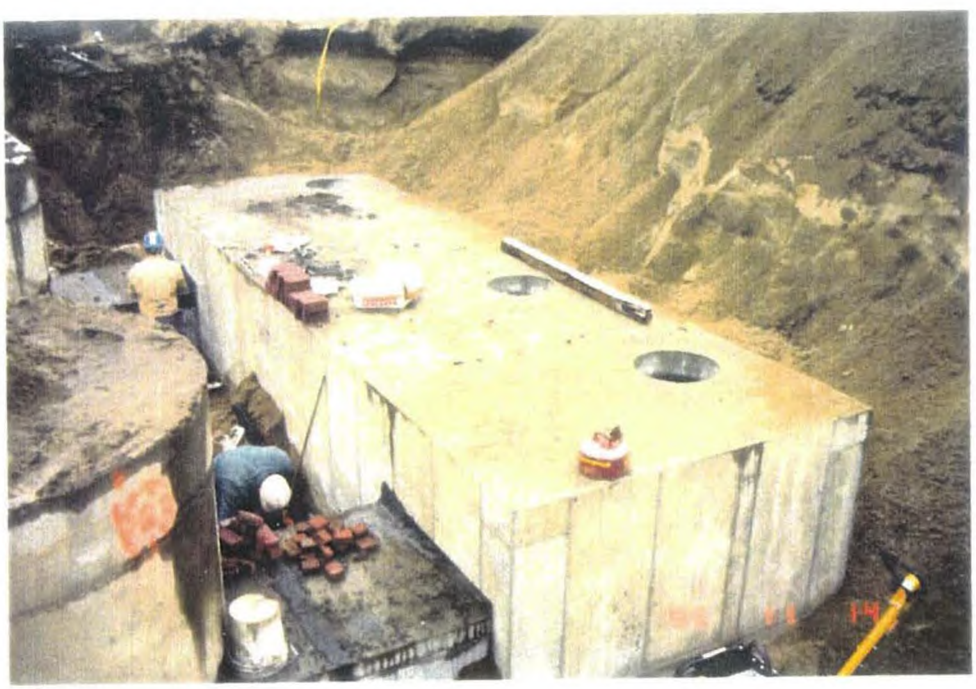


PHOTO 15   DETENTION POND EXCAVATION

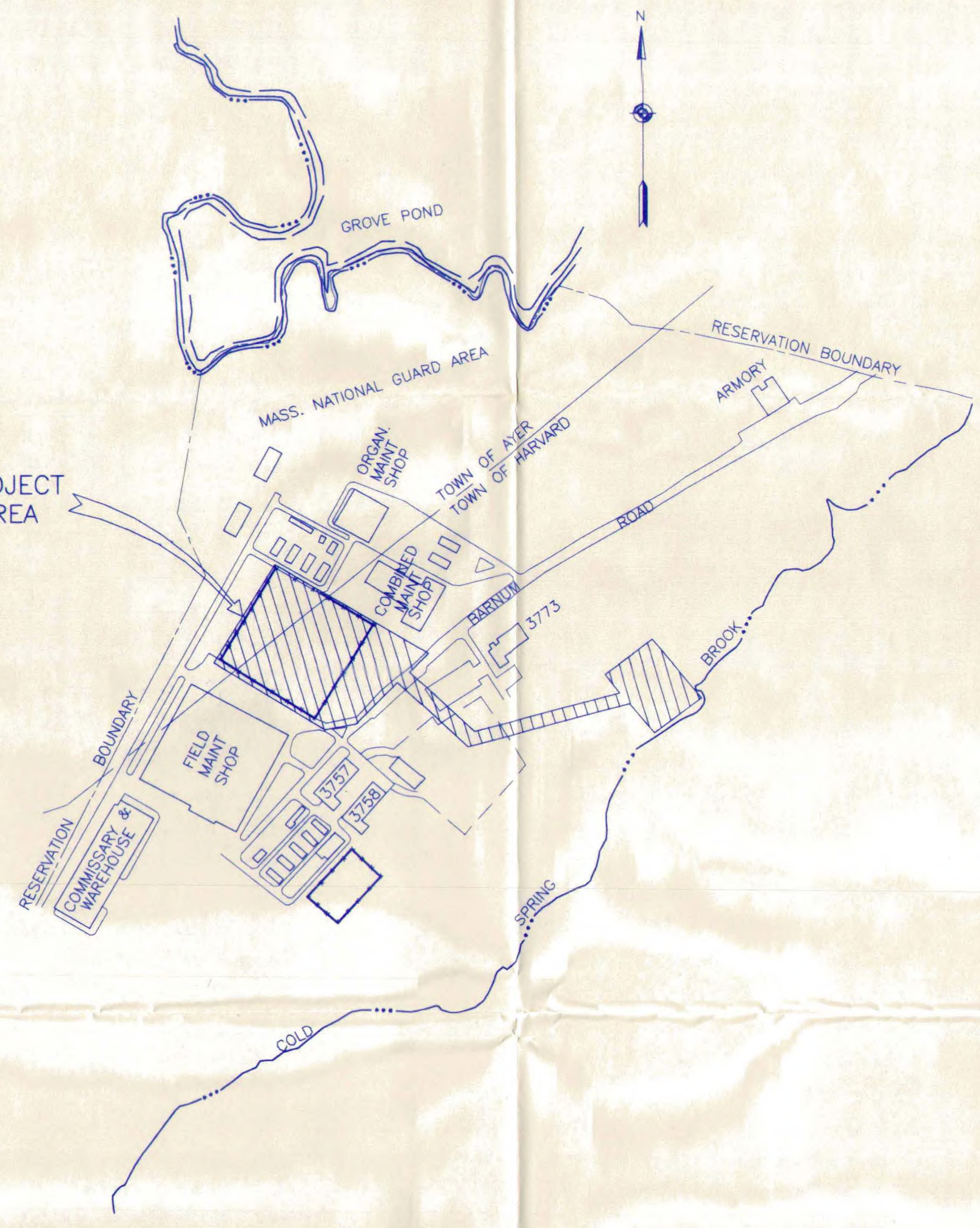
PHOTO 16   DETENTION POND CONSTRUCTION

PHOTO 17   DETENTION POND OVERFLOW AND RIPRAP

PHOTO 18   BASE COURSE PAVING

PHOTO 19. CRUSHING OPERATIONS AND SITE OVERVIEW

PHOTO 20. PAVING




LOCUS PLAN
N.T.S.

## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
- OVERHEAD WIRES W/UTILITY POLE
- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- CONTOUR
- FLOW DIRECTION
- SPOT ELEVATIONS
- EXISTING TEST PIT
- EXISTING SOIL BORINGS (44B– )
- EXISTING GROUNDWATER MONITORING WELL (G3M– )
- EXISTING SOIL VENTING WELLS (44B– )
- HYDRANT
- LIGHTPOLE
- WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND
- LIMITS OF 100' BUFFER ZONE

## ABBREVIATIONS

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| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| BSW | BITUMINOUS SIDEWALK |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

| DRAWING TITLE | SHEET NUMBER |
|---|---|
| DRAWING INDEX & LOCUS PLAN | SHEET 1 |
| EXISTING TOPOGRAPHICAL SURVEY | SHEET 2 |
| EXISTING TOPOGRAPHICAL SURVEY | SHEET 3 |
| EXCAVATION PLAN – PARKING LOT AREA | SHEET 4 |
| FINAL PAVING ELEVATIONS | SHEET 4A |
| EXCAVATION & EROSION CONTROL PLAN | SHEET 5 |
| DETENTION POND AREA | |
| FINISHED DRAINAGE | SHEET 6 |
| FINISHED DRAINAGE | SHEET 7 |
| FINISHED DRAINAGE | SHEET 8 |
| FINISHED DRAINAGE | SHEET 9 |
| FINISHED DRAINAGE | SHEET 10 |
| FINISHED GRADING & DRAINAGE | SHEET 11 |
| SECTIONS & DETAILS | SHEET 12 |
| SECTIONS & DETAILS | SHEET 13 |

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

NOTES:
1. FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS SEE SHEET 2.

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

SIGNATURES AFFIXED BELOW INDICATE OFFICIAL RECOMMENDATION AND APPROVAL OF ALL DRAWINGS IN THIS SET AS INDEXED ON THIS SHEET

APPROVED FOR FUNCTIONAL ADEQUACY BY:

ENGINEER MANAGER — DATE

APPROVAL RECOMMENDED

CHIEF, ENGINEERING MGMT. DIV. — DATE

APPROVED

DIRECTOR OF ENGINEERING — DATE

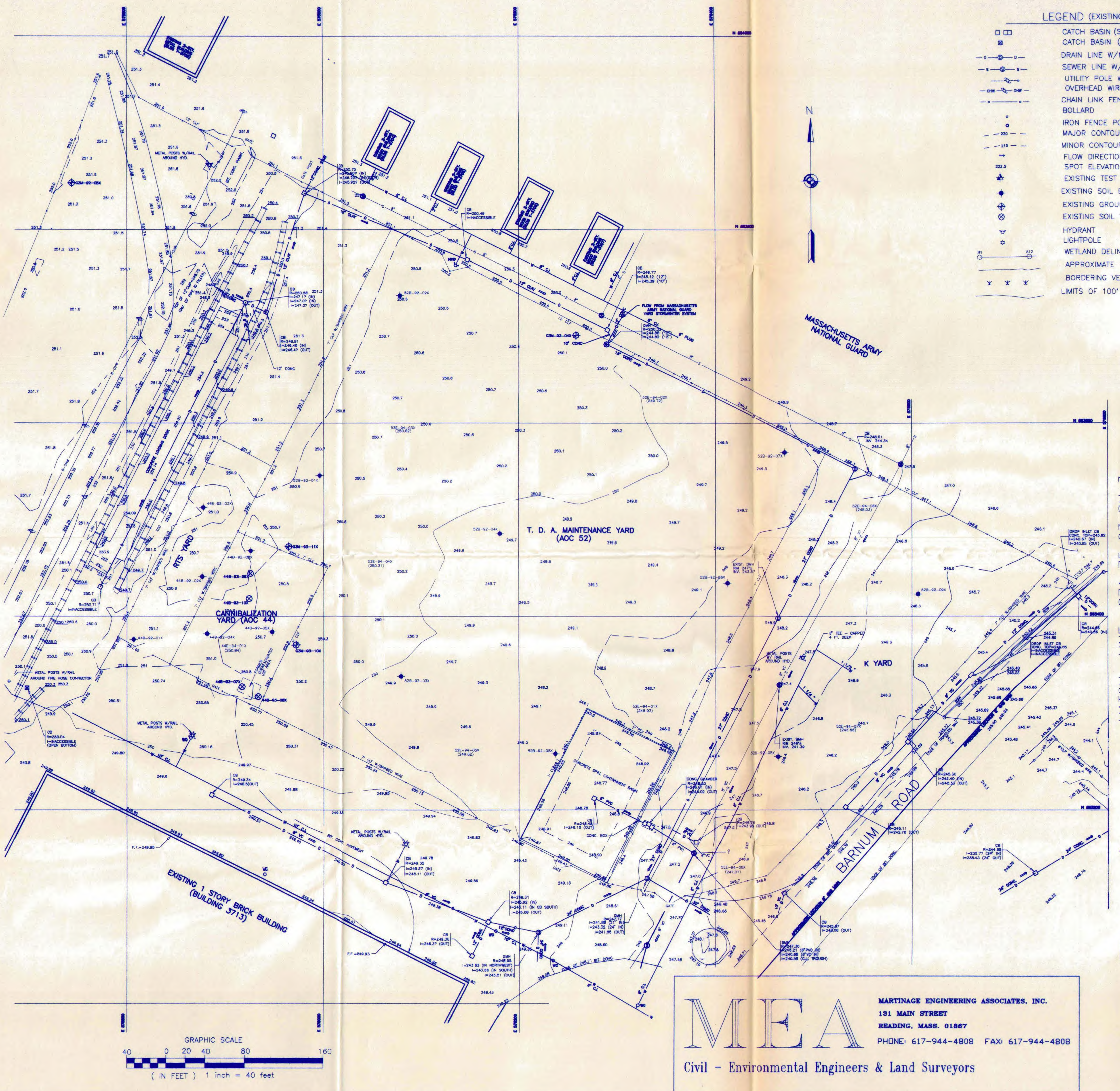
This project was designed by the New England Division of the U.S.Army Corps of Engineers. The initials or signatures and registration designations of individuals appear on these project documents, within the scope of their employment as required by ER 1110-1-8152.

DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P.VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

# REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52 FORT DEVENS, MASSACHUSETTS

## DRAWING INDEX & LOCUS PLAN

SCALE: N.T.S.
DATE: MARCH 15, 1995
CADD NO: INDEX.DWG
SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 1 OF 13




## LEGEND (EXISTING)

CATCH BASIN (SINGLE OR DOUBLE)
CATCH BASIN (OPEN BOTTOM)
DRAIN LINE W/MANHOLE
SEWER LINE W/MANHOLE
UTILITY POLE W/GUY WIRE
OVERHEAD WIRES W/UTILITY POLE
CHAIN LINK FENCE
BOLLARD
IRON FENCE POST
MAJOR CONTOUR
MINOR CONTOUR
FLOW DIRECTION
SPOT ELEVATIONS
EXISTING TEST PIT
EXISTING SOIL BORINGS (44B– )
EXISTING GROUNDWATER MONITORING WELL (G3M– )
EXISTING SOIL VENTING WELLS (44B– )
HYDRANT
LIGHTPOLE
WETLAND DELINEATION
APPROXIMATE 100 YEAR FLOOD ELEVATION
BORDERING VEGETATED WETLAND
LIMITS OF 100' BUFFER ZONE

## ABBREVIATIONS

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| S.M.H. | SEWER MANHOLE |
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| I= | INVERT = |
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| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
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| HYD. | HYDRANT |
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| WG | WATER GATE VALVE |
| BSW | BITUMINOUS SIDEWALK |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

GENERAL NOTES:

1. BENCHMARK:SUPPLIED BY ABB ENVIRONMENTAL SERVICES INC. AND ESTABLISHED BY GOLDEN SURVEY.
TBM – PK #105: ELEV. = 252.20 NGVD DATUM.
2. VISIBLE DETAIL, UTILITIES AND ELEVATIONS WERE LOCATED BY ACTUAL FIELD SURVEY DURING JULY–SEPT. 1994. UNDERGROUND ELECTRIC CONDUITS, TELEPHONE CONDUITS, FIRE ALARM CONDUITS, GAS MAINS AND SERVICES AND WATER MAINS AND SERVICES (IF ANY) NOT VISIBLE FROM THE GROUND SURVEY MAY NOT BE ACCURATELY SHOWN ON THIS PLAN. PLEASE CONTACT THE RESPECTIVE UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THESE LINES.
3. THE COORDINATE SYSTEM USED ON THIS PLAN IS BASED ON THE MASSACHUSETTS COORDINATE SYSTEM AS ESTABLISHED BY GOLDEN SURVEY.
4. DRAINAGE SYSTEM INFORMATION IS SHOWN BASED ON FIELD LOCATIONS OF VISIBLE PIPES AND STRUCTURES.
5. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION OR EXCAVATION ON THE PROPERTY. ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN. AS REQUIRED BY MASSACHUSETTS GENERAL LAWS, CHAPTER 82, SECTION 40, AND CHAPTER 164, SECTION 76(D), THE CONTRACTOR MUST CALL "DIG SAFE", TELEPHONE NO. 1–800–322–4844, AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION OR WORK ON THE PROPERTY.
6. IF THIS PLAN IS UTILIZED FOR EARTHWORK CALCULATIONS THE PERSON PERFORMING THE CALCULATIONS SHOULD BE KNOWLEDGEABLE IN THE STANDARD SURVEYING TOLERANCES AND ACCURACIES INVOLVED IN THE PREPARATION OF A ONE (1) FOOT CONTOUR INTERVAL TOPOGRAPHIC PLAN AND SHOULD MAKE APPROPRIATE ALLOWANCES IN HIS CALCULATIONS.
7. UTILITY CONNECTIONS SHOWN ARE BASED ON INFORMATION SUPPLIED BY ABB ENVIRONMENTAL SERVICES, INC. AND/OR STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES
8. THE WETLAND FLAGS SHOWN ON THIS PLAN WERE FLAGGED BY ABB ENVIRONMENTAL SERVICES, INC. AND FIELD LOCATED BY MARTINAGE ENGINEERING ASSOC. INC, IN SEPT. 1994.
9. EXISTING GROUND WATER MONITORING WELLS G3M–93–10X, G3M–93–11X, AND G3M–92–04X SHALL BE MODIFIED AS SHOWN ON SHEET 12.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P.VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

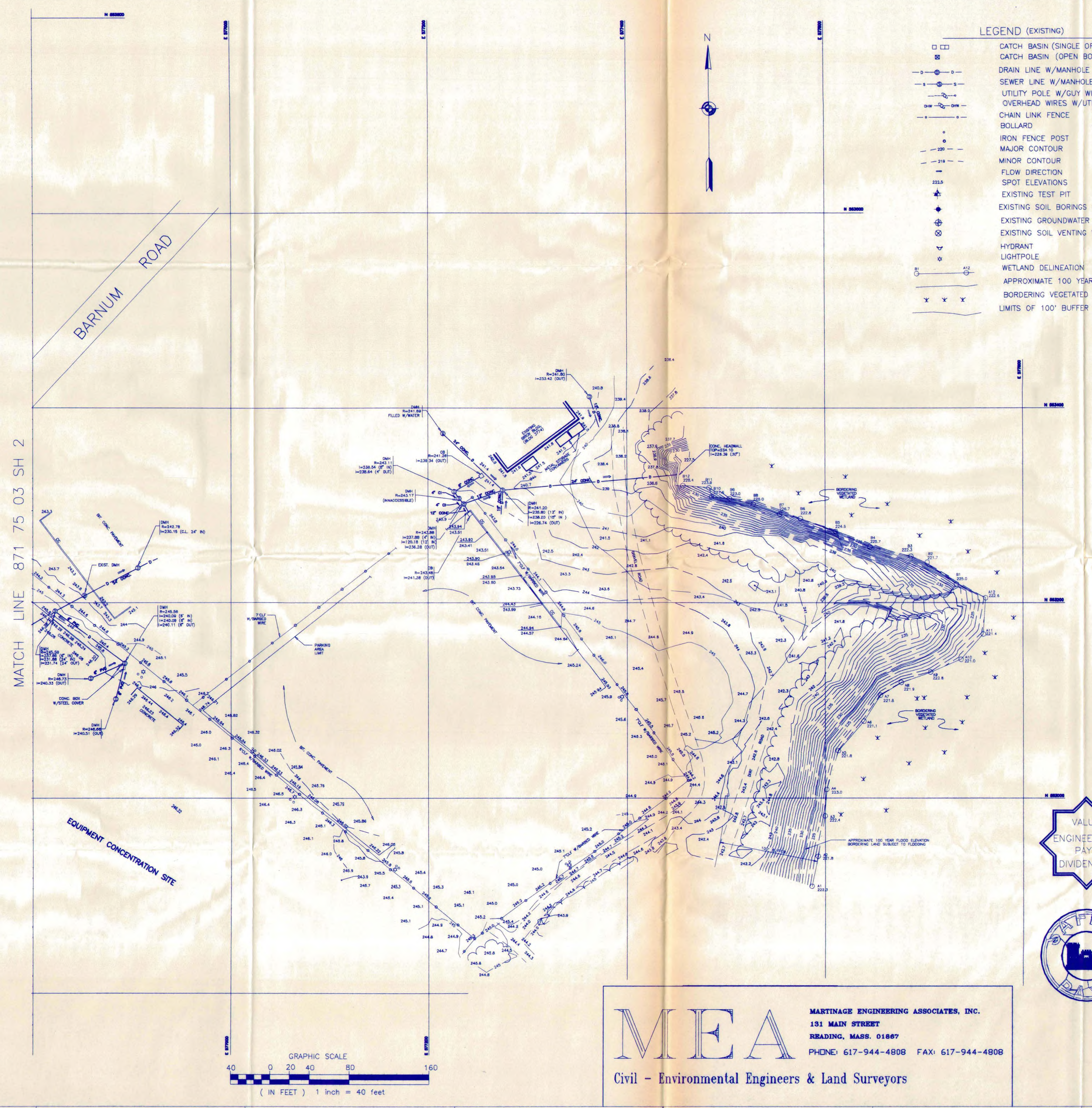
EXISTING TOPOGRAPHICAL SURVEY

SCALE: 1'=40'
DATE: MARCH 15, 1995
CADD NO: MEA3.DWG
SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 2 OF 13

MEA

MARTINAGE ENGINEERING ASSOCIATES, INC.
131 MAIN STREET
READING, MASS. 01867
PHONE: 617-944-4808 FAX: 617-944-4808

Civil – Environmental Engineers & Land Surveyors




## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
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- BOLLARD
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NOTES:
1. FOR ADDITIONAL NOTES, SEE SHEET 2.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

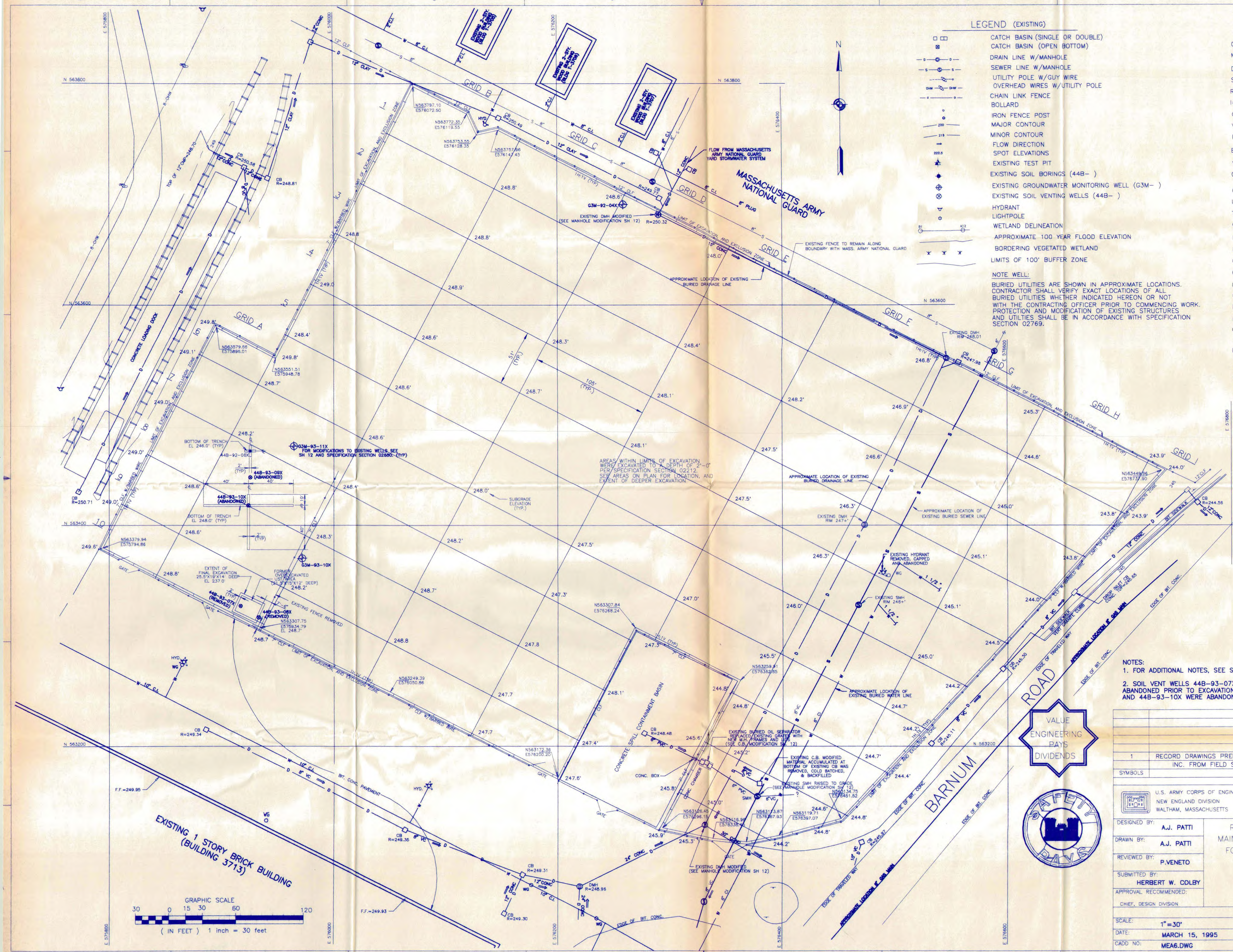
DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P.VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

# REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

## EXISTING TOPOGRAPHICAL SURVEY

MEA
MARTINAGE ENGINEERING ASSOCIATES, INC.
131 MAIN STREET
READING, MASS. 01867
PHONE: 617-944-4808 FAX: 617-944-4808
Civil - Environmental Engineers & Land Surveyors

| | |
|---|---|
| SCALE: | 1"=40' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | MEA4.DWG |
| SOLICITATION NUMBER: | |
| DRAWING CODE: | 871 75 03 |
| SHEET REFERENCE: | SHEET 3 OF 13 |

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- BORDERING VEGETATED WETLAND
- LIMITS OF 100' BUFFER ZONE

NOTE WELL:

BURIED UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS. CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL BURIED UTILITIES WHETHER INDICATED HEREON OR NOT WITH THE CONTRACTING OFFICER PRIOR TO COMMENCING WORK. PROTECTION AND MODIFICATION OF EXISTING STRUCTURES AND UTILITIES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02769.

## ABBREVIATIONS

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|---|---|
| C.B. | CATCH BASIN |
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| CMP | CORRUGATED METAL PIPE |
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| RCP | REINFORCED CONCRETE PIPE |

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 2.
2. SOIL VENT WELLS 44B-93-07X AND 44B-93-08X WERE REMOVED AND ABANDONED PRIOR TO EXCAVATION. SOIL VENT WELLS 44B-93-09X AND 44B-93-10X WERE ABANDONED PRIOR TO EXCAVATION.

| SYMBOLS | DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

REVISIONS

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

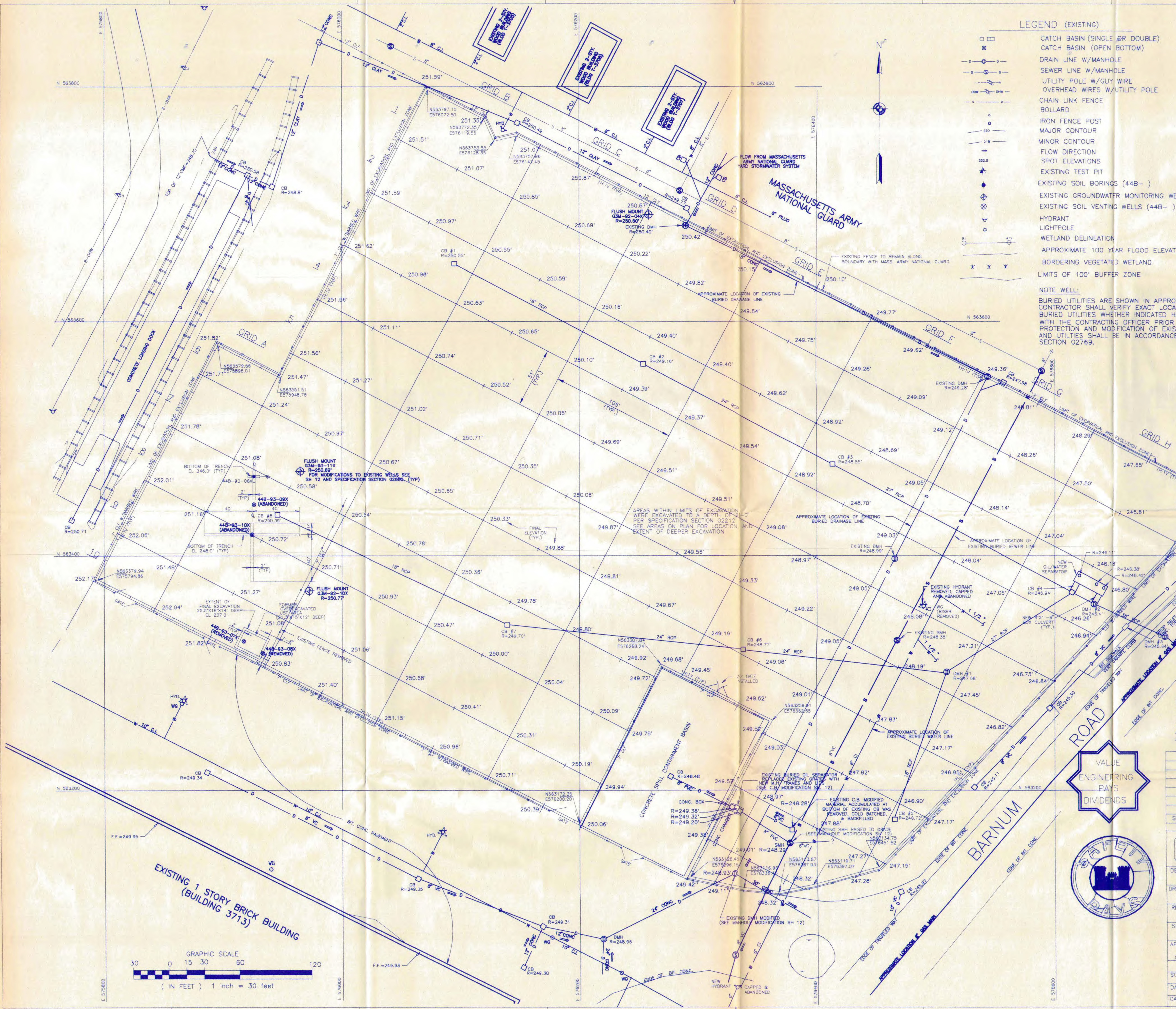
STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P.VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS
FOURTH CUT
SUBGRADE ELEVATIONS
EXCAVATION PLAN
PARKING LOT AREA

SOLICITATION NUMBER:
SHEET REFERENCE:
SCALE: 1"=30'
DATE: MARCH 15, 1995
CADD NO: MEA6.DWG
DRAWING CODE: 871 75 03

SHEET 4 OF 13

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| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| BSW | BITUMINOUS SIDEWALK |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:

1. FOR ADDITIONAL NOTES, SEE SHEET 2.

2. SOIL VENT WELLS 44B-93-07X AND 44B-93-08X WERE REMOVED AND ABANDONED PRIOR TO EXCAVATION. SOIL VENT WELLS 44B-93-09X AND 44B-93-10X WERE ABANDONED PRIOR TO EXCAVATION.

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P.VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

FINAL PAVING ELEVATIONS
PARKING LOT AREA

SCALE: 1"=30'
DATE: MARCH 15, 1995
CADD NO: MEA6A.DWG
SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 4A OF 13


## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
- OVERHEAD WIRES W/UTILITY POLE
- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- MAJOR CONTOUR
- MINOR CONTOUR
- FLOW DIRECTION
- SPOT ELEVATIONS
- EXISTING TEST PIT
- EXISTING SOIL BORINGS (44B– )
- EXISTING GROUNDWATER MONITORING WELL (G3M– )
- EXISTING SOIL VENTING WELLS (44B– )
- HYDRANT
- LIGHTPOLE
- WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND
- LIMITS OF 100' BUFFER ZONE

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| BSW | BITUMINOUS SIDEWALK |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:
1. FOR ADDITIONAL NOTES, SEE SHEET 2.
2. HAY BALE AND SILT FENCE EROSION CONTROLS REMOVED SUBSEQUENT TO ESTABLISHMENT OF VEGETATIVE GROWTH.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

| | |
|---|---|
| DESIGNED BY: | A.J. PATTI |
| DRAWN BY: | A.J. PATTI |
| REVIEWED BY: | P.VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |
| SCALE: | 1"=30' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | MEA7.DWG |

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

EXCAVATION & EROSION CONTROL PLAN
DETENTION POND AREA

SOLICITATION NUMBER:

DRAWING CODE: 871 75 03

SHEET REFERENCE:

SHEET 5 OF 13

## LEGEND (EXISTING)

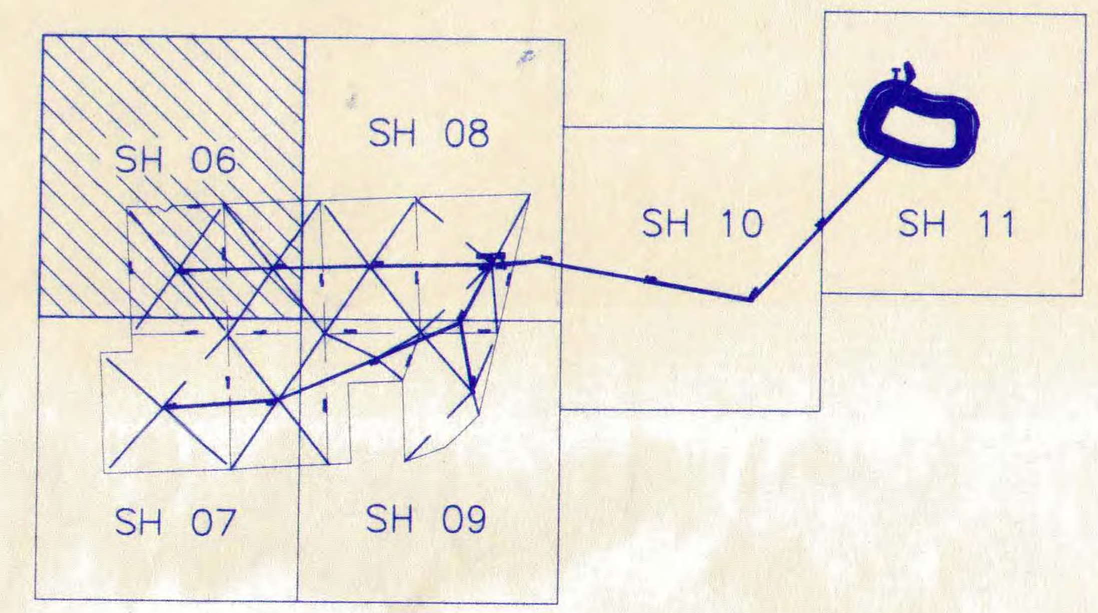
| | |
|---|---|
| | CATCH BASIN (SINGLE OR DOUBLE) |
| | CATCH BASIN (OPEN BOTTOM) |
| — D — D — | DRAIN LINE W/MANHOLE |
| — S — S — | SEWER LINE W/MANHOLE |
| | UTILITY POLE W/GUY WIRE |
| — OHW — OHW — | OVERHEAD WIRES W/UTILITY POLE |
| — W — | WATER LINE |
| — G — | GAS LINE |
| | CHAIN LINK FENCE |
| | BOLLARD |
| | IRON FENCE POST |
| —220— | MAJOR CONTOUR |
| —219— | MINOR CONTOUR |
| | FLOW DIRECTION |
| 222.5 | SPOT ELEVATIONS |
| | SOIL VENTING WELL |
| | EXISTING TEST PIT |
| | EXISTING SOIL VENT BORING (44B- 1) |
| | EXISTING GROUNDWATER MONITORING WELL (G3M- ) |
| | HYDRANT |
| | LIGHTPOLE |
| B1 AT2 | WETLAND DELINEATION |
| | APPROXIMATE 100 YEAR FLOOD ELEVATION |
| | BORDERING VEGETATED WETLAND |

## LEGEND (PROPOSED)

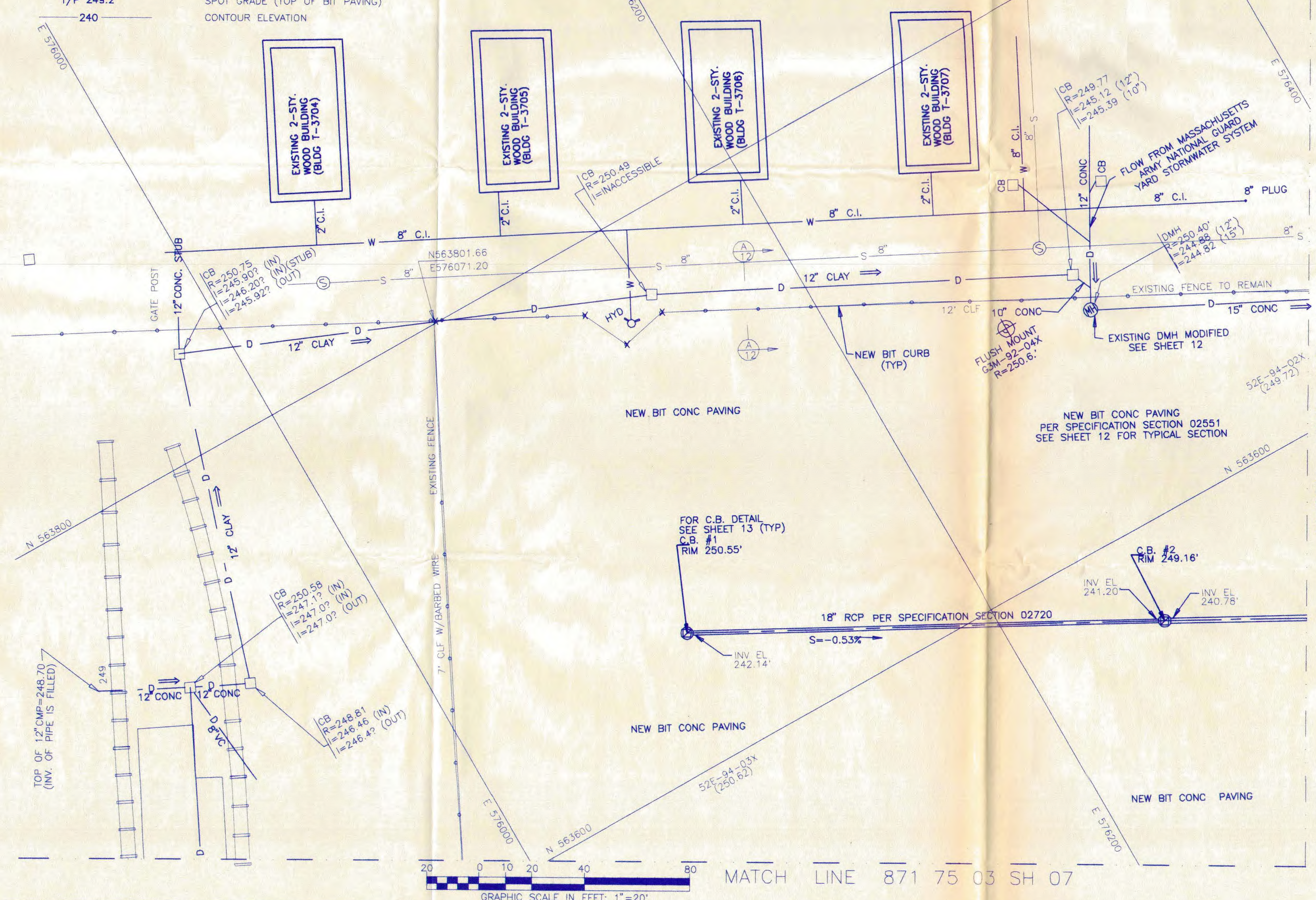
| | |
|---|---|
| C.B. | CATCH BASIN |
| D.M.H. | DRAIN MANHOLE (CLOSED COVER) |
| RCP | DRAIN PIPE |
| HIGH POINT | LIMITS OF DRAINAGE AREAS |
| | SLOPES OF DRAINAGE AREAS |
| | LIMITS OF BIT PAVING |
| T/C 249.7' | SPOT GRADE (TOP OF BIT CURB) |
| T/P 249.2' | SPOT GRADE (TOP OF BIT PAVING) |
| 240 | CONTOUR ELEVATION |

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |




KEY PLAN
N.T.S.




VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

NOTES:
1. FOR GENERAL NOTES, SEE SHEET 2.
2. FOR SECTIONS, AND DETAILS SEE SHEETS 12 , & 13.
3. REFER TO SHEET 4A FOR FINAL PAVING ELEVATIONS.

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

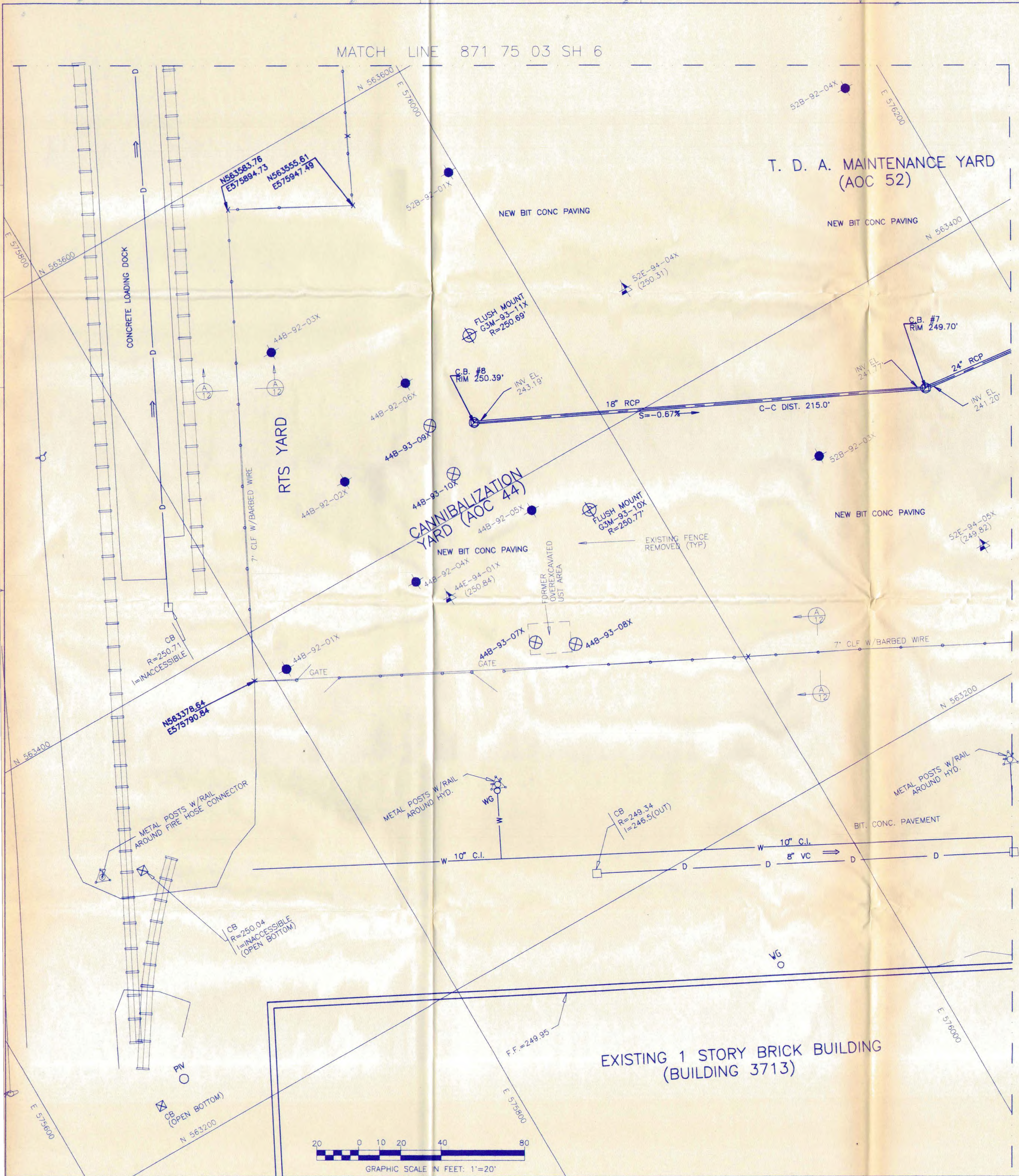
STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

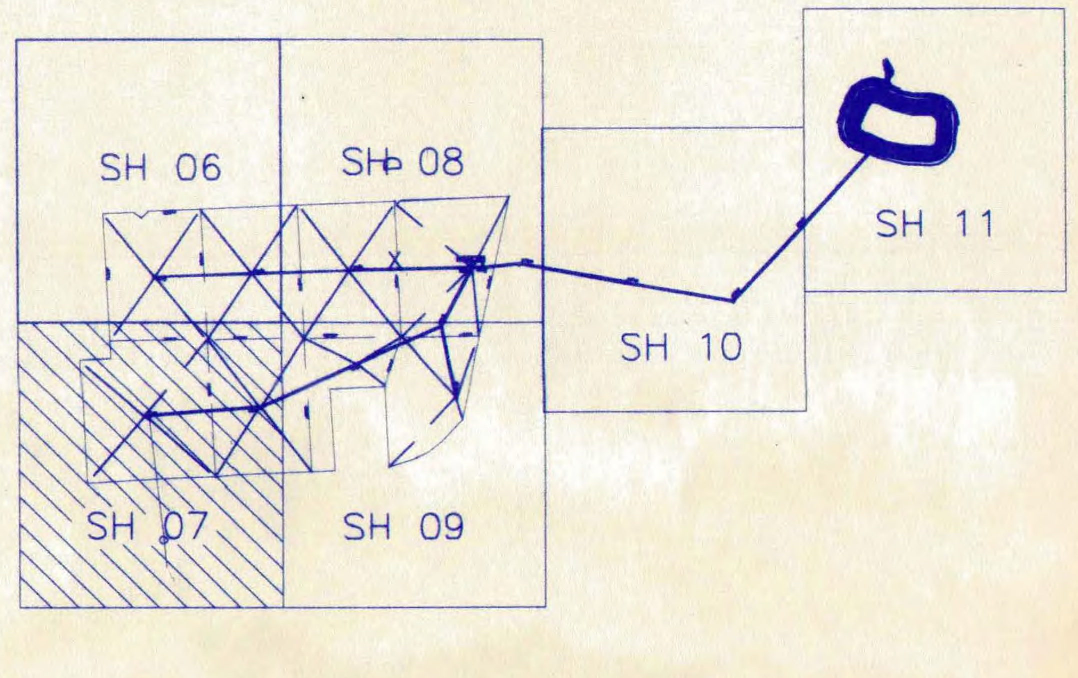
DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P. VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

FINISHED DRAINAGE

SCALE: 1"=20'
DATE: MARCH 15, 1995
CADD NO: FTDEV1.DWG
SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 6 OF 13




## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
- OVERHEAD WIRES W/UTILITY POLE
- WATER LINE
- GAS LINE
- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- 220 MAJOR CONTOUR
- 219 MINOR CONTOUR
- FLOW DIRECTION
- 222.5 SPOT ELEVATIONS
- SOIL VENTING WELL
- EXISTING TEST PIT
- EXISTING SOIL VENT BORING (44B- 1)
- EXISTING GROUNDWATER MONITORING WELL (G3M- )
- HYDRANT
- LIGHTPOLE
- B1 AT2 WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND

## LEGEND (PROPOSED)

- C.B. CATCH BASIN
- D.M.H. DRAIN MANHOLE (CLOSED COVER)
- RCP DRAIN PIPE
- HIGH POINT LIMITS OF DRAINAGE AREAS
- SLOPES OF DRAINAGE AREAS
- LIMITS OF BIT PAVING
- T/C 249.7' SPOT GRADE (TOP OF BIT CURB)
- T/P 249.2' SPOT GRADE (TOP OF BIT PAVING)
- 240 CONTOUR ELEVATION

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:

1. FOR ALL GENERAL NOTES, SEE SHEET 2.
2. FOR SECTIONS, AND DETAILS SEE SHEETS 12, & 13.
3. REFER TO SHEET 4A FOR FINAL PAVING ELEVATIONS.
4. SOIL VENT WELLS 44B-93-07X AND 44B-93-08X WERE REMOVED AND ABANDONED PRIOR TO EXCAVATION. SOIL VENT WELLS 44B-93-09X AND 44B-93-10X WERE ABANDONED PRIOR TO EXCAVATION.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

| | |
|---|---|
| DESIGNED BY: | A.J. PATTI |
| DRAWN BY: | A.J. PATTI |
| REVIEWED BY: | P. VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |
| SCALE: | 1"=20' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | FTDEV2.DWG |

REMEDIATION OF BARNUM ROAD
MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

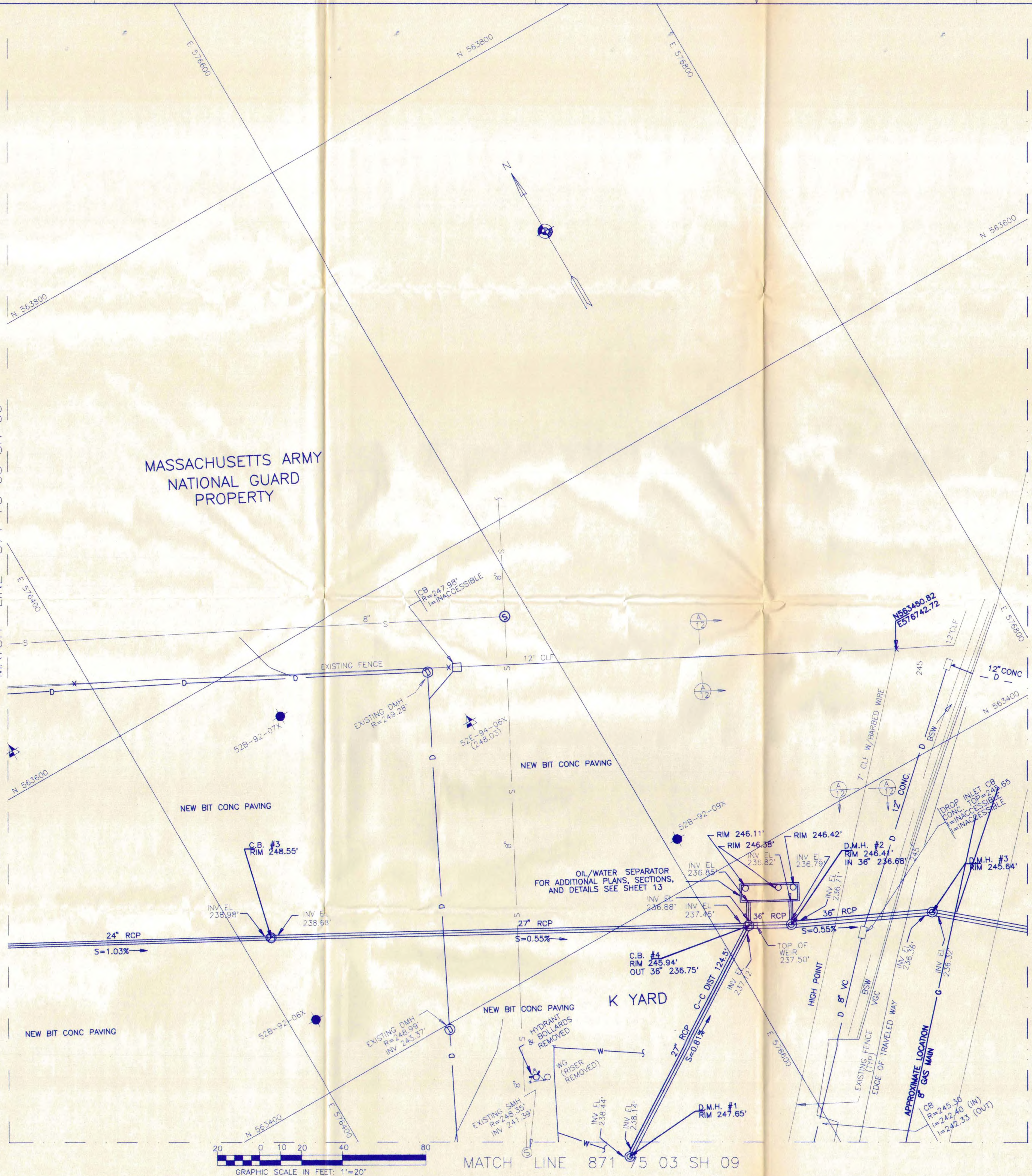
FINISHED DRAINAGE

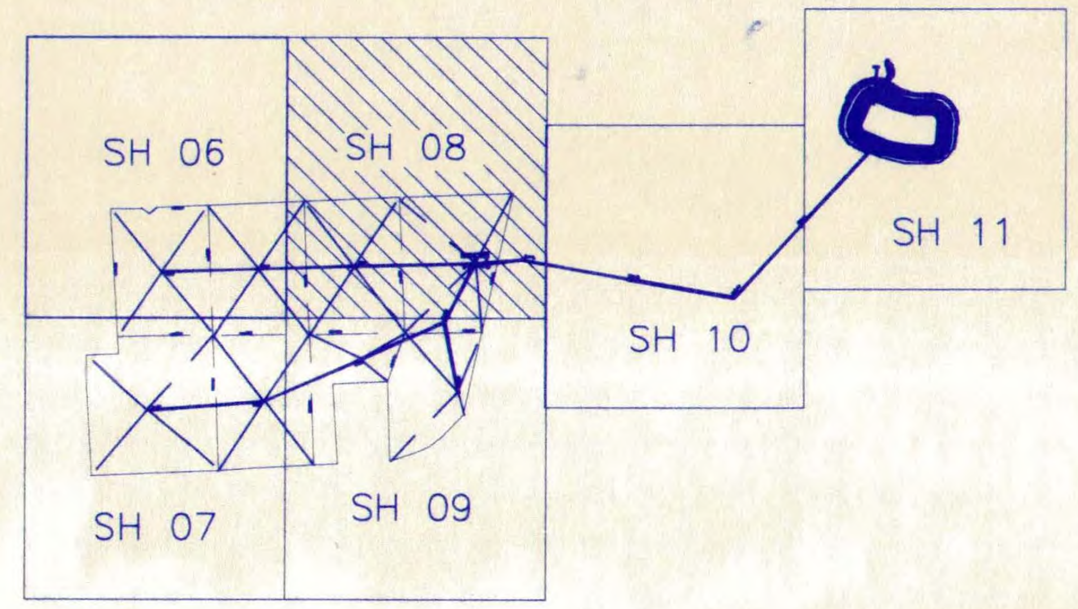
SOLICITATION NUMBER:

DRAWING CODE: 871 75 03

SHEET REFERENCE:

SHEET 7 OF 13




KEY PLAN
N.T.S.

## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
- OVERHEAD WIRES W/UTILITY POLE
- WATER LINE
- GAS LINE
- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- 220 MAJOR CONTOUR
- 219 MINOR CONTOUR
- FLOW DIRECTION
- 222.5 SPOT ELEVATIONS
- SOIL VENTING WELL
- EXISTING TEST PIT
- EXISTING SOIL VENT BORING (44B- 1)
- EXISTING GROUNDWATER MONITORING WELL (G3M- )
- HYDRANT
- LIGHTPOLE
- B1 ... AT2 WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND

## LEGEND (PROPOSED)

- C.B. CATCH BASIN
- D.M.H. DRAIN MANHOLE (CLOSED COVER)
- RCP DRAIN PIPE
- LIMITS OF DRAINAGE AREAS
- HIGH POINT SLOPES OF DRAINAGE AREAS
- LIMITS OF BIT PAVING
- 240 CONTOUR ELEVATION

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:
1. FOR GENERAL NOTES, SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATION SECTION.
3. FOR SECTIONS, AND DETAILS SEE SHEETS 12 , & 13.
4. REFER TO SHEET 4A FOR FINAL PAVING ELEVATIONS.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

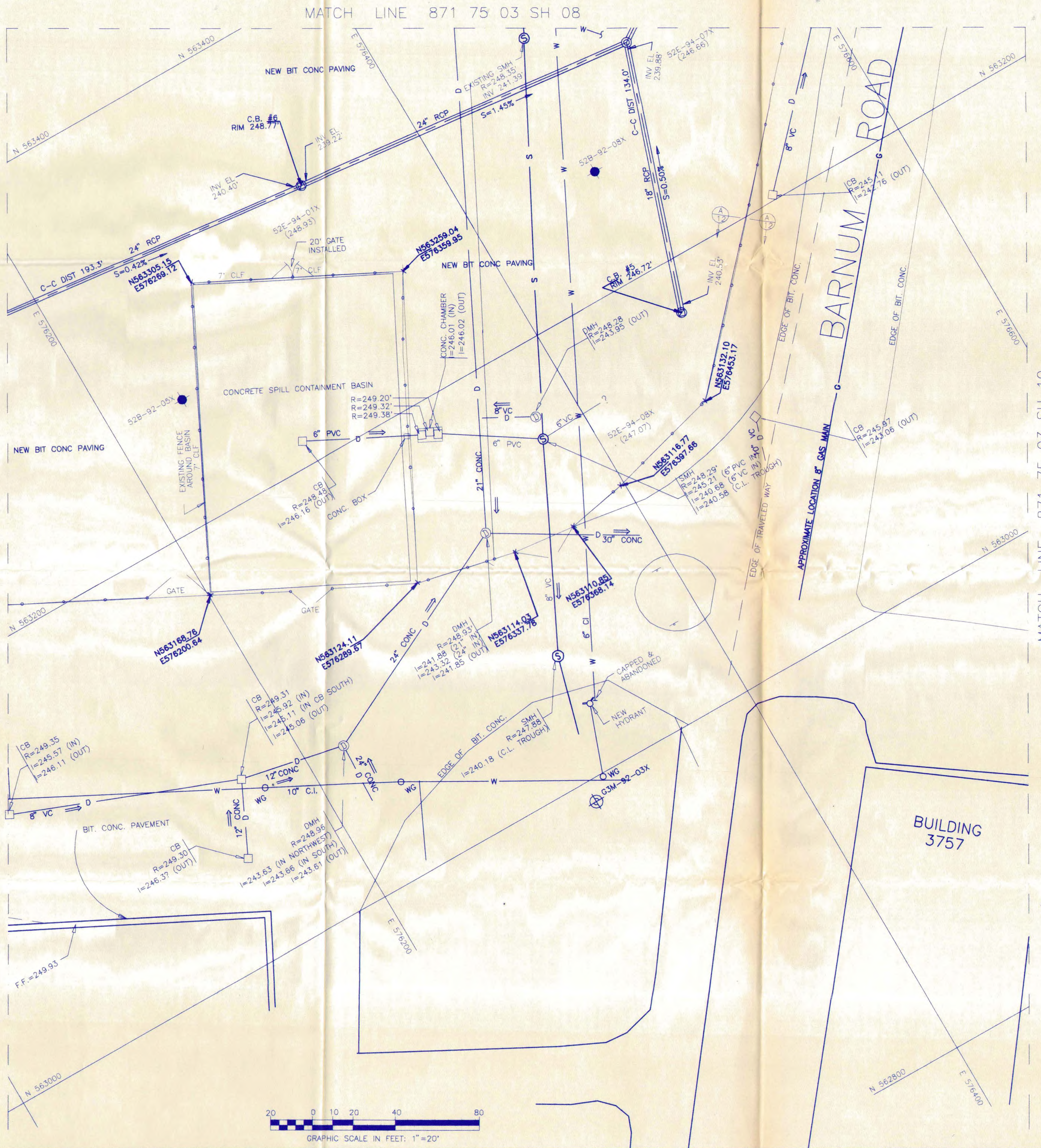
| | |
|---|---|
| DESIGNED BY: | A.J. PATTI |
| DRAWN BY: | A.J. PATTI |
| REVIEWED BY: | P. VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |

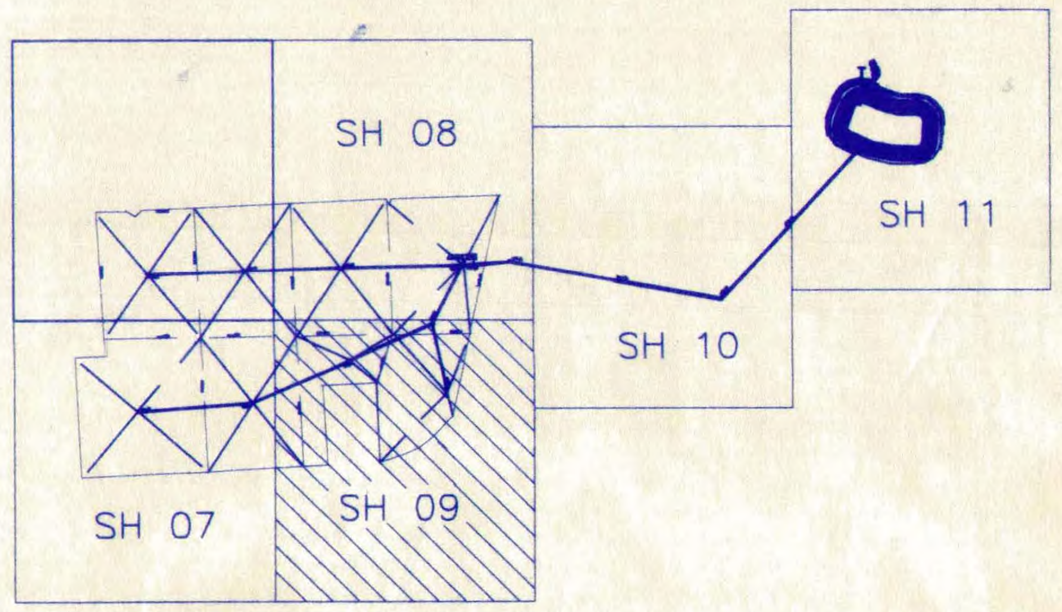
# REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52 FORT DEVENS, MASSACHUSETTS

## FINISHED DRAINAGE

| | |
|---|---|
| SCALE: | 1" = 20' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | FTDEV3.DWG |

SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 8 OF 13




KEY PLAN
N.T.S.

## LEGEND (EXISTING)

CATCH BASIN (SINGLE OR DOUBLE)
CATCH BASIN (OPEN BOTTOM)
DRAIN LINE W/MANHOLE
SEWER LINE W/MANHOLE
UTILITY POLE W/GUY WIRE
OVERHEAD WIRES W/UTILITY POLE
WATER LINE
GAS LINE
CHAIN LINK FENCE
BOLLARD
IRON FENCE POST
MAJOR CONTOUR
MINOR CONTOUR
FLOW DIRECTION
SPOT ELEVATIONS
SOIL VENTING WELL
EXISTING TEST PIT
EXISTING SOIL VENT BORING (44B- 1)
EXISTING GROUNDWATER MONITORING WELL (G3M- )
HYDRANT
LIGHTPOLE
WETLAND DELINEATION
APPROXIMATE 100 YEAR FLOOD ELEVATION
BORDERING VEGETATED WETLAND

## LEGEND (PROPOSED)

CATCH BASIN
DRAIN MANHOLE (CLOSED COVER)
DRAIN PIPE
LIMITS OF DRAINAGE AREAS
SLOPES OF DRAINAGE AREAS
LIMITS OF BIT PAVING
SPOT GRADE (TOP OF BIT CURB) T/C 249.7'
SPOT GRADE (TOP OF BIT PAVING) T/P 249.2'
CONTOUR ELEVATION 240

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:
1. FOR GENERAL NOTES, SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATION SECTION.
3. FOR SECTIONS, AND DETAILS SEE SHEETS 12 , & 13.
4. REFER TO SHEET 4A FOR FINAL PAVING ELEVATIONS.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS.

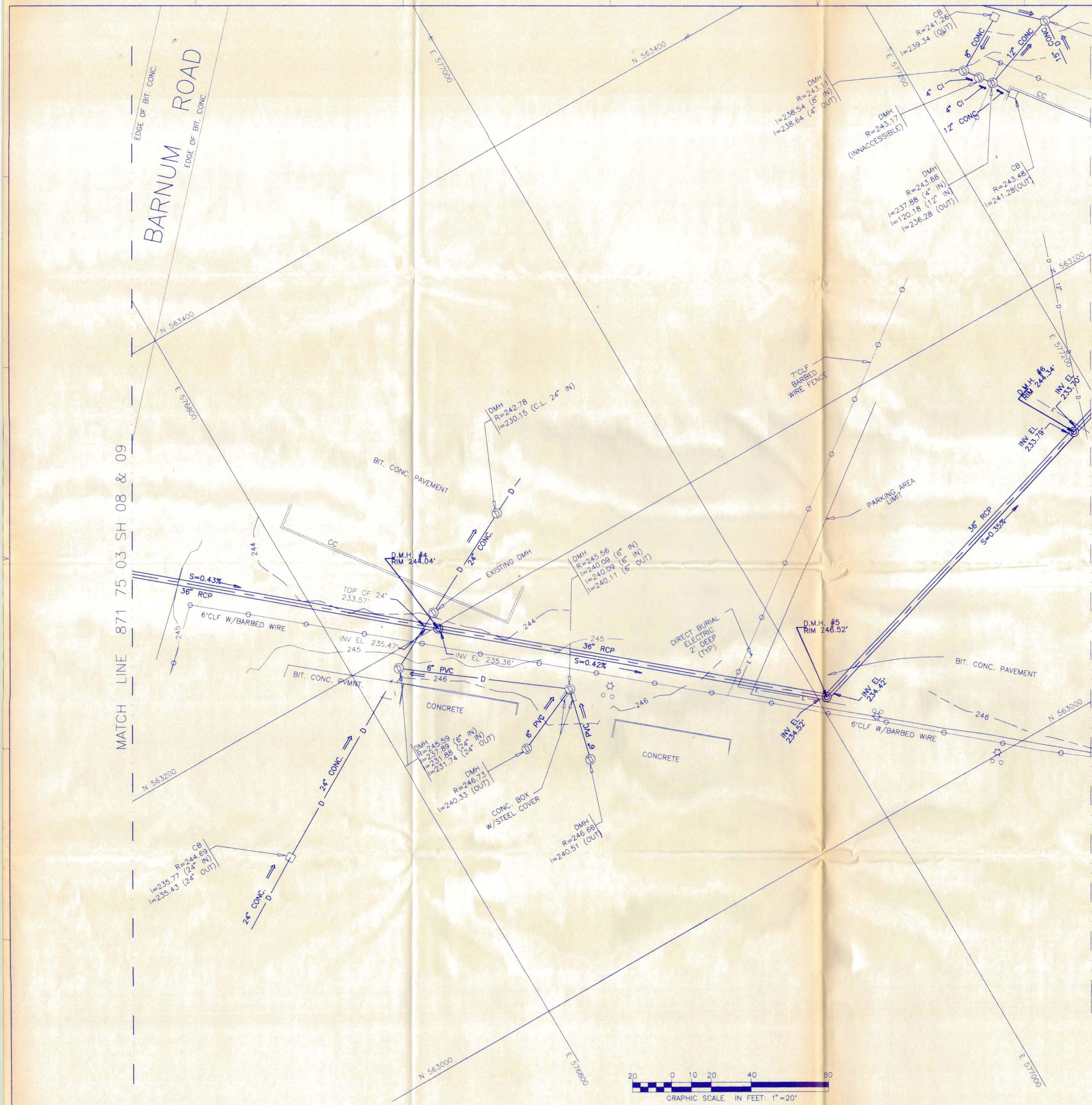
| | |
|---|---|
| DESIGNED BY: | A.J. PATTI |
| DRAWN BY: | A.J. PATTI |
| REVIEWED BY: | P. VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |

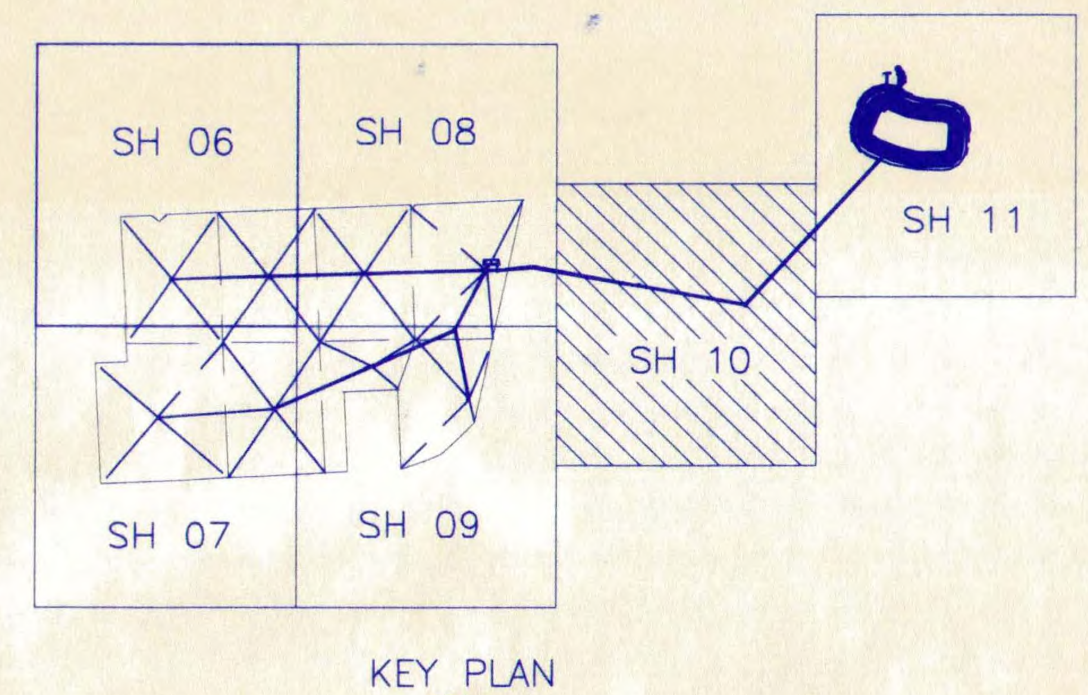
REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

FINISHED DRAINAGE

| | |
|---|---|
| SCALE: | 1"=20' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | FTDEV4.DWG |

SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 9 OF 13




KEY PLAN
N.T.S.

LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
- OVERHEAD WIRES W/UTILITY POLE
- WATER LINE
- GAS LINE
- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- MAJOR CONTOUR
- MINOR CONTOUR
- FLOW DIRECTION
- SPOT ELEVATIONS
- SOIL VENTING WELL
- EXISTING TEST PIT
- EXISTING SOIL VENT BORING (44B- 1)
- EXISTING GROUNDWATER MONITORING WELL (G3M- )
- HYDRANT
- LIGHTPOLE
- WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND

LEGEND (PROPOSED)

- CATCH BASIN
- DRAIN MANHOLE (CLOSED COVER)
- DRAIN PIPE
- LIMITS OF DRAINAGE AREAS
- SLOPES OF DRAINAGE AREAS
- LIMITS OF BIT PAVING
- SPOT GRADE (TOP OF BIT CURB) T/C 249.7'
- SPOT GRADE (TOP OF BIT PAVING) T/P 249.2'
- CONTOUR ELEVATION 240

ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
| CONC. | CEMENT CONCRETE |
| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
| BIT. CONC. | BITUMINOUS CONCRETE |
| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
| CSW | CONCRETE SIDEWALK |
| CNC. | CONCRETE |
| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:
1. FOR GENERAL NOTES, SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATION SECTION.
3. FOR SECTIONS, AND DETAILS SEE SHEETS 12, & 13.

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

| SYMBOLS | DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

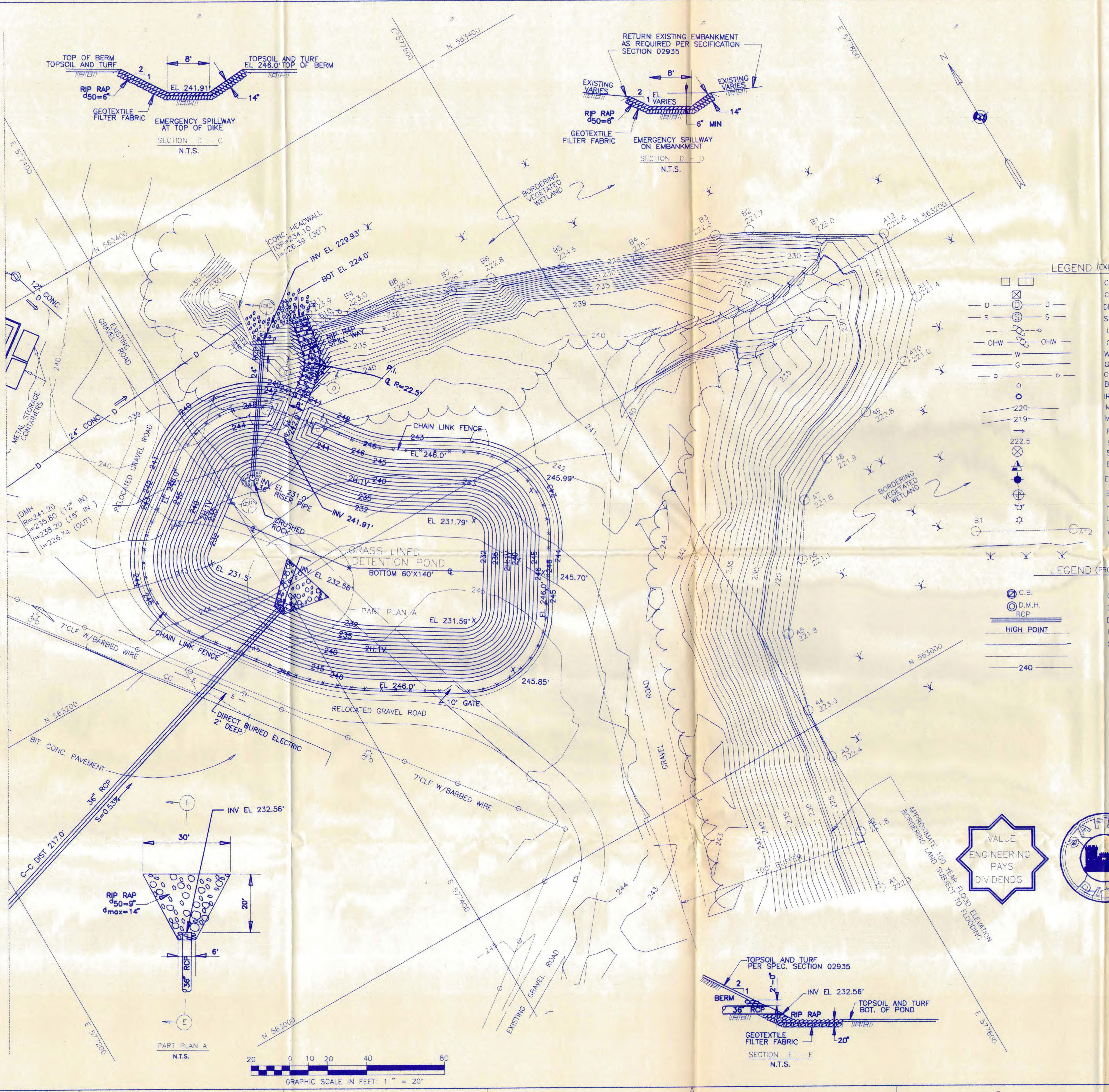
STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

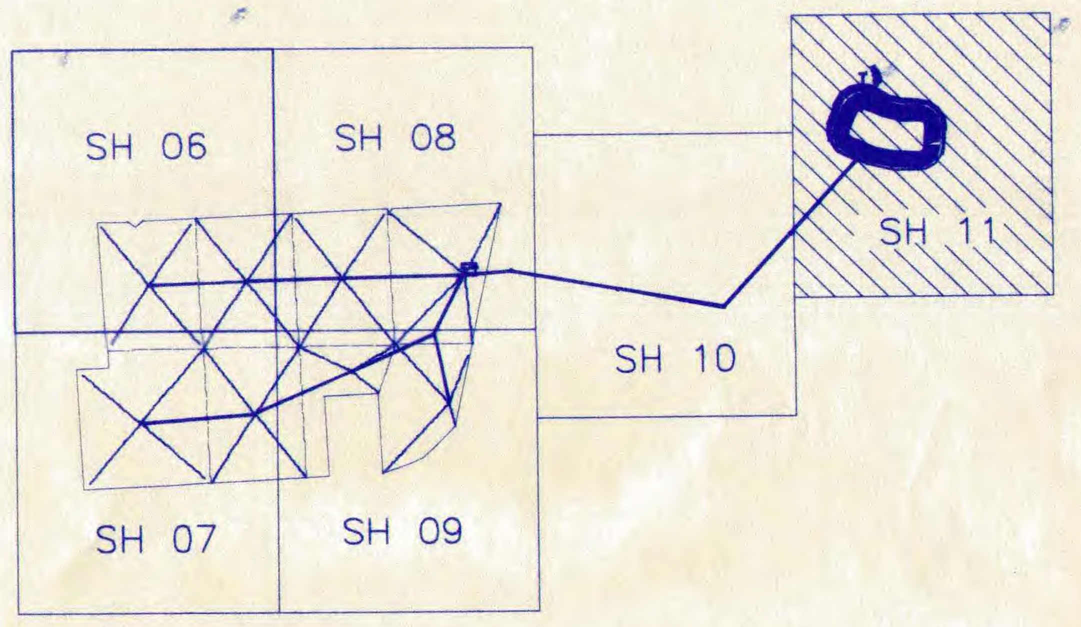
REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

FINISHED DRAINAGE

| | |
|---|---|
| DESIGNED BY: | A.J.PATTI |
| DRAWN BY: | A.J.PATTI |
| REVIEWED BY: | P. VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |
| SCALE: | 1"=20' |
| DATE: | MARCH 15, 1995 |
| CADD NO: | FTDEV5.DGN |

SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 10 OF 13




KEY PLAN
N.T.S.

## LEGEND (EXISTING)

- CATCH BASIN (SINGLE OR DOUBLE)
- CATCH BASIN (OPEN BOTTOM)
- DRAIN LINE W/MANHOLE
- SEWER LINE W/MANHOLE
- UTILITY POLE W/GUY WIRE
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- WATER LINE
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- CHAIN LINK FENCE
- BOLLARD
- IRON FENCE POST
- MAJOR CONTOUR
- MINOR CONTOUR
- FLOW DIRECTION
- SPOT ELEVATIONS
- SOIL VENTING WELL
- EXISTING TEST PIT
- EXISTING SOIL VENT BORING (44B- 1)
- EXISTING GROUNDWATER MONITORING WELL (G3M- )
- HYDRANT
- LIGHTPOLE
- WETLAND DELINEATION
- APPROXIMATE 100 YEAR FLOOD ELEVATION
- BORDERING VEGETATED WETLAND

## LEGEND (PROPOSED)

- CATCH BASIN
- DRAIN MANHOLE (CLOSED COVER)
- DRAIN PIPE
- LIMITS OF DRAINAGE AREAS
- SLOPES OF DRAINAGE AREAS
- LIMITS OF BIT PAVING
- CONTOUR ELEVATION

## ABBREVIATIONS

| | |
|---|---|
| C.B. | CATCH BASIN |
| M.H. | MANHOLE |
| D.M.H. | DRAIN MANHOLE |
| S.M.H. | SEWER MANHOLE |
| R= | RIM = |
| I= | INVERT = |
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| VC | VITRIFIED CLAY |
| PVC | POLYVINYL(CHLORIDE) |
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| VGC | VERTICAL GRANITE CURBING |
| CC | CONCRETE CURBING |
| CLF | CHAIN LINK FENCE |
| UP | UTILITY POLE |
| TBM | TABULATED BENCH MARK |
| CALC. | CALCULATED |
| F.F. | FINISH FLOOR |
| LOC. | LOCATION |
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| UST | UNDERGROUND STORAGE TANK |
| C.L. | CENTER LINE |
| PIV | POST INDICATOR VALVE |
| HYD. | HYDRANT |
| OHW | OVERHEAD WIRE |
| WG | WATER GATE VALVE |
| C.I. | CAST IRON |
| G.W. | GROUND WATER |
| CMP | CORRUGATED METAL PIPE |
| FTG | FOOTING |
| RCP | REINFORCED CONCRETE PIPE |

NOTES:
1. FOR GENERAL NOTES, SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATION SECTION.
3. FOR SECTIONS, AND DETAILS SEE SHEETS 12 , & 13.

| SYMBOLS | REVISIONS DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

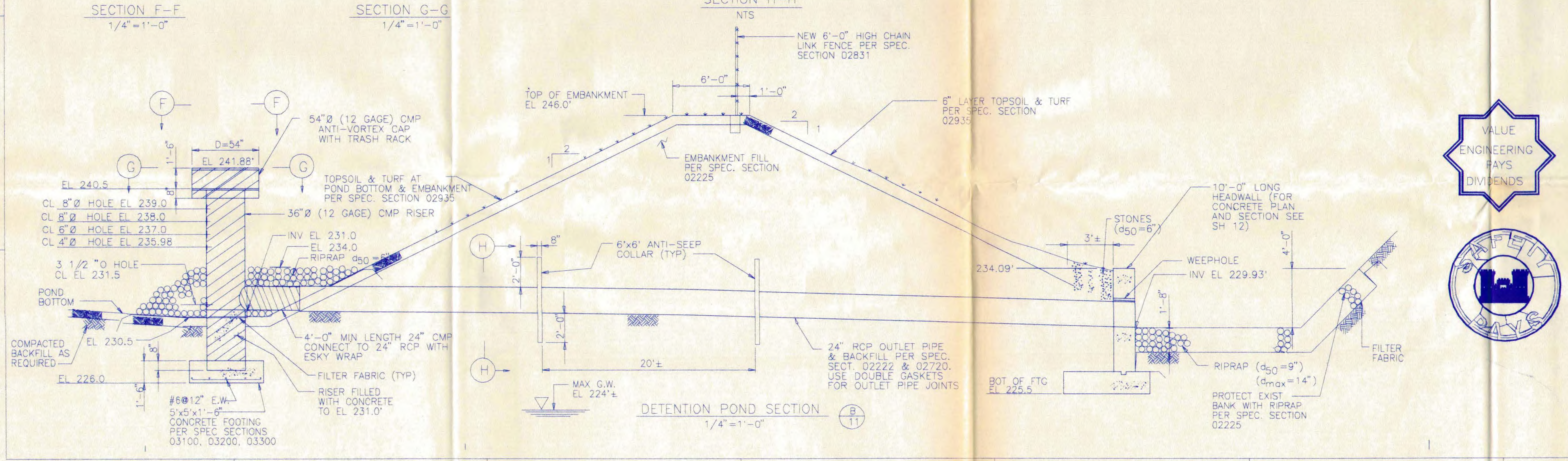
STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

DESIGNED BY: A.J. PATTI
DRAWN BY: A.J. PATTI
REVIEWED BY: P. VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED: CHIEF, DESIGN DIVISION

# REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52 FORT DEVENS, MASSACHUSETTS

## FINISHED GRADING & DRAINAGE

SCALE: 1"=20'
DATE: MARCH 15, 1995
CADD NO: FTDEV6.DWG
SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 11 OF 13


NOTES:

1. FOR GENERAL NOTES SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS.
3. SEE SHOP DRAWINGS REGARDING ROAD BOX DETAILS.

| SYMBOLS | DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |

REVISIONS

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

| | |
|---|---|
| DESIGNED BY: | P.M.VENETO |
| DRAWN BY: | L.S.GAUDETTE |
| REVIEWED BY: | P.M.VENETO |
| SUBMITTED BY: | HERBERT W. COLBY |
| APPROVAL RECOMMENDED: | |
| CHIEF, DESIGN DIVISION | |
| SCALE: | AS NOTED |
| DATE: | MARCH 15, 1995 |
| CADD NO: | MEA5.DWG |

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

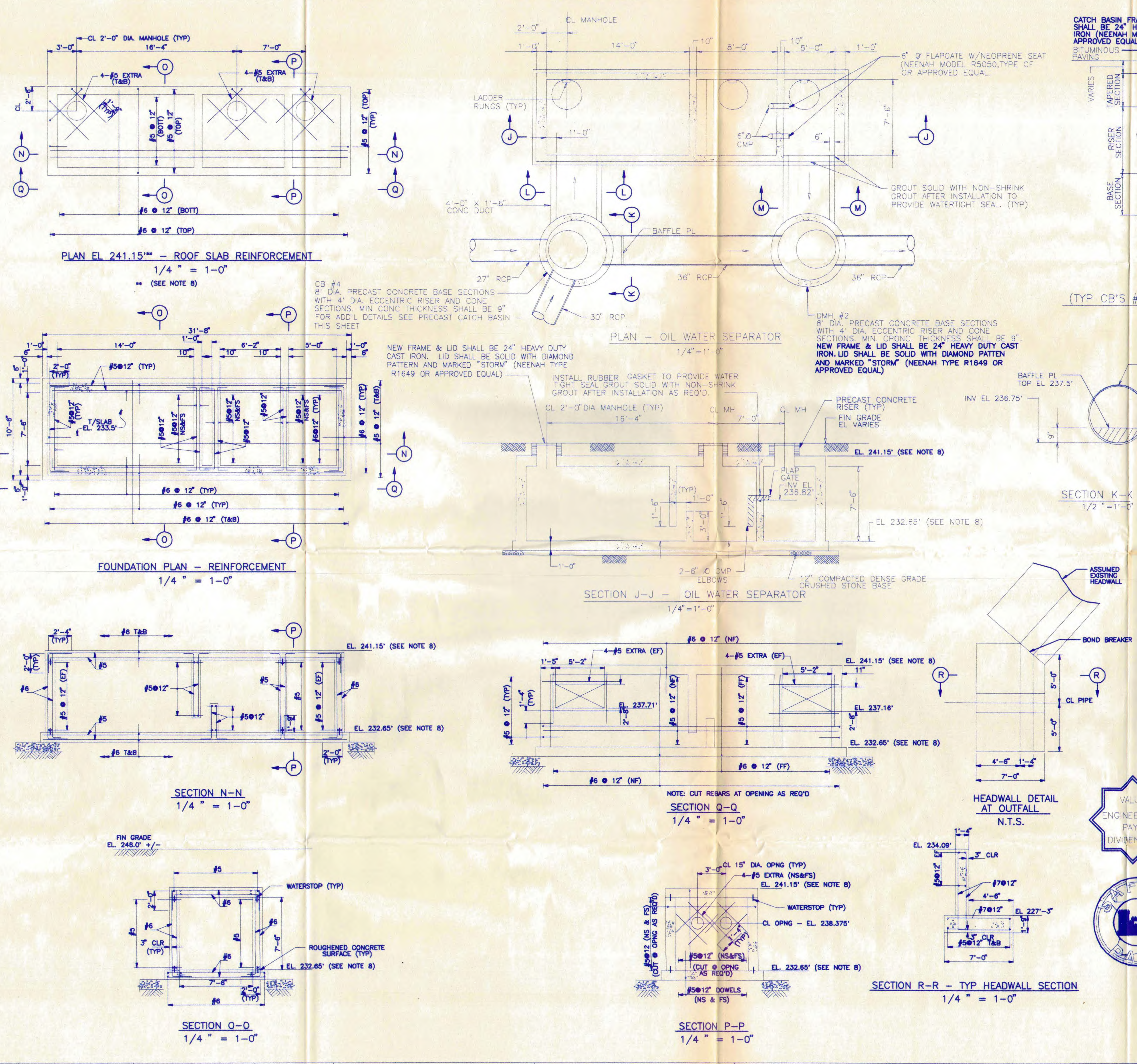
SECTIONS & DETAILS

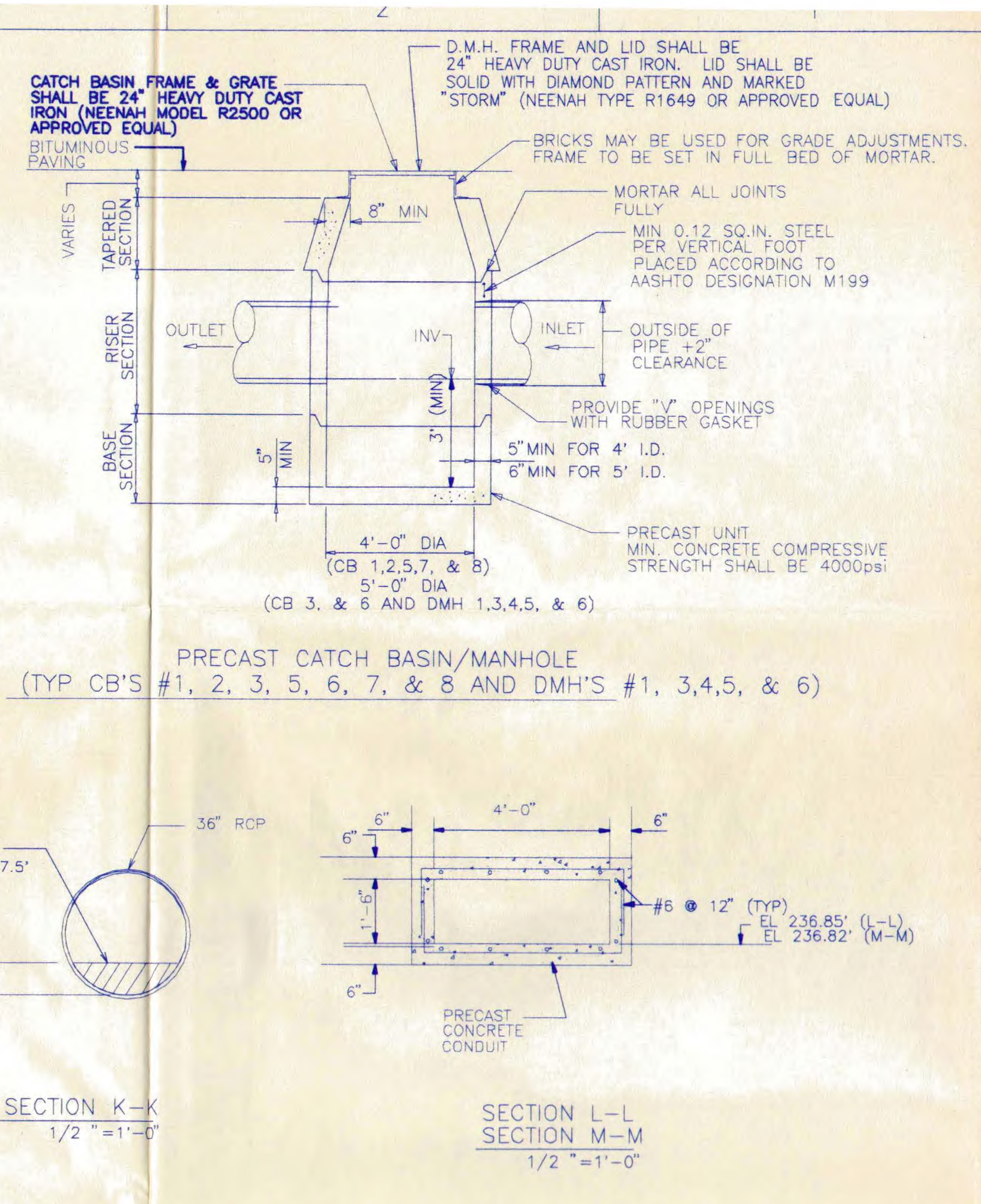
SOLICITATION NUMBER:

DRAWING CODE: 871 75 03

SHEET REFERENCE:

SHEET 12 OF 13




NOTES:

1. FOR GENERAL NOTES SEE SHEET 2.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE PROJECT SPECIFICATION.
3. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 psi, UNLESS OTHERWISE NOTED.
4. REINFORCEMENT SHALL CONFORM TO ASTM A615 , GRADE 60.
5. ALL WATER STOPS SHALL BE 6" PVC OR APPROVED EQUAL.
6. CONCRETE COVER FOR OIL/WATER SEPARATOR SHALL BE A MINIMUM OF 3" FOR EXTERIOR SURFACES AND 1 1/2 " FOR INTERIOR.
7. REFER TO OIL/WATER SEPARATOR SHOP DRAWINGS BY ROTONDO PRECAST CO. FOR DESIGN DETAILS.
8. REVISED PER P. VENETO 10/13/95

VALUE ENGINEERING PAYS DIVIDENDS

| SYMBOLS | DESCRIPTIONS | DATE | APPROVED |
|---|---|---|---|
| 1 | RECORD DRAWINGS PREPARED BY ROY F. WESTON, INC. FROM FIELD SUPPLIED DATA | 4/96 | |
| | REVISIONS | | |

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS

DESIGNED BY: C. TORRES
DRAWN BY: E. T. KERNAN
REVIEWED BY: P. M. VENETO
SUBMITTED BY: HERBERT W. COLBY
APPROVAL RECOMMENDED:
CHIEF, DESIGN DIVISION

REMEDIATION OF BARNUM ROAD MAINTENANCE YARDS AOC's 44 & 52
FORT DEVENS, MASSACHUSETTS

SECTIONS & DETAILS

SCALE: AS SHOWN
DATE: MARCH 15, 1995
CADD NO: MEA8.DWG

SOLICITATION NUMBER:
DRAWING CODE: 871 75 03
SHEET REFERENCE:
SHEET 13 OF 13