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REMOVAL ACTION WORK PLAN FOR DEFENSE, REUTILIZATION AND MARKETING
OFFICE SHORELINE STABILIZATION NSY PORTSMOUTH ME
9/1/1999
FOSTER WHEELER ENVIRONMENTAL CORPORATION

**US NAVY NORTHERN DIVISION
REMEDIAL ACTION CONTRACT (RAC)
CONTRACT NO. N62472-94-D-0398
DELIVERY ORDER NO. 0010
FOSTER WHEELER ENVIRONMENTAL CORPORATION**

**REMOVAL ACTION
WORK PLAN**

FOR

**DRMO SHORELINE STABILIZATION
AT
PORTSMOUTH NAVAL SHIPYARD**

KITTERY, MAINE

SEPTEMBER 1999

Prepared for

U.S. Navy Northern Division

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ATTACHMENTS

Attachment 1	Project Organization Chart
Attachment 2	Sample Documents
Attachment 3	Soil Sample Results

LIST OF ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CQC	Contractor Quality Control
CRF	Change Request Form
DRMO	DRMO Salvage Area
EZ	Exclusion Zone
FS	Feasibility Study
FWENC	Foster Wheeler Environmental Corporation
HASP	Health and Safety Plan
HSWA	Hazardous and Solid Waste Amendments Permit
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
MEDEP	Maine Department of Environmental Protection
mg/kg	Milligrams Per Kilogram
NA	Not Applicable
NCR	Non-Conformance Report
NPL	National Priority List
NTR	Navy Technical Representative
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PNS	Portsmouth Naval Shipyard
ppb	Parts Per Billion
PPE	Personal Protection Equipment
ppm	Parts Per Million
QC	Quality Control
QCM	Quality Control Manager
RAA	Regulatory Affairs Advisor
RAB	Restoration Advisory Board
RAC	Remedial Action Contractor
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facilities Investigation
ROICC	Resident Officer in Charge of Construction
SHSO	Site Health and Safety Officer
SQCR	Site Quality Control Representative
SVOCs	Semi-Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
VTSR	Verified Time of Sample Receipt

1. INTRODUCTION

Foster Wheeler Environmental Corporation (FWENC) is pleased to submit the Removal Action Work Plan to the Department of the Navy (Navy) in response to Delivery Order 0010. This work plan describes the work that will be performed at the Defense Reutilization and Marketing Office (DRMO) shoreline at the Portsmouth Naval Shipyard (PNS). This work is being undertaken by the Navy as an Emergency Removal Action using its lead agency authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The DRMO Salvage Area (DRMO) was identified as a site on the National Priority List (NPL) for PNS. Site investigations have indicated the presence of soil contamination, principally lead at elevated levels. Other chemicals (cadmium, copper, and zinc) may also exceed CERCLA's unacceptable risk level of 1×10^{-4} and the State of Maine's risk guideline of 1×10^{-5} , however, a site specific risk assessment including all data available from the site has not been performed at this time. A final remedy for the site has not yet been selected.

During an inspection of the PNS shoreline in June 1999, significant erosion was discovered along the shoreline of the Piscataqua River adjacent to the DRMO Salvage Area. The existing embankment rock had sloughed exposing lead contaminated soil from the DRMO area to potential erosion from the river. To protect human health and the environment from a release of lead contamination, an emergency removal action under CERCLA is being implemented. The interim measure is to protect the DRMO embankment soil from further erosion. FWENC will stabilize the shoreline by reshaping the existing embankment rock and add additional shoreline protection materials to form a barrier between the DRMO soil and the river. This Work Plan provides the details of how this work will be performed. Work described includes mobilization, site preparation, removal of existing curb and fence, removal of keel blocks and other debris from shoreline slope, regrading of embankment rock, placement of stone and geotextile layers to stabilize slope, replacement of curb and fence, site restoration, and demobilization.

1.1 PROJECT BACKGROUND

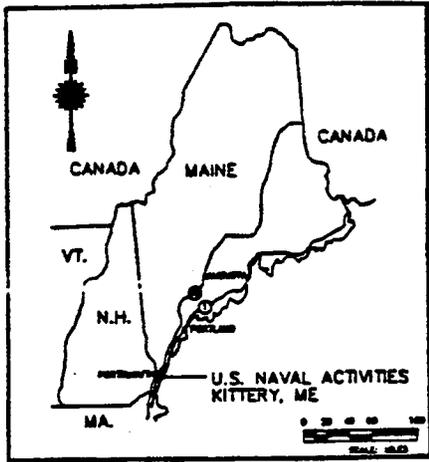
PNS is located on the northern side of the Piscataqua River in the Town of Kittery, Maine as shown in Figure 1-1. The shipyard, established in 1800, was primarily used to design, construct, repair, and overhaul submarines during the 1900s. Currently, the shipyard is involved in the conversion, repair and overhaul of submarines. The entire facility consists of approximately 278 acres, about 90 acres are filled land. The facility contains over 350 buildings that are densely clustered. Effective May 31, 1994, the PNS was listed on the NPL.

The DRMO Salvage Yard is located on the southern shoreline of PNS as shown in Figure 1-1. The area has been identified as Site 6 of the PNS's Installation Restoration Program (IRP). The area consists of approximately 2 acres of filled land, which is currently used as a scrap yard. It was previously used to store refuse, including lead and nickel-cadmium battery elements, motors, typewriters, paper products, and scrap metal prior to off-site recycling or disposal. Former uses of this area have resulted in high contamination levels of lead. In 1993, approximately one half of the scrap yard was paved, and the other half was covered with a Geosynthetic Clay Liner (GCL) cap with 12 inches of soil cover. The GCL cap was tied into a new concrete curb approximately 5 feet from the shoreline of the adjacent Piscataqua River.

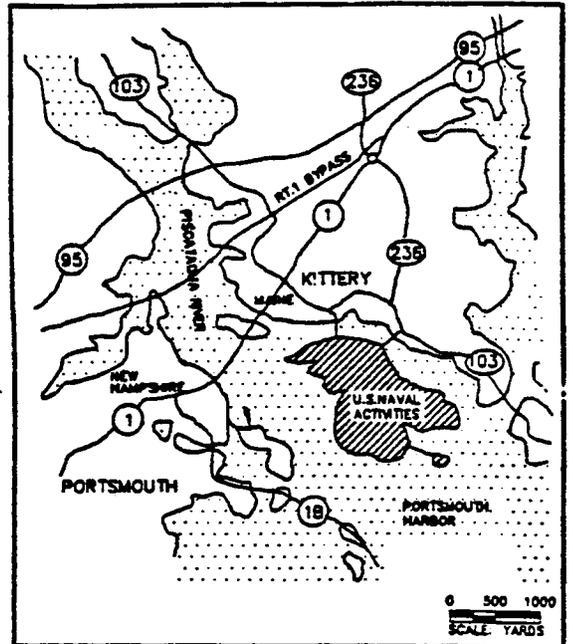
The DRMO shoreline formerly was covered with embankment rock (large riprap) and keel blocks at a steep slope of approximately 2H:1V (2 feet horizontally to 1 foot vertically), extending approximately 30 vertical feet below the low tide level. The keel blocks are constructed of concrete and wood and were used to support submarines in dry docks before being used for erosion protection. Despite this attempt to stabilize the shoreline, wave action of the river has caused the shoreline to deteriorate due to scouring behind the large keel blocks. This was caused by a lack of intermediate size stone and small stone bedding layers. Many of the riprap stones and keel blocks have moved down the slope. Much of the slope surface is left with exposed soil only, with no protection from erosion. On September 30, 1999, the exposed soil was covered with hydromulch as an interim erosion control measure. In some locations the deterioration of the shoreline has destabilized the fence to the extent that it is at risk of falling into the river. A more detailed explanation of how the previous riprap failed will be provided in the Removal Action Report.

1.2 OBJECTIVES

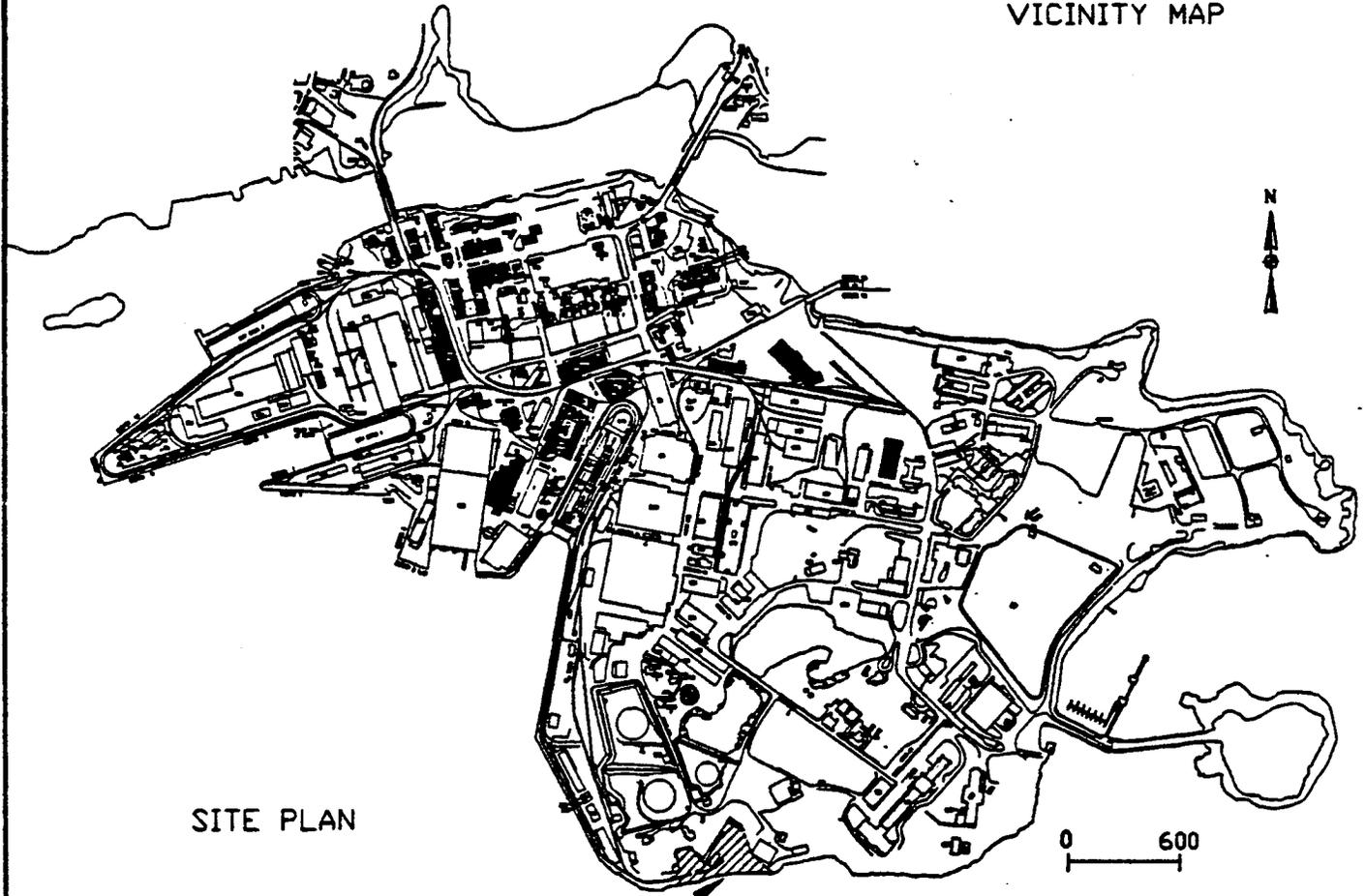
The objective of the project is to stabilize the DRMO shoreline in order to minimize additional soil erosion and migration of chemicals into the Piscataqua River. The stabilization design provides for filtering by using multiple layers of increasingly larger materials. FWENC will remove the existing curb and fence and create a temporary berm before proceeding with work on the shoreline. The keel blocks and other debris will be removed and disposed. The existing embankment rock, much of which has fallen to the bottom of the slope, will be regraded. Layers of soil/gravel, geotextile, bedding stone, intermediate rock, and surface rock will be placed to stabilize the slope. The curb and fence will be replaced, and the section of the GCL cap disturbed during construction of the berm will be restored. Specific aspects of the work are discussed in Section 4 of this work plan.



AREA MAP



VICINITY MAP



SITE PLAN

SITE LOCATION

Approximate scale in feet

**U.S. Navy RAC
Portsmouth Naval Shipyard
Kittery, Maine**

Figure 1-1
Site Location Map

Foster Wheeler Environmental Corporation

2. PROJECT MANAGEMENT

The Project Management Team will be responsible for all technical and administrative aspects of the project. Technical responsibilities include completion of the required removal and construction activities in accordance with the Work Plan and good engineering practices. Included among the team's administrative responsibilities are project communications, project controls and scheduling, document control, and project meetings.

2.1 PROJECT TEAM ORGANIZATION

The project organization chart is included in Attachment 1. The following personnel are considered to be key team members for the performance of this project:

Senior Project Engineer/Manager, C. Tippmann: The responsibility of the Project Manager is general oversight of all facets of the project. He will be responsible for the oversight, resource allocation, scheduling and quality control of the Project. He reports to the Program Manager and is first point of contact for the Contracting Officer's Technical Representative (COTR) and the Design Navy Technical Representative (NTR).

Project Superintendent, D. Sullivan: The Superintendent will be responsible for all on site construction activities including supervision of craft labor and subcontractors and control of materials and equipment. The Project Superintendent reports directly to the Project Manager and Design NTR and interfaces with the Site Quality Control Representative on a daily basis to ensure quality control standards are being met.

Project Procurement Engineer, M. Machado: The Project Procurement Engineer is responsible for procurement of materials and equipment and reports directly to the Project Superintendent.

Project Controls Engineer, J. Smith: The Project Controls Engineer is responsible for project controls, including scheduling, invoicing, and financial reporting and reports directly to the Project Superintendent.

Health and Safety Manager, G. Coppi: The Health and Safety Manager (HSM) is responsible for general oversight of the health and safety procedures used on this project. He will consult with and give direction to the Site Health and Safety Officer.

Site Health and Safety Officer, J. Carroll: The Site Health and Safety Officer (SHSO) will be responsible for the overall health and safety of all employees on site. The SHSO will be responsible for daily health and safety monitoring, implementation of all health and safety procedures and requirements, and maintenance of health and safety records. The SHSO will

have the authority to shut down any operation that is deemed by him to be unsafe. He will report to the HSM and will interface closely with the Site Superintendent.

Program Quality Control Manager, M. Miller: The Program Quality Control Manager (QCM) is responsible for approval and oversight of quality control activities and procedures used on the project.

2.2 PROJECT COMMUNICATION

Lines of communication between Foster Wheeler Environmental and other Project Team members will be as shown in the Project Organization Chart in Attachment 1. Communication between FWENC and PNS Security, Public Works, Environmental, and other departments will be through the Construction NTR in the office of the Resident Officer in Charge of Construction (ROICC).

2.3 DOCUMENT CONTROL

Quality control records, test reports, submittals and approvals, as-built drawings, changes to the contract, updated construction schedules, invoices, daily reports, and all other project record documents, as required, will be maintained in the project files. The files will be located in the site office and will be available for review by the Navy.

Technical changes to the work identified by FWENC, technical questions concerning drawings and specifications, and reporting of non-conforming items will be documented by the submittal of Field Change Requests, Requests For Information and Non-Conformance Reports to the Navy for disposition. These documents will be maintained in the project files. Formats that will be used for these reports and the daily reports are included in Attachment 2.

2.4 PROJECT MEETINGS

Pre-construction

Before any physical work begins on the site, the Foster Wheeler Environmental project staff and the Navy and their representatives will meet to discuss coordination of the project. Items to be discussed in this meeting will include access to the site, working hours, specific health and safety issues and general scheduling of the work.

Daily Safety Meeting

FWENC supervisory personnel will hold daily tailgate safety meetings to advise the workers of proper methods of performing the work planned for the day. The topics of discussion will be listed on a sign-in sheet and the sheet will be kept as a record of the meeting.

2.5 STATUS REPORTS

FWENC will prepare monthly status reports of the current condition of the project. The status reports will include a Technical Progress Report, Non-Compliance Report, Cost Performance Report, Project Schedule, updated Submittal Register, Government Materials Tracking Report, Variance Analysis Report, and a Waste Materials Report.

2.6 DAILY REPORT/CQC REPORT

Every day that work is performed, FWENC will prepare and submit the Daily Report/Contractor Quality Control (CQC) Report to the Navy. The report will be submitted the following business day.

2.7 SUBMITTAL REGISTER

The CQC representative will prepare and continually update a Submittal Register to document quality control for materials, inspection, and testing. The Submittal Register will be maintained on site and available for review.

2.8 REGULATORY AGENCY PERSONNEL SITE VISITS

To the extent possible, regulatory agency personnel who visit the site are requested contact the PNS's IRP Coordinator, Ms. Marty Raymond, at least one week in advance so that a Navy IRP representative will be available to answer questions or comments during the site visit. Communication of any such questions or comments to FWENC will be coordinated by the Navy.

3. DESCRIPTION OF ACTIVITIES

3.1 SCOPE OF WORK

The scope of work for this project includes removal of the existing curb and fence along the DRMO shoreline, removal and disposal of keel blocks and debris from the shoreline, regrading of the existing embankment rock, stabilizing the slope with gravel, geotextile, and stone layers, and replacement of the curb and fence. FWENC will provide the necessary supervision, labor, equipment, and materials required to perform the stabilization activities in accordance with applicable regulations. Upon completion of the stabilization activities, FWENC will restore any impacted areas to their original condition.

3.2 ANTICIPATED TASKS

The following major activities will be performed:

- Install erosion and sedimentation control measures.
- Remove and dispose existing curb. Use existing GCL cap material to create a temporary berm.
- Remove and dispose existing fence.
- Remove and dispose of keel blocks and other debris on slope.
- Regrade existing embankment rock to form a level bench.
- Cover existing soil surface with ASTM C33 size 8 stone.
- Lay geotextile along slope. Overlap seams 12 inches and lay seams perpendicular to slope.
- Place ASTM C33 size 357 bedding stone over geotextile.
- Place intermediate layer of Class C stone.
- Place surface layer of Class B stone.
- Pour concrete curb.
- Restore existing GCL by overlapping with replacement GCL behind curb. Seal joint with bentonite.
- Backfill GCL cap behind curb using berm material.
- Replace fence.
- Perform site cleanup. Demobilize resources.

3.3 MANPOWER REQUIREMENTS

FWENC estimates that the following union craft labor will be required for the proposed activities:

Operating Engineers -	3
Laborers -	4

3.4 EQUIPMENT REQUIREMENTS

Major construction equipment that will be used on this project includes the following. The Project Superintendent will substitute/add equipment as required.

1. Excavator with thumb attachment
2. Front end loader

3.5 CONTRACTOR QUALITY CONTROL

Contractor Quality Control (CQC) activities for the project will be performed by the Site QC Representative. He will be responsible for ensuring that contractor activities conform to the requirements of the work plan, the health and safety plan, and all applicable federal, state, and local regulations. CQC activities will be conducted as outlined in Section 5 of this work plan.

3.6 HEALTH AND SAFETY REQUIREMENTS

The site-specific Health and Safety Plan (HASP) provides requirements and guidelines that will be utilized in the field to protect the health and safety of workers. The SHSO will provide oversight of activities to ensure conformance with the HASP. The SHSO will supervise operations and be responsible for conducting site health and safety training/briefings, air and dust monitoring during operations, personnel monitoring, enforcing/modifying levels of Personal Protective Equipment (PPE), ensuring compliance with decontamination procedures, maintaining monitoring equipment, and documenting and reporting all health and safety related accidents or injuries.

The SHSO will conduct regular site safety inspections. Weekly and monthly reports will be prepared and submitted to the Health and Safety Manager. Daily health and safety reports will also be prepared and submitted with the daily report.

The following are specific components of the HASP that affect the daily activities of workers:

- A hazard assessment has been prepared for the major aspects of the project. Chemical, physical, and biological hazards associated with the project have been identified. Biological hazards may include insects, snakes, ticks, or plants such as

poison ivy. Activity hazard analyses have been prepared to define the specific risks and means of mitigation that are associated with daily construction activities.

- Control measures to reduce the risk of exposure to chemical, physical, and biological hazards.
- Specific training requirements that will enable workers to operate at the site and improve their awareness of health and safety are presented in the HASP.
- Control of site operations, use of PPE, site safety equipment, and on-site communications.
- Real-time air monitoring and medical surveillance procedures are included in the HASP.
- Decontamination procedures, including contamination prevention, personnel decontamination, equipment decontamination, and disposal procedures, have been defined for site work.

3.7 PROCEDURES FOR DECONTAMINATION

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when leaving the work site, either at the end of each day, during scheduled breaks, and/or upon completion of the project, when leaving a contaminated or potentially contaminated area and entering a clean one, and when completing a task involving handling contaminated material prior to beginning a clean task. Decontamination procedures are included in the HASP.

3.7.1 Personnel Decontamination

The following site activities present an opportunity for personnel contamination:

- Removal of existing curb.
- Removal of keel blocks and other debris from shoreline slope.
- Regrading existing embankment rock.
- Covering existing soil surface with gravel.
- Decontamination of equipment.

FWENC will apply engineering and/or work practice controls as a means of protecting personnel in performance of site-specific tasks. Engineering controls will be implemented to reduce and maintain employee exposure at safe levels for those tasks that include possible exposure to

hazardous chemicals. FWENC employees will wear appropriate PPE when engineering controls are impractical.

Any personnel exposed to possible contamination during daily activities will follow the decontamination procedures outlined in the HASP. Decontamination procedures will ensure that material which workers may have contacted in the Exclusion Zone (EZ) does not result in personal exposure and is not spread to clean areas of the site. The EZ will be limited to the work areas that are considered or suspected to contain hazardous chemicals, which will be revised and updated daily as waste material is exposed and subsequently covered with clean fill material.

3.7.2 Equipment Decontamination

All contaminated equipment will be decontaminated when switching from a contaminated task to a clean one and prior to being demobilized from the site. The bucket of the excavator may also be decontaminated if the potential for cross-contamination exists within any given excavation. Decontamination procedures may include sweeping, wiping, scraping, or steam cleaning the exterior of the equipment in accordance with the HASP. Personnel performing decontamination tasks will wear the proper PPE as prescribed in the HASP.

3.7.3 Disposal

Decontamination liquids, solids and used PPE will be placed in DOT-approved 1A2 & 1A2 55-gallon steel drums for disposal off site. The liquid and solid materials will be sampled and characterized accordance with the RCRA waste characterization procedures and the disposal facility's requirements. The materials will then be disposed of off-site in accordance with Federal and State of Maine regulations at a licensed facility by PNS. Used PPE material will generally be disposed of off site as non-hazardous waste.

4. STABILIZATION ACTIVITIES

4.1 MOBILIZATION

Temporary construction offices and facilities, lay down, and staging and material storage areas will be installed and/or established as part of the mobilization task. Temporary facilities will include an office trailer and portable toilets. The location of the temporary facility performance of the utility work will be coordinated with the Navy through the Resident Officer in Charge of Construction (ROICC). Arrangements will be made at the site for mail delivery and solid waste and sewage disposal services. Administrative staff, craft labor and equipment will be mobilized to the site as part of this task.

4.2 SITE PREPARATION

4.2.1 Documentation

To the extent possible, existing site conditions will be thoroughly documented with photographs. The Navy will also be responsible for taking photographs during during construction to document the work in the Removal Action Report..

4.2.2 Erosion and Sediment Controls

Prior to commencing the stabilization activities, erosion and sediment control measures will be installed around the work area. The following describes the erosion and sediment controls that will be installed:

- A temporary diversion berm will be constructed on the upgradient side of the slope, using the existing cover material. The existing cover consists of stone and cement with a high content of fines that will minimize permeability of the berm.
- All disturbed areas will be covered daily with gravel which will be incorporated into the stabilization work or 10 mil polyethylene plastic.

Erosion and sediment controls may be installed in additional locations if determined necessary during the site preparation activities. All of the erosion and sediment controls will be inspected and maintained on a daily basis.

4.2.3 Curb and Fence Removal

The existing curb, which ties in to the Geosynthetic Clay Liner (GCL) cap, will be removed and sent to a concrete recycling facility. The crushed stone aggregate/portland cement material of the existing cap will then be used to create a temporary diversion berm over the GCL cap. Care will be taken when digging into the cap to minimize damage to the GCL under the stone layer. A section of GCL will be installed to replace the GCL that was damaged during the removal of the curb. The replacement GCL will overlap the existing GCL by 12 inches. Granular bentonite will

be sprinkled along the entire overlap width to seal the existing GCL to the replacement GCL. The existing fence, which has been destabilized by the erosion of the shoreline slope, will be removed and disposed.

4.3 SHORELINE SLOPE STABILIZATION

4.3.1 Removal of Keel Blocks and Debris

The keel blocks that were placed to stabilize the shoreline will be removed along with other debris that has accumulated. The excavator with thumb attachment will be used for this activity. The wood and concrete components of the keel blocks will be separated and sent to the appropriate recycling facilities. The additional debris collected will be disposed of as construction debris. Personnel will take care to avoid walking directly on the slope, in order to prevent contact with contaminated soil. In order to contain contaminated soil on the slope, all materials to be removed from the slope will be broomed off to remove any adhering dirt prior to being disposed off site. If brushing blocks and debris is not sufficient to remove adhering soil, the items will be disposed at an approved off-site hazardous disposal facility. Debris will be broomed prior to removal from the slope area and then will be placed in polyethylene plastic lined rolloff containers segregated for wood and concrete waste.

4.3.2 Regrading

Much of the existing embankment rock that had previously provided erosion protection over the shoreline slope has shifted down to the lower portion of the slope. Approximately 250 cubic yards of the rock will be consolidated and regraded to form a level bench midway down the slope to provide a foundation on which the new shoreline stabilization system can be constructed. Minor regrading of the exposed slope will be performed in order to level off any surface irregularities. This activity will be minimized to limit disturbance of the contaminated soil on the exposed shoreline slope.

The hydromulch that was spread on the soil as an interim erosion control measure will be left in place and covered by the embankment rock. The volume of organic material is minimal and will not affect slope stability.

4.3.3 Shoreline Stabilization

The exposed soil surface at the top of the slope will be covered with ASTM C33 size 8 stone. The thickness of the layer will be variable but sufficient to cover the existing soil, with a minimum thickness of 3 inches. This layer will provide soil filtering characteristics as well as structural strength to hold the slope. A layer of 16-oz. nonwoven geotextile will then be placed along the slope to act as a filter that is permeable to water but prevents lead contaminated soil from migrating out. The geotextile will provide durability and resistance to mechanical damage. The seams of the

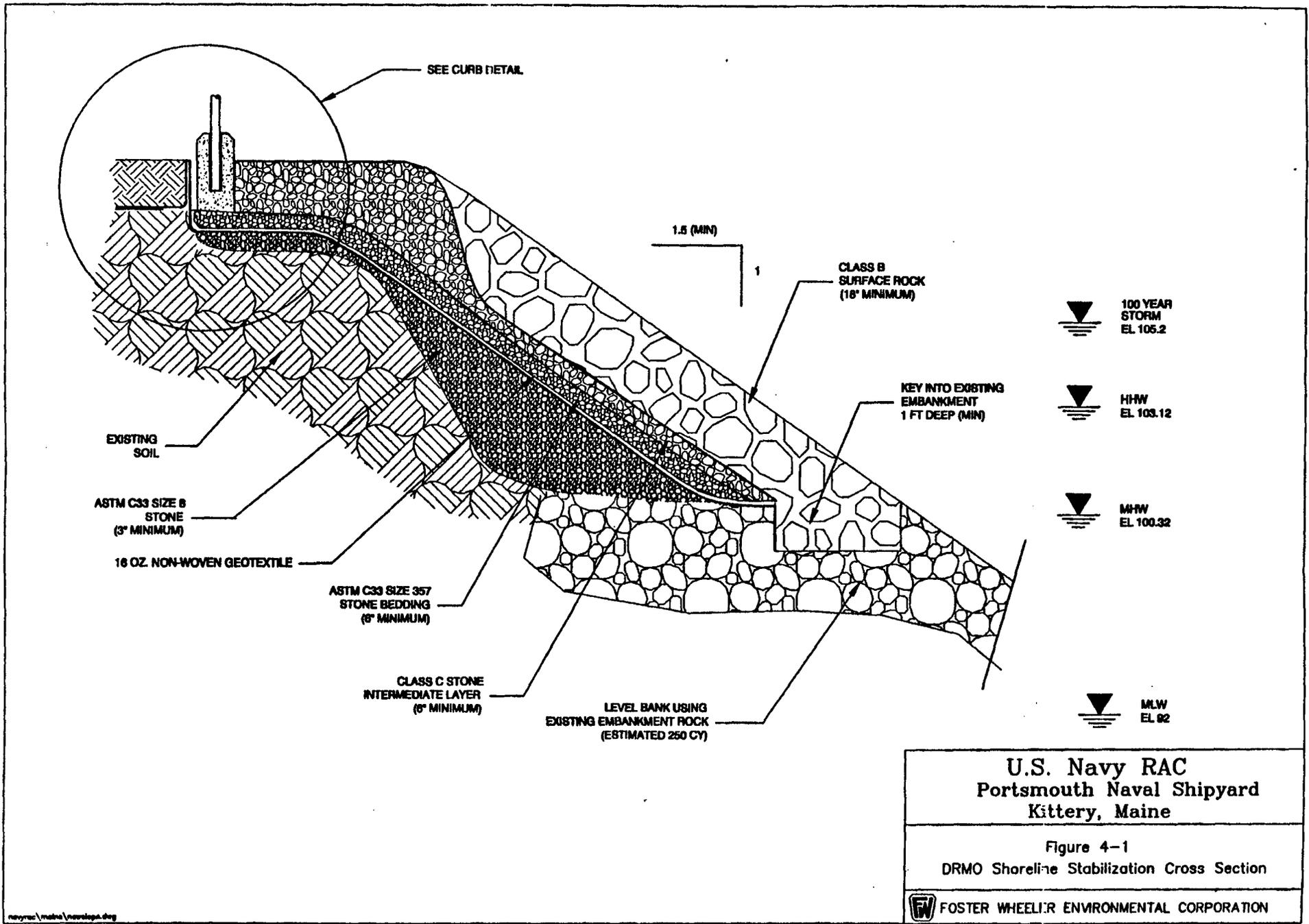
geotextile sections will be overlapped 12 inches and will be perpendicular to the slope. A minimum 6-inch layer of ASTM C33 size 357 stone bedding will be placed over the geotextile. A minimum 6-inch intermediate layer of Class C stone (100% passing 12-inch, 50-90% passing 4-inch, 0-30% passing 1-½ -inch, 0-10% passing ¾-inch) will then be placed on the shoreline slope. A final layer of Class B surface rock (approximately 50% with minimum volume of 3 cubic feet and 40percent ranging from 1-3 cubic feet) will be placed with a maximum slope of 1:1.5. The surface rock will be keyed into the existing embankment rock to provide slope toe protection. See Figure 4-1 for a cross section of the stabilized slope. Below the mean high water line, the existing soil will continue to be held in place by the existing embankment rock. The rock is variably sized to minimize voids, and provides 5-10 feet of cover, which will prevent the soil from piping out.

A concrete curb will be poured to replace the curb that was removed during site preparation activities. The concrete will be 3500 psi strength. The exposed corners will be chamfered. Expansion joints will be provided every 100 feet and contraction joints will be saw-cut every 10 feet. Three-inch diameter galvanized pipe sleeves will be embedded 12 inches into the curb at 10-foot intervals. The temporary berm will be removed and the material will be returned to its original position as backfill against the curb. The geotextile and GCL layers will be terminated between the backfill and the curb. In this configuration, the GCL will contain water within the existing DRMO work pad, diverting it away from the slope area to prevent leaching of contaminated soils into the river.

A subcontractor will install a fence. The fenceposts will be inserted into the curb, and the voids in the sleeves will be filled with nonshrink grout. Figure 4-2 shows a detail of the curb area.

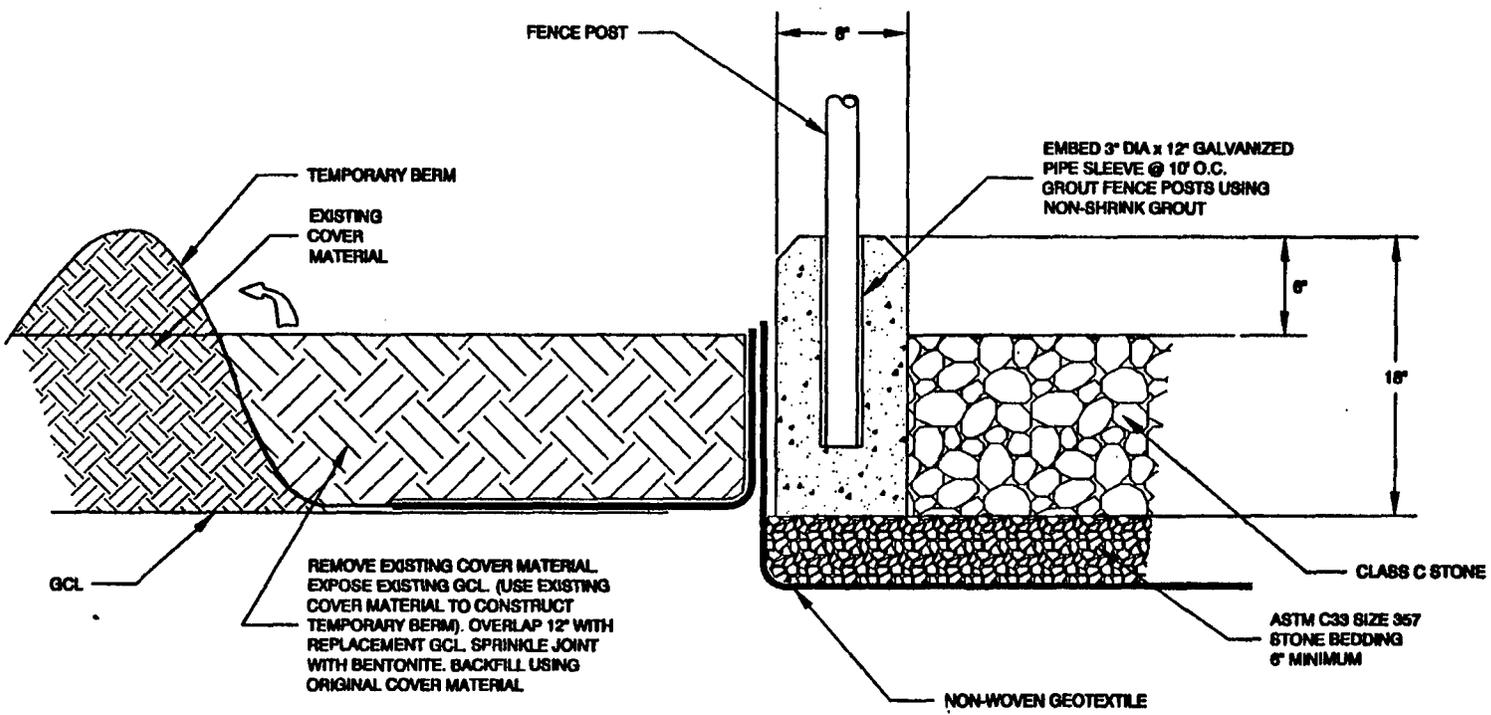
4.4 WASTE DISPOSAL

FWENC will place all of the waste materials in DOT-specification drums, drum overpacks and polyethylene plastic lined roll-off containers that will be provided by PNS. FWENC will also perform waste characterization sampling as required, and provide PNS with the sample results for waste profiling and waste manifesting. Disposal of the waste materials generated will be performed by PNS. It is assumed that most debris, PPE, and decontamination wastes will not be RCRA hazardous because potentially hazardous soils will be removed from the debris surface and returned to the slope prior to disposal. Debris from which adhering soils can not be removed by brushing will be handled as described in Section 4.4.5.



U.S. Navy RAC
 Portsmouth Naval Shipyard
 Kittery, Maine

Figure 4-1
 DRMO Shoreline Stabilization Cross Section



NOTES

1. EXISTING CONCRETE CURB SHALL BE REMOVED AND REPLACED WITH THE ABOVE DETAIL.
2. CONCRETE SHALL BE 3500 PSI. EXPANSION JOINTS SHALL BE PROVIDED EVERY 100 FEET. CONTRACTION JOINTS SHALL BE SAW CUT EVERY 10 FEET. CHAMFER TOP CORNERS.

<p>U.S. Navy RAC Portsmouth Naval Shipyard Kittery, Maine</p>
<p>Figure 4-2 DRMO Shoreline Stabilization Curb Detail</p>
<p> FOSTER WHEELER ENVIRONMENTAL CORPORATION</p>

4.4.1 Concrete and Stone Debris

Concrete and stone will be swept or brushed clean of all adhering soil particles prior to removal from the shoreline area, and will be visually inspected to ensure that it is visibly clean prior to placement in a polyethylene plastic lined rolloff container. This debris will be recycled at an approved recycling facility. Concrete that cannot be swept clean or which is visibly stained will be placed in a segregated rolloff container for disposal at an approved solid waste landfill. Rolloff container(s) will be labeled with non-hazardous waste labels.

4.4.2 Wood Debris

Wood debris will be swept clean of all adhering soil particles and placed in a lined rolloff container for recycling at an approved facility. Wood that is visibly stained or not cleanable will be placed in a separate rolloff container for disposal at a Subtitle D Solid Waste Landfill. Non-hazardous waste labels will be placed on the rolloff containers.

4.4.3 Decontamination Water

Decontamination water is expected to be non-hazardous and will be placed in DOT specification 55-gallon steel drums for off-site disposal. Drum will be labeled with non-hazardous waste labels, and waste name and accumulation start date. Decontamination water will not be discharged to the ground surface, surface water, or on-site sewers without written authorization from Maine DEP and PNS. Decontamination water will be sampled and tested for RCRA characteristics prior to disposal at an approved disposal facility.

4.4.4 Fencing

Chain link fencing removed from the shoreline area will be broomed clean to remove all adhering soils and will be placed in a segregated rolloff container for shipment to a approved scrap metal recycling facility.

4.4.5 Mixed Debris

Mixed debris (wood, paper, plastic, glass, metal) that is not recyclable will be broom cleaned to remove all adhering soils and visually inspected to ensure a visually clean surface prior to placement in a lined rolloff container for off-site disposal at a approved disposal facility.

Mixed debris that is visibly stained, or does not meet the EPA definition of a visibly clean surface, will be segregated in a separate lined rolloff container. This debris will be tested for TCLP metals prior to

off-site disposal. Rolloff containers will be initially labeled with a non-hazardous waste label and the accumulation start date. If the TCLP analysis exceeds regulatory limits, the container will be labeled with Hazardous Waste Labels and will be turned over to PNS for disposal.

4.4.6 Waste Handling and Storage

All wastes will be stored in lined rolloff containers or DOT-approved drums. All containers will initially be labeled with the waste name, start date, and a Non-Hazardous Waste Label. All drums and rolloff containers will be securely covered or tarped except when waste is being placed in or removed from the containers. Liquid waste containers will be placed within polyethylene lined secondary containment.

A written waste inventory will be maintained for all wastes generated and will include the following information:

- Waste name
- Date generated
- Container size
- Container number
- Waste classification and/or waste codes
- Date shipped off-site
- Manifest or Bill of Lading number

Waste storage areas and containers will be inspected weekly and the inspections documented in writing.

4.4.7 Waste Transportation and Disposal

Only Navy approved disposal facilities and transporters for off-site waste disposal will be used. Since PNS is a CERCLA site, any hazardous wastes or wastes containing CERCLA Hazardous Substances will be disposed only a facilities approved by EPA to accept CERCLA waste.

4.4.8 Waste Disposal Documentation

All waste will be handled by PNS.

FWENC will maintain copies of all waste documentation, including waste analyses, waste inventories, profile sheets, manifests and bills of lading, and invoices in the project file. Originals will be forwarded to the client upon project close out. Copies will be retained in the project file.

4.5 SITE RESTORATION

Site restoration involves returning all of the impacted areas of the site to their pre-construction condition. Impacted areas include the shoreline slope area, stockpile areas, site haul roads, and the support zone area. Since these areas were not previously vegetated, replanting will not be required.

4.6 DEMOBILIZATION

All excavation equipment, office trailers, storage containers, and construction supplies will be demobilized upon completion of the stabilization activities. All of the construction equipment will be cleaned prior to being demobilized.

5. QUALITY CONTROL

The Navy will provide a Site Quality Control Representative (SQCR) to perform on-site QC functions throughout the stabilization activities at the DRMO shoreline area. The SQCR will conduct physical inspections of the site activities and interface with the Program Quality Control Manager to document that the work is performed in accordance with the project plans. All subcontractors will conform to and participate in the QC program as described in this document.

5.1 PERSONNEL TRAINING REQUIREMENTS

Training requirements for personnel working on this project are identified in the HASP.

5.2 INSPECTION AND AUDIT PROCEDURES

5.2.1 Preparatory Phase

The preparatory phase will be conducted with the SQCR, the superintendent, and the foreman responsible for the definable feature, documenting the results of the preparatory phase actions in the daily CQC Report. The following will be performed prior to beginning work on each definable feature of work:

- Review each paragraph of the applicable Work Plan sections;
- Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- Review the testing schedule and ensure that provisions have been made to provide the required QC testing;
- Examine the work area to ensure that the required preliminary work has been completed;
- Examine the required materials, equipment, and sample work to ensure that they are on hand and conform to the approved Work Plan and submitted data;
- Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDSs) are submitted; and
- Discuss construction methods.

5.2.2 Initial Phase

When construction crews are ready to start work on a definable feature of work, the initial phase will be conducted with the SQCR, the superintendent, and the foreman responsible for that definable feature of work. The initial segment of the definable feature of work will be observed to ensure that the work complies with contract requirements. The observation will be documented in the daily CQC Report. The initial phase inspection will be repeated for each new crew to work on-site, or when acceptable levels of specified quality are not being met. The following will be performed for each definable feature of work:

- Establish the quality of workmanship required;
- Resolve conflicts;
- Review the HASP and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and
- Ensure that testing is being performed by the approved laboratory.

5.2.3 Follow-Up Phase

The following will be performed for ongoing work daily, or more frequently as necessary, until the completion of each definable feature of work. Follow-up inspections will be documented in the daily CQC Report:

- Ensure the work is in compliance with contract requirements;
- Maintain the quality of workmanship required;
- Ensure that testing is being performed by the approved laboratory; and
- Ensure that rework items are being corrected.

5.2.4 Audit Procedures

Any outside party requesting access to inspect the site should be referred to the Project Superintendent, who will initiate the appropriate notification of the Project Manager, the Navy ROICC and the RAA. Access to the site will be coordinated with the Navy.

5.3 CHANGES AND NON-CONFORMANCES

5.3.1 Changes in Project Plans

Circumstances during the construction process may develop making it necessary for the Work Plan to be revised to accomplish the project goals. These circumstances could include such events as changed site conditions (e.g., subsurface features); proposed use of alternative methods or materials and required improvements in the work plan to permit smooth and effective construction activities.

A Change Request Form (CRF) will be generated by project field staff in response to these changes. The CRF will be prepared by the Senior Project Engineer and processed by the Project Superintendent in accordance with established Foster Wheeler Environmental engineering procedures. CRFs will be reviewed by the Navy, USEPA, and the Maine Department of Environmental Protection (MEDEP). The Navy will communicate the changes to the Restoration Advisory Board (RAB). All comments will be considered. Once approved by the Navy, the CRF acts to supersede the pertinent sections of the Work Plan.

5.3.2 Control of Discrepant and Non-Conforming Items

Discrepant items are those found during inspection to be incomplete, but are correctable by further prescribed processing. Non-conforming items are those that have been completed, inspected, and accepted, but are subsequently found to deviate from the design documents.

5.3.2.1 Discrepant Items

Incomplete items that are discovered during field activities to be discrepant, but which are correctable by further prescribed processing are controlled and documented by the use of Rework Item List (see Attachment 3) prepared and maintained by the SQCR. This list describes the discrepancy that must be corrected before the item is completed, inspected and accepted. Discrepant items that are corrected within the same shift as discovered need not be placed on a rework item list, but will be reported in the Daily Report.

5.3.2.2 Non-Conforming Items

Non-conforming items will be controlled and documented by the use of a non-conformance report. A sample non-conformance report is shown in Attachment 3. The verification of corrective actions taken in accordance with the non-conformance reports is the responsibility of the SQCR. The non-conformance report will be accurately and concisely written by the SQCR after consultation with the interested parties to ensure that the nonconforming item is correctly described, the appropriate program criteria referenced, and sufficient data provided to facilitate proper and complete dispositions to resolve the non-conformity. The non-conformance report is reviewed by the Program QCM, and is then transmitted to the Construction NTR and the Design NTR. Each non-conformance report will be given a disposition by the Construction NTR and/or Design NTR, which is the action required to correct or resolve the non-conformance.

Non-conformance reports are dispositioned in one of the following four ways:

- "Rework," which is the action by which a non-conforming item is processed to make it conform to the requirements of the design documents.
- "Repair," which is the action to make a non-conforming item perform its intended use but not necessarily meet all the requirements of the design documents.
- "Reject," which is the action taken to eliminate a non-conforming item from its specified use and replace it with conforming material.
- "Use-As-Is," which is the action taken by the Construction NTR to accept an otherwise non-conforming item.

The Program QCM is authorized to make "Rework" and "Reject" dispositions. "Repair" and "Use-As-Is" dispositions are obtained from the Construction NTR by means of a non-conformance report. Upon completion of "Rework" and "Reject" dispositions, the SQCR will make a re-inspection to determine acceptability of the work. If the item is found acceptable as the result of the re-inspection, the SQCR will document his acceptance, and the Program QCM will sign and date the non-conformance report.

If the item is found unacceptable during the re-inspection, the SQCR signs, dates and reprocesses the non-conformance report.

If the final disposition is "Reject," the SQCR and Program QCM sign and date the non-conformance report after ensuring that adequate measures have been taken to prevent the inadvertent use of an unacceptable item.

Information copies of each completed non-conformance report are sent to the Construction NTR. Distribution of the non-conformance report is shown on the report.

5.4 MATERIAL VERIFICATION

The SQCR will perform verification to ensure that the following materials meet the requirements of the project:

1. Geosynthetic Clay Liner (GCL)
2. Nonwoven geotextile
3. Aggregates

5.5 SUBMITTALS

5.5.1 Submittal Log

The Site Quality Control Representative will maintain and update the submittal log throughout the project.

5.5.2 Reviewing, Certifying, Approving Authority

The SQCR will be responsible for preparing the project technical submittals and assuring that they are in compliance with the contract requirements. The SQCR will then forward the submittals to the Program QCM for review and approval. The Program QCM is Mr. Mark Miller. The SQCR and Project Superintendent will interface with the Program QCM to ensure that all submittals are submitted to the required Navy personnel. Each submittal will be accompanied by a transmittal form to identify the contents of the submittal and to provide a unique tracking number.

5.6 REPORTING AND DOCUMENTATION

The following information and data will need to be recorded and transferred to the Navy as part of the reporting requirements.

5.6.1 Daily Production Reports

As part of the QC requirements, the Project Superintendent will submit a daily production report for the previous day's activities to the ROICC office. The report will include all the previous day's activities, health and safety incidents, and any other relevant events that occurred the previous day. This report will be submitted within 24 hours of the activities.

5.6.2 Daily Contractor Quality Control (CQC) Reports

A daily CQC Report will be submitted with along with the Daily Production Report that includes a QC review of the project and results of all inspections and testing. All inspections and testing activities performed will be documented with the appropriate forms to address each work activity inspected by the SQCR according to the established acceptance criteria. The SQCR will maintain current records of quality control operations, activities and tests performed, including the work of subcontractors and suppliers. These records will include factual evidence of required quality control activities including the following:

- Work performed daily, giving location, description, and by whom.
- Results of test and/or quality control activities performed with results and references to specifications/plan requirements. The control phases involved per definable feature of work will be identified (e.g., preparatory, initial, and follow-up). Any deficiencies, along with corrective action, will be noted.

- **Material received with statement as to its acceptability and storage.**
- **Submittals reviewed, with contract reference, by whom, and action taken.**
- **Results, instructions, and/or corrective actions taken as a result of specific job safety evaluation.**
- **Any instruction given or received, conflicts in plans or specifications, and status of resolution.**
- **Subcontractor's verification statements and certifications.**
- **Completed CRFs.**
- **Non-Conformance Reports.**
- **QC Daily Log.**
- **All measurements performed on the excavations.**

Operations records will include a description of trades working on the project, the number of personnel working, weather conditions encountered, and any delays encountered. These records will also cover both conforming and deficient features.

6. ENVIRONMENTAL PROTECTION AND REGULATORY COMPLIANCE

This Environmental Protection Plan fulfills the requirement identified in Part 4.0, Environmental Requirements, of the RAC, as well as the requirement identified in the Foster Wheeler Environmental Regulatory Compliance Policies and Procedures.

As this activity is being performed entirely on-site under CERCLA, no environmental permits will be required for the remedial activities. However, compliance with substantive applicable, relevant and appropriate federal and state environmental and construction regulations will be required as discussed below.

6.1 AIR POLLUTION CONTROL

Fugitive dust emissions may result from project operations. Consequently, control technologies will be used to monitor and control dust emissions. This will include keeping surfaces adequately wet during construction activities, covering exposed soil areas with 10 mil polyethylene plastic sheeting or Size 8 stone and covering waste hauling vehicles to prevent fugitive dust emissions. Additional controls are identified in Section 4.10 of the RAC. To assure compliance with state air pollution control requirements, all project activities will be conducted in compliance with Maine Ambient Air Quality Standards (06-096 CMR 110) and Classification of Air Quality Control Regulations (06-096 CMR 114).

6.2 STORM WATER AND EROSION CONTROL

This section contains information about remedial activities that will require erosion and sedimentation control and the types of protection that will be employed. Descriptions of all remediation activities can be found in Section 4.0 of this Work Plan.

Construction activities at PNS may impact surface water runoff and require erosion and sediment controls to be established. The following activities may require the establishment of erosion and sediment controls:

- Removal of fencing, concrete curbing and existing GCL cap;
- Excavation and removal of curbing, keel blocks and debris;
- Regrading of existing embankment rock and underlying soils;
- Placement of underlying stone and surface rock
- Site restoration.

The primary methods of erosion protection to be employed will be diversion and slope protection by covering. By installing a temporary berm above the excavation slope, surface water will be diverted from the excavation area. The slope surface diversion area will be kept to a minimum. Disturbed areas will be covered daily with stone or polyethylene sheeting to prevent erosion. Since the base of the excavation consists of large rock, installation of silt fence is not possible. Also, the swift tidal currents will prevent installation of a silt curtain in the Piscataqua River.

FWENC will provide continuing maintenance of the erosion and sediment controls throughout the project. All controls will be inspected daily and after each precipitation event. Inspections will be documented in writing in the project file.

6.3 WASTE MANAGEMENT AND DISPOSAL

FWENC will be responsible for the characterization, testing, containerization, and staging of all waste materials as specified in Section 4.4 of the Work Plan. Off-site disposal will be the responsibility of the Navy.

6.4 WETLANDS PROTECTION AND PERMITTING

The shoreline at PNS DRMO area is regulated as a Coastal Wetland by Maine DEP and the USACE. Since project activities will result in the excavation and placement of fill below the normal high water level, both a Maine DEP Natural Resources Protection Act (NRPA) and a USACE Permit are applicable to project activities. Since the work will not place structures below the mean low tide line, it is not necessary to obtain a Conveyance from the Maine DEP for the stone and riprap placement.

Planned activities qualify for a NRPA Permit by Rule, and for coverage under the USACE Programmatic General Permit (PGP). As confirmed with the USACE, the project qualifies for Category I of the USACE PGP. As such, only a NRPA Permit by Rule Application must be submitted to Maine DEP; no permit application or notification must be submitted to USACE, and no further action is required from the USACE.

The Environmental Division at PNS will prepare and submit the NRPA Permit by Rule Application to Maine DEP. Once submitted, the Permit becomes effective within 14 days of receipt of the application by Maine DEP, unless the Department approves or denies the permit. If Maine DEP does not speak to or write the applicant within 14 days, the permit is approved and the applicant may proceed with the project. Once approved, the permit is normally approved for two years.

6.5 EMERGENCY RESPONSE AND SPILL CONTROL

An emergency response section is included as a part of the HASP. This plan is designed to prevent the spread of chemicals to adjacent, populated areas and to delineate contingency procedures to be used in the event of injuries to employees or other site-related accidents. Off-site contamination could occur as a result of an accidental release or spillage of contaminated materials. The emergency response section includes the procedures that will be used to mitigate the harmful effects of such a release as well as rescue and first aid services to be rendered.

A spill control plan outlining methods, means, and facilities required to prevent contamination is also contained in the HASP. A spill response kit will be maintained on each piece of major equipment such as dump trucks, excavators, and air compressors. At least one spill response kit will be maintained in the work area at all times while work is in progress.

Spills and releases will be reported according to procedures outlined by the Navy, HASP, and the Foster Wheeler Environmental Procedures on Reporting Spills and Releases EHS 1-7. The Spill/Release Coordinator (Project Superintendent) will contact the company Regulatory Compliance Specialist or Regional ESQ Manager who will determine whether any spills/releases are reportable and provide guidance on reporting procedures. Since the State of Maine release reporting regulations require that immediate telephone notification be provided to the Maine Department of Public Safety at (800)-452-4664 or (207)-657-3030 whenever hazardous waste, hazardous matter or petroleum products are spilled or released into the land, water or ambient air, the Project Spill/Release Coordinator will immediately notify the PNS Fire Department if a spill or release occurs. Immediate telephone notification will be made to the Maine DEP at (800) 482-0777 or (207) 791-7561 if there is any release of hazardous waste, hazardous matter, or petroleum products to water. Written spill reports must be forwarded to the DEP within 10 days.

7. CLOSEOUT REPORT

A final engineering closeout report will be written and finalized within 60 days of project completion and furnished to the Navy. The 60 days will commence on the first day after the final inspection has been completed and the work accepted by the Navy. The final engineering closeout report will contain the following items:

- **Summary of Record Documents – This section will include brief descriptions of the Statement of Work, Work Plan, and Health and Safety Plan and their relation to the project;**
- **Discussion of Activities Performed;**
- **Summary of QC testing performed by the SQCR and the QC manager;**
- **Contractor submittals to document that the project was completed in accordance with the Work Plan;**
- **As-Built Drawings;**
- **Photographs taken by the Navy during various stages of the work.**

8. REFERENCES

Halliburton NUS Corporation. On-Shore Feasibility Study (FS) Report for Portsmouth Naval Shipyard. March 1995.

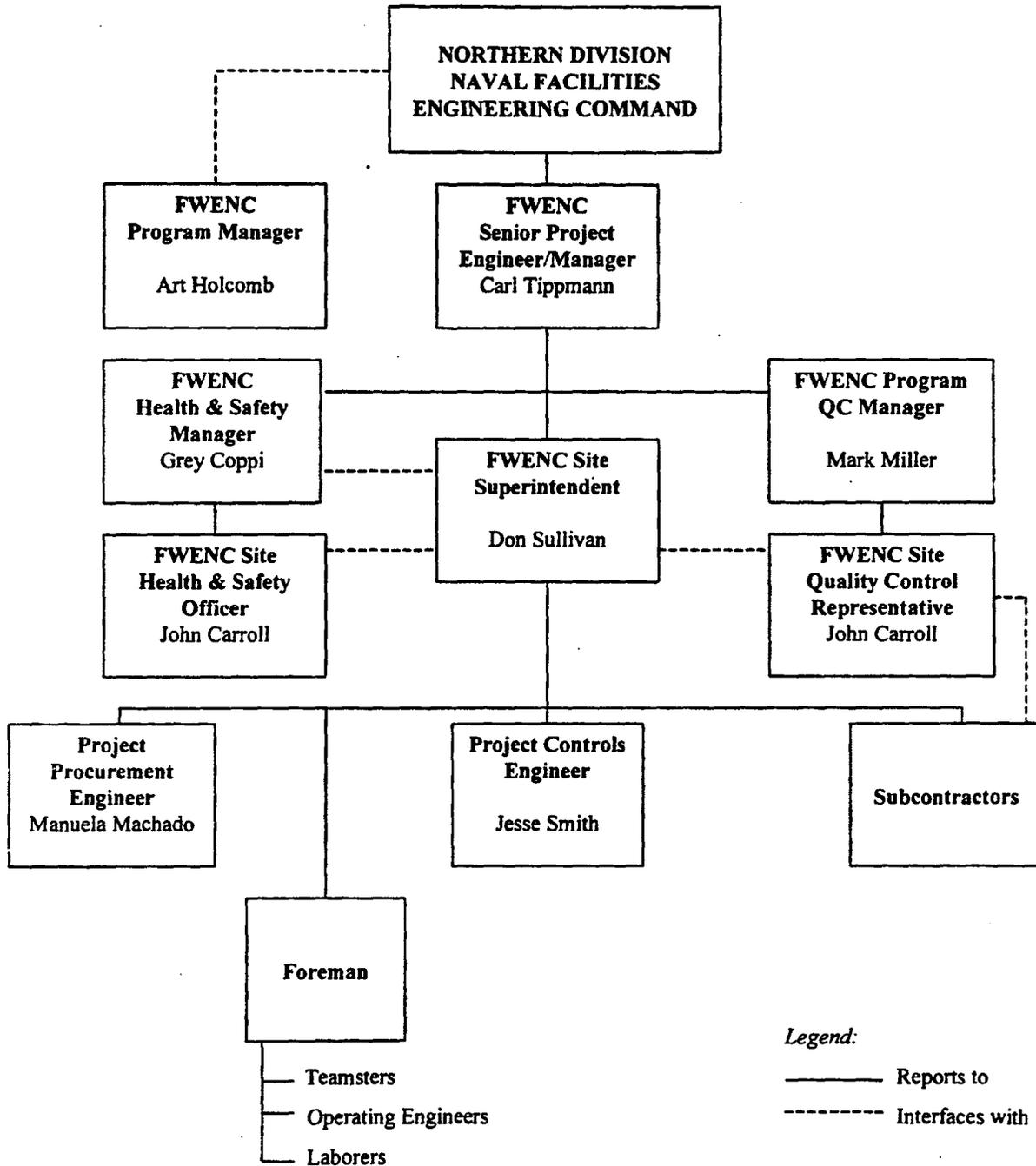
Halliburton NUS Corporation. RCRA Facilities Investigation Report (RFI) Data Gap Report for Portsmouth Naval Shipyard. November 1995.

McLaren/Hart, Inc. RCRA Facilities Investigation Report (RFI) for Portsmouth Naval Shipyard. July 1992.

Naval Facilities Engineering Service Center. Navy Installation Restoration Laboratory Quality Assurance Guide, Interim Guidance Document. February 1996.

Attachment 1
Project Organization Chart

Attachment 1



Project Organization Chart
 DRMO Shoreline Stabilization
 Portsmouth NSY
 Kittery, Maine
 Prepared for
 Naval Facilities Engineering Command
 Lester, Pennsylvania

Attachment 2
Sample Documents

CONTRACT NO. N62472-94-D-0398	DELIVERY ORDER # 0010	ACTIVITY LOCATION PORTSMOUTH NSY, KITTELY, MAINE
PROJECT TITLE: DRMO SHORELINE STABILIZATION		
FROM: Foster Wheeler Environmental Corp. / CQC J. Carroll	DATE	
TO: ROICC	DATE	

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

COPY TO:

ROICC DESIGNER OTHER

FROM: DESIGNER	SIGNATURE AND DATE
TO: ROICC	DATE

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

COPY TO:

ROICC DESIGNER

FROM: ROICC	SIGNATURE AND DATE
TO: CONTRACTOR	DATE

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

COPY TO:

ROICC OTHER

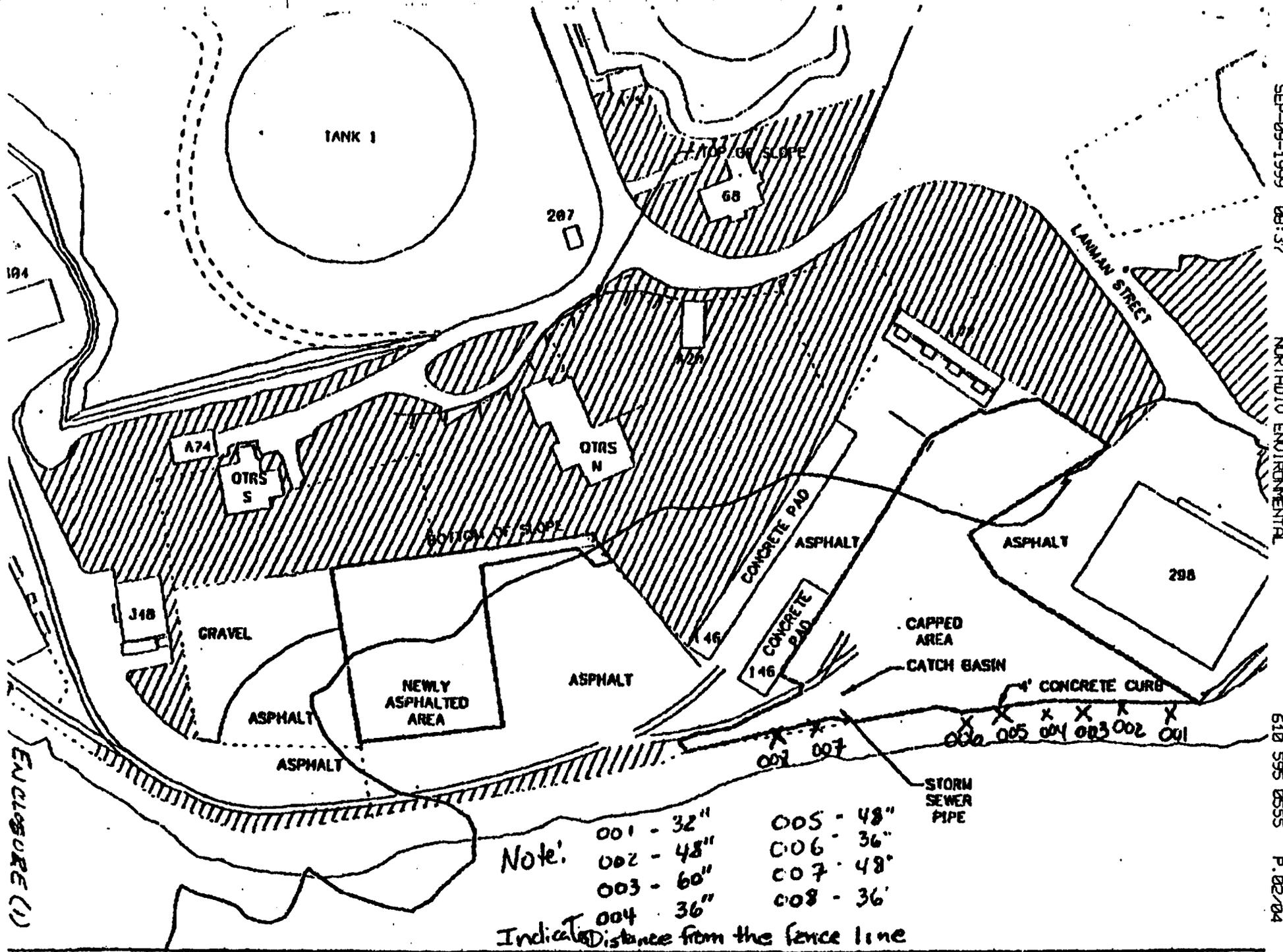
FOR COMMANDING OFFICER, NORTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
100	Geotextile	John Carroll			
	SD-02, Manufacturers Catalog Data				
	#57 Stone				
	SD-09, Reports				

CQC

FOSTER WHEELER ENVIRONMENTAL CORP. CONTRACTOR QUALITY CONTROL INSPECTION REPORT		Project: 1284	Report No:	Page ___ of
		CONTRACT: N62472-94-D-0398		
Client: U.S. Navy		NAVFAC Spec:		
Location: Kittery, ME		Delivery Order Number: 10		
Subcontractor(s): See Daily Production Report		Visitors to Site: See Daily Production Report		
Date:	Weather:	Temperature: ___ F / ___ F	Precipitation ___ in	
FIELD INSPECTIONS PERFORMED:		Section and Paragraph(s)	V / W / P	
1				
2				
3				
4				
5				
6				
7				
8				
DOCUMENTATION SUBMITTED				
1				
2				
3				
4				
DOCUMENTATION RECEIVED				
1				
2				
3				
4				
REWORK ITEMS IDENTIFIED TODAY	REWORK ITEMS CORRECTED TODAY	DATE IDENTIFIED		
1	1			
2	2			
3	3			
<p>V = Verified - Confirmed by evidence that function or requirements are true W = Witnessed - Personal observation while task(s) or test(s) are performed P = Personal performance of task(s) or function(s)</p>				
CQC REMARKS:				
<p>On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during the reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in the report.</p>				
SIGNED: _____ John Carroll				
GOVERNMENT QUALITY ASSURANCE REPORT;				
REMARKS AND/OR EXCEPTIONS TO THIS REPORT:				

Attachment 3
Soil Sample Results



Note: 001 - 32" 005 - 48"
 002 - 48" 006 - 36"
 003 - 60" 007 - 48"
 004 - 36" 008 - 36"

Indicates Distance from the fence line

232 DRT OU ISY
 SOIL DATA
 KATAHDIN
 SDG: WP3444

P. 2/2

SAMPLE NUMBER:	89PT01071-001	89PT01071-002	89PT01071-003	89PT01071-004
SAMPLE DATE:	07/29/88	07/29/89	07/29/89	07/29/88
LABORATORY ID:	WP3444-1	WP3444-2	WP3444-3	WP3444-4
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	85.7 %	88.8 %	88.8 %	87.5 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
INORGANICS												
ALUMINUM	12800	.		9880	.		15800	.		15400	.	
ANTIMONY	18.6			279			72.7			47.0		
ARSENIC	19.0			28.3			27.6			20.7		
BARIUM	84.3	N*		571	N*		387	N*		280	N*	
BERYLLIUM	0.70	BN		1.4	N		0.88	BN		0.59	BN	
CADMIUM	1.6	N		0.8	N		1.8	N		1.2	BN	
CALCIUM	1550			8580			17280			13800		
CHROMIUM	81.7			357	.		75.8	.		85.0	.	
COBALT	12.8	N		30.0	N		18.8	N		14.8	N	
COPPER	167	.		1220	.		8480	.		718	.	
IRON	29800	.		70800	.		31300	.		28700	.	
LEAD	11000	E		110000	E		35200	E		18900	E	
MAGNESIUM	7350	.		6810	.		11100	.		10300	.	
MANGANESE	574	.		920	.		812	.		450	.	
NICKEL	215	.		1340	.		138	.		86.8	.	
POTASSIUM	1740	N		2120	N		4420	N		4400	N	
SELENIUM	1.1	B		0.75	B		4.2			0.41	U	
SILVER	0.22	B		1.9	B		0.71	B		0.11	U	
SODIUM	218	.		330	.		304	.		425	.	
THALLIUM	0.64	U		2.3	B		2.0	B		0.72	U	
THALLIUM-OF	0.18	B		0.48	B		0.20	B		0.28	B	
VANADIUM	32.7	N		38.2	N		40.3	N		40.8	N	
ZINC	388	.		4930	.		2080	.		1828	.	

AUG 06 '99 11:55AM TETRA TECH INC

SOIL DATA
KATAHDIN
SDG: WP3444

SAMPLE NUMBER:	88PT01071-005	99PT01071-005	99PT01071-007	99PT01071-008
SAMPLE DATE:	07/28/99	07/28/99	07/28/99	07/28/99
LABORATORY ID:	WP3444-5	WP3444-6	WP3444-7	WP3444-8
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	97.6 %	99.4 %	96.4 %	96.2 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
INORGANICS												
ALUMINUM	13300	.		13400	.		10200	.		16500	.	
ANTIMONY	7.5			2.6			20.2			74.6		
ARSENIC	21.5			22.6			15.5			18.2		
BARIUM	256	N ^a		114	N ^a		472	N ^a		424	N ^a	
BERYLLIUM	0.57	BN		0.54	BN		32.2	N		28.0	N	
CADMIUM	2.9	N		2.1	N		2.0	BN		2.2	BN	
CALCIUM	13000			16100			7600			16100		
CHROMIUM	77.0	.		78.8	.		204	.		120	.	
COBALT	17.7	N		19.2	N		122	N		92.4	N	
COPPER	604	.		123	.		2800	.		2490	.	
IRON	37200	.		26900	.		90000	.		76000	.	
LEAD	4930	E		680	E		8000	E		4450	E	
MAGNESIUM	9216	.		11000	.		9100	.		11600	.	
MANGANESE	1020	.		710	.		1020	.		965	.	
NICKEL	147			206			638			387		
POTASSIUM	3570	N		3740	N		2800	N		3600	N	
SELENIUM	0.44	U		0.52	U		3.2	U		1.3	U	
SILVER	0.40	B		0.12	U		1.7	B		0.59	B	
SODIUM	360			307			1360			1230		
THALLIUM	0.77	U					2.0	U				
THALLIUM-OF	0.28	B		0.18	U		0.14	U		0.17	U	
VANADIUM	41.0	N		37.5	N		48.0	N		42.4	N	
ZINC	2750	.		754	.		1900	.		1500	.	

**FINAL
SITE HEALTH AND SAFETY PLAN**

Site: DRMO SHORELINE STABILIZATION
PORTSMOUTH NAVAL SHIP YARD

Location: KITTERY, ME

Prepared By: FOSTER WHEELER ENVIRONMENTAL CORPORATION

Date Prepared: SEPTEMBER 30, 1999

Revision: 0

Project Description: Stabilize existing shoreline to prevent release of contaminants into
waterway

Delivery Order #: J010

Waste Types:	Solid
Characteristics:	Toxic
Status:	Active, Military
Background Review:	Preliminary
Overall Hazard:	Low

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APPROVALS

By their signature, the undersigned hereby certify that this SHSP has been reviewed and approved for use at the DRMO, Portsmouth Naval Ship Yard, Kittery, ME

DELIVERY ORDER MANAGER

DATE

PROGRAM HEALTH AND SAFETY MANAGER

DATE

SITE SUPERINTENDENT

DATE

SITE HEALTH AND SAFETY OFFICER

DATE

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1.0 INTRODUCTION

1.1 Purpose

This Site Health and Safety Plan (SHSP) addresses the health and safety practices that will be followed by all site workers participating in activities at the DRMO Stabilization located at the Portsmouth Naval Ship Yard in Kittery, ME. This SHSP takes into account the specific hazards inherent to the shoreline stabilization and presents procedures to be followed by Foster Wheeler Environmental Corporation (FWENC), its subcontractors, and all other on-site personnel in order to avoid and, if necessary, protect against health and/or safety hazards. Activities performed will comply with applicable parts of OSHA Regulations, 29 CFR Parts 1910 and 1926, USACOE EM 385-1-1, and the Foster Wheeler Environmental Corporation Health and Safety Program. A copy of the FWENC Health and Safety Program Manual will be maintained on site. Modifications to this SHSP may be made with the approval of the PHSM using the Field Change Request Form found in Appendix A.

1.2 Scope

1.2.1 Objectives

The objective of the project is to stabilize the DRMO shoreline, in order to prevent additional erosion and transfer of contaminants into the Piscataqua River. FWENC will remove the existing curb and fence and create a temporary berm before proceeding with work on the shoreline. The keel blocks and other debris will be removed and disposed. The existing embankment rock, much of which has fallen to the bottom of the slope, will be regraded. Layers of gravel, geotextile, bedding stone, intermediate rock, and surface rock will be placed to stabilize the slope. The curb and fence will be replaced, and the section of the GCL cap disturbed during construction of the berm will be restored. Specific aspects of the work are discussed in Section 4 of the work plan.

1.2.2 Anticipated Tasks

The following major activities will be performed during the removal action:

- Install erosion and sedimentation control measures.
- Remove and dispose existing curb. Use existing GCL cap material to create a temporary berm.
- Restore existing GCL by overlapping with replacement GCL behind curb. Backfill joint with bentonite.
- Remove and dispose of existing fence.
- Remove and dispose of keel blocks and other debris on slope.
- Regrade existing embankment rock to form a level bench.
- Cover existing soil surface with pea gravel.
- Lay geotextile along slope. Overlap seams 12 inches and lay seams perpendicular to slope.
- Place 1.5-inch bedding stone over geotextile.

- Pour concrete curb.
- Place intermediate layer of 4 to 6-inch rock.
- Place surface layer of 18 to 24-inch rock.
- Replace fence.
- Perform site cleanup. Demobilize resources.

1.2.3 Mobilization

Temporary construction offices and facilities, lay down, staging and material storage areas, the stabilized construction entrance, and haul roads will be installed and/or established as part of the mobilization task. Temporary facilities will include an office trailer and portable toilets. The temporary facilities will be located in an area that is accessible to power and water. Utility connections will be made to power, water and communications. The location of the temporary facility performance of the utility work will be coordinated with the Navy through the Resident Officer in Charge of Construction (ROICC). Arrangements will be made at the site for mail delivery and solid waste and sewage disposal services. Administrative staff, craft labor and equipment will be mobilized to the site as part of this task.

1.2.4 Site Preparation

1.2.4.1 Erosion and Sediment Controls

Prior to commencing the stabilization activities, erosion and sediment control measures will be installed around the work area as follows:

- A temporary diversion berm will be constructed on the upgradient side of the slope, using the existing cover material.
- All disturbed areas will be covered daily with pea gravel or 10 mil poly.
- A stone construction entrance will be installed to minimize the tracking of soil to surrounding areas.

Erosion and sediment controls may be installed in additional locations if determined necessary during the stabilization activities.

1.2.4.2 Curb and Fence Removal

The existing curb, which ties into the Geosynthetic Clay Liner (GCL) cap, will be removed and sent to a concrete recycling facility. The crushed stone aggregate material of the existing cap will then be used to create a temporary diversion berm over the GCL cap. A section of the replacement GCL will be installed in place of the GCL that was damaged during the removal of the curb. The replacement GCL will overlap the existing GCL by 12 inches. The existing fence, which has been destabilized by the erosion of the shoreline slope, will be removed and disposed.

1.3 Shoreline Slope Stabilization

1.3.1 Removal of Keel Blocks and Debris

The keel blocks that were placed to stabilize the shoreline will be removed along with other debris that has accumulated. The excavator with thumb attachment will be used for this activity.

1.3.2 Regrading

Much of the existing embankment rock has shifted to the lower portion of the shoreline slope. Approximately 250 cubic yards of the rock will be regraded to form a level bench midway down the slope. Minimal shaping of the slope will be performed in order to level off any surface irregularities.

1.3.3 Shoreline Stabilization

The exposed soil surface at the top of the slope will be covered with pea gravel. Two layers of geotextile will then be placed along the slope. The bottom layer will be 12-oz. nonwoven geotextile, which will act as a filter to prevent lead contaminated soil from migrating out. A layer of 8-oz. woven geotextile will be placed on top to provide structural strength for the slope. The seams of the geotextile sections will be overlapped 12 inches and will be perpendicular to the slope. A minimum 6-inch layer of 1.5-inch nominal stone bedding will be placed over the geotextile.

A concrete curb will then be poured to replace the curb that was removed. Three-inch diameter galvanized pipe sleeves will be embedded 12 inches into the curb at 10-foot intervals. The temporary berm will be removed and the material will be returned to its original position as backfill against the curb. The edges of the geotextile and GCL layers will meet and be held in place between the backfill and the curb. A minimum 12-inch intermediate layer of 4 to 6-inch rock will then be placed on the shoreline slope. A final layer of 18 to 24-inch surface rock will be placed with a maximum slope of 1:1.5. A subcontractor will install a 10-foot aluminum fence with a privacy shield. The fence posts will be inserted into the curb, and the voids in the sleeves will be filled with nonshrink grout.

1.3.4 Site Restoration

Site restoration involves returning all of the impacted areas of the site to their pre-construction condition. Impacted areas include the shoreline slope area, stockpile areas, site haul roads, and the support zone area. Vegetation in all of these areas will be re-established by seeding the areas with a mix of seed to match existing vegetation. A layer of mulch or hay will be spread over the exposed topsoil to allow proper germination of the newly planted seed.

1.3.5 Demobilization

All excavation equipment, office trailers, storage containers, and construction supplies will be demobilized upon completion of the removal activities. All of the construction equipment will be cleaned prior to being demobilized.

1.4 Application

The SHSP applies to all personnel involved in the above tasks who wish to gain access to active work areas, including but not limited to:

- Client representatives
- Federal, state or local representatives
- Foster Wheeler Environmental employees and subcontractors
- Sub-contractors, if any, will provide activity hazard analysis and discuss them with Foster Wheeler Environmental prior to mobilization.

1.5 Summary of Major Risks

- Operation of heavy equipment
- Operation of high pressure washer
- Test Pitting
- Excavation

2.0 PROJECT ORGANIZATION

2.1 Project Manager (PM)

The Project Manager is Carl Tippmann.

- Ensures implementation of this program through coordination with the responsible Project Health and Safety Manager (PHSM)
- Conducts periodic inspections
- Participates in major incident investigations/safety briefings
- Ensures the SHSP has all of the required approvals before site work is conducted
- Ensures that the PHSM or SHSO is informed of project changes which require modifications of the site safety plan
- Has overall project responsibility for project health and safety
- Conducts periodic site inspections – monthly
- Assists in conducting daily safety briefing

2.2 Site Superintendent (SS)

The Site Superintendent is John Carroll

- Ensures that the SHSP is implemented in conjunction with the designated PHSM and SHSO
- Ensures that field work is scheduled with adequate personnel and equipment resources to complete the job safely
- Ensures that adequate telephone communication between field crews and emergency response personnel is maintained
- Ensures that field site personnel are adequately trained and qualified to work at the site
- Conducts weekly site inspections
- Acts as Emergency Coordinator
- Reviews and writes incident reports
- Conducts daily safety briefings

2.3 Project Health and Safety Manager (PHSM)

The Project Health and Safety Manager is an individual certified by the American Board of Industrial Hygiene as a Certified Industrial Hygienist (CIH) or the Board of Certified Safety Professional as a Certified Safety Professional (CSP) with experience in hazardous waste site remediation activities. The PHSM is Grey Coppi.

- Provides for the development and approval of the SHSP
- Serves as the primary contact to review health and safety matters that may arise
- Approves revised or new safety protocols for field operations
- Approves individuals who are assigned HSO responsibilities
- Approves to fulfill other project roles
- Coordinates revisions of this SHSP with field personnel
- Coordinates upgrading or downgrading of personal protective equipment with the SHSO
- Assists in the investigation of all accidents
- Conducts periodic inspections for compliance with the SHSP and gives periodic safety briefings

2.4 Site Health and Safety Officer (SHSO)

The Site Health and Safety Officer is a person knowledgeable in appropriate safety and health regulations with at least one year of experience or specialized training in serving in a health and safety role on hazardous waste remediation sites. The SHSO is John Carroll

- Works as a member of the project team to ensure implementation of site safety plans
- Ensures that all health and safety activities identified in site safety plans are conducted and/or implemented
- Identifies operational changes which require modifications to health and safety procedures and site safety plans, and ensures that the procedure modifications are implemented and documented through changes to the site safety plan
- Directs and coordinates health and safety monitoring activities
- Ensures that proper personal protective equipment is utilized by field teams
- Assists in conducting and documenting daily safety briefings
- Monitors compliance with this SHSP
- Notifies PHSM of all accidents/incidents
- Coordinates with the construction superintendent and PM in any accident/incident investigation
- Maintains Accident/Incident Report Forms
- Determines upgrade or downgrade of PPE based on site conditions and/or real-time monitoring results
- Ensures that monitoring instruments are calibrated
- Reports to PHSM to provide summaries of field operations and progress
- Maintains health and safety field log books

2.5 Site Personnel

- Report any unsafe or potentially hazardous conditions to the SHSO
- Maintain knowledge of the information, instructions and emergency response actions contained in the SHSP
- Comply with rules, regulations and procedures as set forth in this SHSP and any revisions
- Prevent admittance to work sites by unauthorized personnel
- Inspect all tools and equipment, including PPE, daily prior to use
- Act as safety leaders

The project organization duties and responsibilities will be:

- Project Manager - Carl Tippmann
- Site Superintendent – John Carroll
- Project Health and Safety Manager - Grey Coppi
- Health and Safety Officer – John Carroll

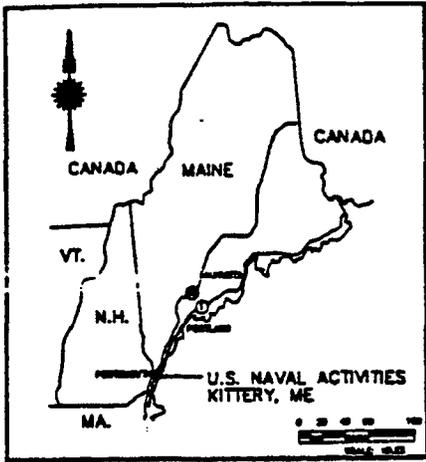
3.0 BACKGROUND AND SITE DESCRIPTION

3.1 Location

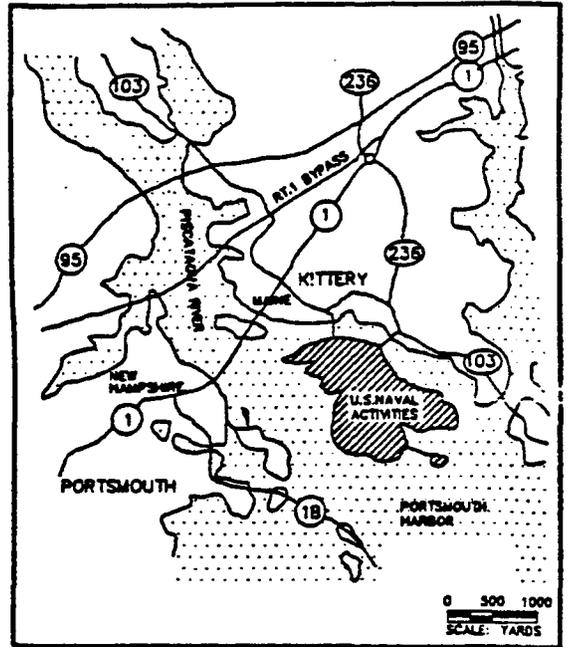
The Portsmouth Naval Ship Yard is located on the northern side of the Piscataqua River in the town of Kittery, Maine (ME). The Piscataqua River is a tidal estuary that forms a boundary between Maine and New Hampshire. The total area of the facility is approximately 278 acres, 90 of which are filled tidal flats. The facility contains 376 buildings that are densely clustered to two thirds of the site. The shipyard was established in 1800. During the 1900s, NSY Portsmouth was used for the design, construction, repair, and overhaul of Naval submarines. The first government-built submarine was designed and constructed there during World War I. Currently, the shipyard is only involved in the repair and overhaul of submarines.

3.2 Background and Site Description

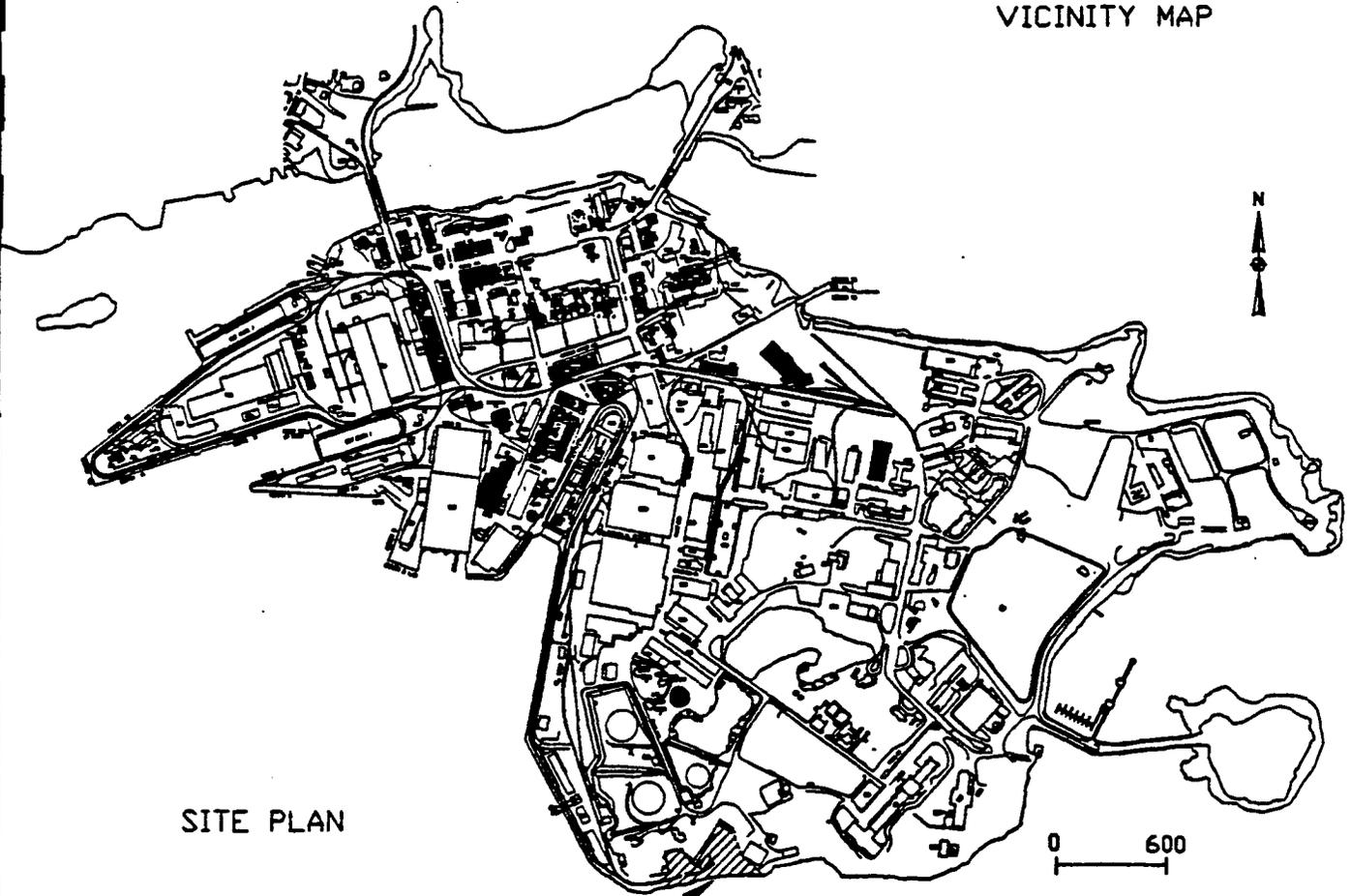
The Portsmouth Naval Ship Yard, DRMO, is located on the southern end of Seavey Island as shown on Figure 3-1. The DRMO is approximately 2 acres and serves as a temporary storage area for refuse prior to disposal. Refuse stored at the DRMO includes lead and nickel-cadmium battery elements, paper products, and scrap metal. Most of the DRMO is situated on filled land. Most of the surface of the DRMO is covered by asphalt.



AREA MAP



VICINITY MAP



SITE PLAN

SITE LOCATION

Approximate scale in feet

<p>U.S. Navy RAC Portsmouth Naval Shipyard Kittery, Maine</p>
<p>Figure 3-1 Site Location Map</p>
<p> FOSTER WHEELER ENVIRONMENTAL CORPORATION</p>

3.3 Site Characterization Data

Table 3-1 is the contaminant data summary as presented by NUS in their RFI Report, 1995.

**TABLE 3-1
CONTAMINANT DATA SUMMARY**

CONTAMINANT	MEDIA	LOCATION	HIGHEST CONCENTRATION DETECTED
Copper	Soil boring 0-12"	Fence area	7 - 12,200 ppm
Lead	Soil boring 0-12"	Fence area	3 - 3585 ppm
Nickel	Soil boring 0-12"	Fence area	5 - 2680 ppm
Zinc	Soil boring 0-12"	Fence area	18 - 1240 ppm

* Shading denotes contaminants that will be sampled using personal air monitoring during soil excavation and handling activities.

CONTAMINANT	MEDIA	LOCATION	CONTAMINANT CONC. RANGE
Copper	Soil boring 0 - 39"	DRMO	16 - 23,000 ppm
Lead	Soil boring 0 - 39"	DRMO	16 - 130,000 ppm
Nickel	Soil boring 0 - 39"	DRMO	29 - 488 ppm
Zinc	Soil boring 0 - 39"	DRMO	150 - 786 ppm

* Shading denotes contaminants that will be sampled using personal air monitoring during soil excavation and handling activities.

The following data is from the July 29, 1999 sampling event:

CONTAMINANT	MEDIA	LOCATION	HIGHEST DETECTED CONCENTRATION
Copper	Soil	DRMO	9480 ppm
Lead	Soil	DRMO	110,000 ppm
Nickel	Soil	DRMO	1340 ppm
Zinc	Soil	DRMO	19,900 ppm

* Shading denotes contaminants that will be sampled using personal air monitoring during soil excavation and handling activities.

4.0 POTENTIAL HAZARDS

4.1 Properties of Chemical Contamination

Table 4-1 provides chemical information for the contaminants that may be encountered during site investigation activities. Various metals were detected in the soil at a depth of 0-39." Four of them were selected as possible contaminants of concern with lead presenting the greatest risk due to its PEL and the concentration found in soil. According to the NUS RFI, nickel is a human lung carcinogen.

4.1.1 Metals

Metals present a potential for exposure to field personnel. The route of exposure from metals is via ingestion or inhalation of dust. Exposure may result in effects to the eye and skin, liver, upper respiratory system, central nervous system blood forming organs and the reproductive system. Metal poisoning may result from cumulative action; therefore, smoking, drinking or eating is prohibited in work areas where dust is generated. The exposure via inhalation or ingestion is considered to be low when good personal hygiene and dust control methods are implemented according to this plan.

4.2 Physical Hazards

4.2.1 Construction Hazards

Most physical hazards are discussed in the Activity Hazard Analyses for the different phases of the remedial activity. Primarily, these are the same as for any construction or remedial investigation site. The hazards may arise from poor house keeping; the use of hand and power tools; handling and storage of fuels; the installation and use of electric power; work on elevated work surfaces or uneven terrain; heavy equipment operation; use of rigging. Excavation of soil will be performed during the cap regrading and rock placement. No entry into these excavations is anticipated; however, if entry is required, we will follow EHS 6-3 for excavation/trenching and EHS 6-1 for confined space entry.

**TABLE 4-1
CHEMICAL DATA**

COMPOUNDS	CAS #	ACGIH TLV	OSHA PEL	ROUTES OF EXPOSURE	SYMPTOMS OF EXPOSURE	TARGET ORGANS	PHYSICAL DATA
Copper (dust)	7440-50-8	1 mg/m ³	1 mg/m ³	Inhalation Ingestion	Irritates nasal mucous membrane, pharynx; nasal perforation; eye irritation; metallic taste; dermatitis	Respiratory system, skin, liver, kidneys, increase risk of Wilson's Disease	Metal: reddish, lustrous, malleable, odorless solid. BP: 4703 °f
Lead	7439-92-1	.05 mg/m ³	.05 mg/m ³	Inhalation Ingestion	Lassitude, insomnia, constipation, abdominal pain, colic, anemia, tremors, wrist drop	Gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	Metal: heavy, ductile, soft gray solid. BP: 3164 ° F
Nickel	7440-02-0	1.5 mg/m ³	1 mg/m ³	Inhalation Ingestion	Headache, vertigo; nausea, vomiting, epigastric pain; substernal pain; cough, hyperpnea; cyanosis; weakness; pneumonitis, delirium, convulsion; potential carcinogen	Lungs, paranasal sinus, central nervous system, lung carcinogen	Metal: lustrous, silvery solid. BP: 5139 ° F
Zinc	1314-13-2	10 mg/ m ³	15 mg/m ³	Inhalation Ingestion	Eye/skin irritation	Skin, lungs	Metal: white solid

4.2.2 Heat Stress

Heat stress is a significant potential hazard, which is generally exacerbated with the use of PPE in hot environments. A heat stress prevention program will be implemented when ambient temperatures exceed 70°F for personnel wearing impermeable clothing and for other personnel when the WBGT index exceeds the ACGIH TLVs. The following are the main elements and some of the specific methods for the control of Heat Stress related injuries found in the Foster Wheeler Environmental Corporate Environmental, Health and Safety Program Manual (EHS 4-6).

- Selection of PPE to reduce the risk of heat related illness (Select PPE based on site data and working conditions)
- Hydration (Fluid replacement with cool water or electrolyte replacement)
- Cool rest areas (Provide shaded rest areas)
- Engineering Controls (If feasible provide air conditioned cabs in heavy equipment, cool water drenching during breaks)
- Administrative Controls (adjust work schedules by starting work earlier in the day, acclimate work force to working in heat, provide appropriate work/rest regimens)
- PPE (Provide ice vests and vortex tubes where appropriate)
- Monitoring (Body core temperature with thermometer, check pulse rate of workers)
- Identification of heat related illness (Including heat cramps, heat exhaustion, and heat stroke)
- Employee training (Train employees on health effects of heat stress related illness)

4.3 **Biological Hazards**

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects and plants.

4.3.1 Animals

Workers shall use discretion and avoid all contact with animals. If these animals present a problem, efforts will be made to remove these animals from the site.

4.3.2 Insects

Insects, such as mosquitoes, ticks, bees and wasps may be present during certain times of the year. Workers will be encouraged to wear repellents (DEET for ticks) when working in areas where insects are expected to be present. If insects are prevalent, efforts will be made to remove them from the site by contacting a licensed pest control technician. The following is a list of preventive measures:

- Instruct employees to perform periodic self checks as well as to utilize the “buddy system” to detect ticks in their hair or on their skin
- Apply insect repellent prior to field work and/or as often as needed throughout the work shift
- Wear proper protective clothing (Tyvek, work boots, socks and light colored pants)

- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible
- Field personnel who may have insect allergies should provide this information to the SHSO prior to commencing work

4.3.2.1 Lyme Disease

Since the site is located in the northeast, the potential for coming into contact with deer ticks exists. Lyme disease is caused by an infection from a deer tick which is about the size of the head of a pin. During the painless tick bite, a microorganism (spirochete) may be transmitted into the bloodstream which may lead to Lyme disease. The effects of the disease vary from person to person, which often makes it difficult to diagnose. Typically, the incubation period ranges from two days to two weeks. In most cases, the infected area will resemble a red bulls' eye with concentric rings. Within the same period, flu-like symptoms may develop. If left untreated, the red ringed area will eventually fade and Lyme disease may further develop into an arthritis-like condition.

Control measures to prevent Lyme Disease include the following:

- Instruct employees to perform periodic self checks as well as to utilize the "buddy system" to detect ticks in their hair or on their skin
- Apply insect repellent prior to field work and/or as often as needed throughout the work shift
- Wear proper protective clothing (Tyvek, work boots, socks and light colored pants)
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible
- If a tick is found, remove it by pulling gently at the head with tweezers
- Report any of the above symptoms and all tick bites to the SHSO for evaluation
- A three part vaccine with about 80% effectiveness is available for high risk areas following consultation with the FWENC corporate medical consultant.

4.3.2.2 Eastern Equine Encephalitis

Eastern Equine Encephalitis (EEE) is a serious but very rare illness caused by a virus carried by wild birds that live in freshwater swamp areas. The virus is transmitted among birds by the female of one species of swamp breeding mosquito. This species of mosquito is not known to bite humans. Normally the virus remains confined to these birds and mosquitoes, but in occasional years there is spill over of the virus into other species of mosquitoes that may bite humans. It is not currently known how this spill over occurs. The risk of EEE transmission ends after one or two frosts, and the adult mosquitoes involved in the transmission of EEE die.

EEE is characterized by swelling of the brain (encephalitis), and has an incubation period of between two and ten days. Early symptoms include a fever of between 103 and 106 degrees, stiff neck, headache and a feeling of lethargy. The disease progresses rapidly, and many patients are comatose within a week. Approximately half of these patients die or suffer permanent

neurological damage. EEE also occurs in horses, but a vaccine has been developed for horses which is highly effective. A person or horse who has contacted EEE is not infectious, and someone exposed to a horse or person with EEE would not contract the disease. There is no licensed vaccine for general use in humans.

Control measures to prevent EEE include the following:

- Use mosquito repellent according to label directions
- Wear long sleeve shirts and pants, especially at dawn and dusk when mosquitoes are out in the largest numbers
- Eliminate areas of stagnant water where mosquitoes can breed

4.3.3 Plants

Plants such as poison ivy and poison oak may be prevalent at the site during certain times of the year. Workers will be cautioned to avoid these plants and to minimize contact with them. PPE may be worn by employees in order to reduce the potential for exposure. Pre-exposure topical lotions may be applied prophylactically.

5.0 ACTIVITY HAZARD ANALYSES

The Activity Hazard Analysis is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, mitigate and control these hazards. The AHAs follow the guidance of the Foster Wheeler Environmental Corporate Program EHS 3-5. AHAs will be developed for all activities as necessary, prior to start-up. The AHAs will be used to train workers in proper safety procedures during phase preparatory meetings.

AHAs are included in Appendix B of this SHSP. AHAs have been developed for the following tasks:

- Mobilization
- Installation of erosion controls
- Removal of curb/fence
- Removal of keel blocks
- Regrade existing embankment rock
- Cover existing soil surface with gravel
- Lay Geotextile
- Place stone
- Site Restoration and Demobilization

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment (PPE) detailed in the SHSP represents the hazard analysis and PPE selection required by 29 CFR 1910.132. For the purposes of PPE selection, the PHSM and SHSO are considered competent persons. The signatures contained in the approval section of the SHSP constitute certification of the hazard assessment. For activities not detailed below, the SHSO will conduct a hazard assessment and select the PPE using the appropriate form and will certify the assessment by signing the form. PPE selection will be made in consultation with the PHSM. The task-specific level of PPE required for each task is described in Table 6-1.

**TABLE 6-1
PERSONAL PROTECTIVE EQUIPMENT SELECTION**

TASK	HEAD	EYE/FACE	FEET	HANDS	BODY	HEARING	RESPIRATOR
Mobilization							
Mobilize equipment and supplies	HH	SG	STB	LWG	WC	EP as needed	Level D
Establish lay down, staging and material storage areas	HH	SG	STB	LWG	WC	EP as needed	Level D
Establish stabilized construction entrance and haul roads	HH	SG	STB	LWG	WC	EP as needed	Level D
Installation of Erosion and Sediment Controls							
Construct diversion berm on the upgradient side of the slope	HH	SG	STB	LWG	WC	EP as needed	Level D
Cover all disturbed areas with bank run gravel or poly, daily	HH	SG	STB	LWG	WC	EP as needed	Level D
Curb and Fence Removal							
Remove existing curb	HH	SG	STB, OB	LWG, Sur	WC, tyvek	EP as needed	Level C
Use existing stone to create a temporary diversion berm over the GCL cap	HH	SG	STB, OB	LWG	WC, tyvek as needed	EP as needed	Level D
Remove existing fence	HH	SG	STB, OB	LWG, sur	WC, tyvek	EP as needed	Level C

Removal of Keel Blocks and Debris

Remove keel blocks and other debris using excavator w/ thumb attachment	HH	SG	STB, OB	LWG, Sur	WC, tyvek	EP as needed	Level C
Regrade Existing Embankment							
Consolidate and regrade existing embankment rock	HH	SG	STB, OB	LWG, Sur	WC, tyvek	EP as needed	Level C
Regrade exposed slope	HH	SG	STB, OB	LWG, Sur	WC, tyvek	EP as needed	Level C
Shoreline Stabilization							
Cover exposed soil at top of embankment with bank run gravel	HH	SG	STB, OB	LWG, Sur	WC, tyvek	EP as needed	Level C
Place geotextile along the slope	HH	SG	STB	LWG	WC	EP as needed	Level D
Place stone layers over geotextile	HH	SG	STB	LWG	WC	EP as needed	Level D
Replace concrete curb	HH	SG	STB	LWG	WC	EP as needed	Level D
Remove temporary berm	HH	SG	STB	LWG	WC	EP as needed	Level D
Replace section of GCL	HH	SG	STB	LWG	WC	EP as needed	Level D
Return material to its original position as backfill against the curb	HH	SG	STB	LWG	WC	EP as needed	Level D
Install fence	HH	SG	STB	LWG	WC	EP as needed	Level D

Heavy Equipment Decontamination							
Decontaminate equipment	HH	SG, PFS	STB, OB	Nit, Sur	WC, poly	EP as needed	Level D

HEAD PROTECTION

HH = Hard Hat

HEARING PROTECTION

EP = ear plugs

HAND PROTECTION

LWG = Leather work gloves

Nit = Nitrile

Sur = Surgical

EYE/FACE PROTECTION

APR = Full Face Air Purifying Respirator

SG = ANSI approved safety glasses with side shields

BODY PROTECTION

Tyvek = Uncoated paper Tyvek coveralls

Poly = Polyethylene coated tyvek coveralls

WC = Work Clothes

FOOT PROTECTION

STB = Leather work boots with steel toe

OB = Overboots

RESPIRATORY PROTECTION

Level D = No respiratory protection needed

Level C = Full face air purifying respirator P100 cartridge

7.0 AIR MONITORING

The following sections contain information describing the types, frequency and location of real time air monitoring and integrated air monitoring.

7.1 Real-Time Air Monitoring

This section addresses the real time air monitoring that will be conducted including instrumentation selection, frequency and location of air sampling. Real-time air monitoring will be conducted during all activities that could potentially expose workers to lead contaminated soil. Table 7-1 describes real-time air monitoring location/frequency. Table 7-2 provides real-time air monitoring action levels. See Appendix C for dust action level calculations.

**TABLE 7-1
FREQUENCY AND LOCATION OF AIR MONITORING**

ACTIVITY	AIR MONITORING INSTRUMENT	FREQUENCY AND LOCATION
During all activities that could generate exposure to soil until covered by an impermeable membrane	Dust Monitor	At the area of activity and in the worker breathing zone, on a 30-minute basis.

**TABLE 7-2
REAL TIME AIR MONITORING ACTION LEVELS**

AIR MONITORING INSTRUMENT	MONITORING LOCATION	ACTION LEVEL	SITE ACTION	REASON
Mini-Ram	Breathing Zone	>0.2 mg/m ³	Upgrade to Level C and apply dust control measures to maintain dust levels below 0.2 mg/m ³	Concentrations of metals in soil allow an action level of 0.2 mg/m ³

The following instruments will be used for real-time air monitoring:

- Mini-Ram Dust Monitor

Due to the high concentrations of lead in soil, the real-time action level is: .2 mg/cm³.

Instrument calibration shall be documented and included in a dedicated safety and health log book or on separate calibration pages. All instruments shall be calibrated before and after each shift. Manufacturer's literature and the operations manual for each piece of monitoring equipment will be maintained on-site by the SHSO for reference. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

7.2 Integrated Air Monitoring

In accordance with past FWENC practice and the OSHA lead-in-construction standard, air monitoring for lead exposure will be performed. Sampling media includes a three-piece filter cassette, tygon tubing and a pump calibrated for 2 liters per minute. The sampling and analytical protocol will be consistent with a NIOSH method, i.e., 7082. Table 7-3 summarizes the integrated air monitoring which will be conducted.

Monitoring will continue at the same frequency listed in Table 7-3 if the results are 75% or greater of the PEL. Engineering and administrative controls will also be implemented at this time to reduce exposure. Monitoring will discontinue if the results are less than 75% of the PEL and the real-time air monitoring for dust is less than 0.2 mg/m³. If real-time air monitoring for dust is 0.2 mg/m³ or greater, monitoring will continue and engineering controls will be implemented.

**TABLE 7-3
FREQUENCY AND LOCATION OF INTEGRATED AIR MONITORING**

LOCATION OR ACTIVITY	CONTAMINANT	FREQUENCY	METHOD
Site disturbing activities	Lead - 37mm @ 2 l/min	1 sample per shift for first 2 days of excavation/soil handling	NIOSH 7082
		EXPEDITE ALL SAMPLES!	

Procedures to be followed include:

- Selection of high-risk individuals who may be subject to contaminant exposure, based on job assignment and observations of the SHSO
- Air sampling pumps used to collect worker exposure samples shall be calibrated before and after use each day. Calibration shall be accomplished using a primary standard calibration system, e.g., the Buck Calibrator. Results of the calibrations shall be recorded in the pump calibration log.
- Chemical analysis of samples collected for assessment of employee exposures shall be performed only by an analytical laboratory accredited by the American Industrial Hygiene Association for metals analysis.

7.3 Data Quality Assurance

7.3.1 Calibration

Real time air monitoring instrument calibration shall be documented on the calibration log. All instruments shall be calibrated before and after each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

7.3.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment, will be maintained on-site by the SHSO for reference. The SHSO shall record the PPE worn by each exposed worker on the pump calibration flow sheet.

7.3.3 Data Review

The SHSO will interpret monitoring data based upon Table 7-2 and 7-3 and his/her professional judgment.

The data will be reviewed and evaluated to determine the potential for worker exposure, upgrade/downgrades in levels of protection, comparison to direct reading instrumentation and changes in the integrated air monitoring strategy. The SHSO will immediately report all integrated sampling results at or above 75% of the PEL/TLV (one half of PEL/TLV where no respirators are worn) to the PHSM. Upon receipt of air monitoring results, the exposure results will be tabulated and posted at the site.

8.0 ZONES, PROTECTION AND COMMUNICATION

8.1 Site Control

Site zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach may be utilized. It shall include an Exclusion zone (EZ), Contamination Reduction zone (CRZ) and a Support Zone (SZ). Specific zones shall be established on the work site when operations begin, if appropriate.

The following shall be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone – The SZ is an uncontaminated area (trailers, offices, etc.) that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

Contamination Reduction Zone – The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides for an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for Exclusion Zone entry and egress in addition to access for heavy equipment and emergency support services. Personnel providing support functions in the CRZ will sign in/out of the zone by utilizing a site entry log.

Exclusion Zone – All activities that may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an exclusion zone (EZ). This zone will be clearly delineated by cones, tapes or other means. The SHSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the site SHSO and primarily based upon exposure potential allowing adequate space for the activity to be completed, field members and emergency equipment. Personnel entering the exclusion zone shall sign in/out of the zone by utilizing a site entry log.

Individuals will only be allowed to access areas of the site relative to their jobs. Any person working in an area where the potential for exposure to site contaminants exists, will only be allowed access after providing the SHSO with proper training and medical documentation.

8.2 Contamination Control

One of the most important aspects of decontamination is the prevention of contamination. Good contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel

- do not walk through areas of obvious or known contamination
- do not handle or touch contaminated materials directly
- make sure all personal protective equipment has no cuts or tears prior to donning
- fasten all closures on suits, covering with tape, if necessary
- particular care should be taken to protect any skin injuries
- stay upwind of airborne contaminants
- do not carry cigarettes, gum, etc. into contaminated areas

Sampling, Monitoring

- when required by the HSO, cover instruments with clear plastic, leaving openings for sampling ports
- bag sample containers prior to emplacement of sample material

Heavy Equipment

- limit the amount of contamination that comes into contact with heavy equipment
- if contaminated tools are to be placed on non-contaminated equipment for transport to the decontamination pad, use plastic to keep the equipment clean
- keep excavated soils contained and out of the way of workers

8.2.1 Personnel Decontamination Station

Personnel exiting the Exclusion Zone shall be thoroughly decontaminated. Discarded protective clothing will be disposed in drums. Specific decontamination procedures will be utilized as appropriate, depending on the level of operation performed by the individual. The level of contamination at this site is expected to be minimal. The following protocol shall be used for decontamination according to the level of protection utilized:

Level D	Level D+	Level C	Level B
1. Equipment drop	1. Equipment drop	1. Equipment drop	1. Equipment drop
2. Hand/face wash	2. Outer boot & glove wash	2. Outer boot & glove wash	2. Outer boot & glove wash
	3. Outer boot & glove rinse	3. Outer boot & glove rinse	3. Outer boot & glove rinse
	4. Tape removal – boot & glove	4. Tape removal – boot & glove	4. Tape removal – boot & glove
	5. Outer boot & glove removal	5. Outer boot & glove removal	5. Outer boot & glove removal
	6. Coverall removal/disposal	6. Coverall removal/disposal	6. SCBA or escape tank removal
	7. Inner glove removal/disposal	7. Respirator removal	7. Coverall removal/disposal
	8. Hand/face wash	8. Inner glove removal/disposal	8. SCBA or ALR face shield removal
	9. Shower may be required	9. Inner clothing removal	9. Inner glove removal/disposal
		10. Hand/face wash	10. Inner clothing removal
		11. Shower may be required	11. Hand/face wash
		12. Redress	12. Shower may be required
		13. Respirator cleaning/sanitizing	13. Redress
			14. Respiratory cleaning/sanitizing

At a minimum, all personnel will thoroughly wash their arms, face and hands upon exiting the EZ or CRZ prior to eating, drinking, smoking, applying cosmetics, or any other actions that would increase the risk of hand to mouth transfer of chemicals.

Non-phosphate detergent (i.e., Dove) and water should be sufficient for use as the decontamination solution except during potential mercury exposure contamination. All receptacles for contaminated protective clothing will be equipped with lids that can be closed to prevent the release of contaminants and the collection of rainfall. The decontamination liquids and clothing will be contained and disposed according to federal, state and local regulations.

8.2.2 Heavy Equipment Decontamination

Heavy equipment will not be permitted to leave the EZ unless it has been decontaminated and visually inspected by the SHSO or designee. This inspection will be documented in a field log book or decontamination form.

8.3 **Communication**

- Hand-held two-way radios are utilized as appropriate by field teams for communication with the Command Post.
- Telephones – A telephone will be located in the Command Post in the SZ for communication with emergency support services/facilities.
- Air Horns – Air horns shall be carried by field teams or be strategically located within the EZ and shall be maintained as the means for announcing emergency evacuation procedures and backup for other forms of communication.
- Hand Signals – Hand signals shall be used by field teams along with the buddy system. They shall be known by the entire field team before operations commence and their use covered during site-specific training. Typical hand signals are the following:

SIGNAL

Hand gripping throat

Grip on a partner's wrist or placement of both hands around a partner's waist.

Hands on top of head

Thumbs up

Thumbs down

MEANING

Out of air, can't breathe

Leave the area immediately, no debate.

Need assistance

Okay, I'm all right, I understand.

No, negative.

9.0 **MEDICAL SURVEILLANCE PROCEDURES**

All contractor and subcontractor personnel performing field work where potential exposure to contaminants exist at the site are required to have passed a medical surveillance examination in accordance with 29 CFR 1910.120(f). A back evaluation shall be included as part of the initial exam.

The Foster Wheeler Environmental Corporate Medical Surveillance Program is described in detail in Section 4.5 of the Health and Safety Program. The Corporate Medical Consultant is Greaney Medical Group in California. Dr. Peter Greaney is Board certified in occupational medicine.

9.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the SHSO before an employee can work in the exclusion zone. The examination will be taken annually at a minimum and upon termination of hazardous waste site work if the last examination was not taken within the previous six months. Additional medical testing may be required by the PHSM in consultation with the Corporate Medical Consultant and the SHSO if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance. In addition, **biological monitoring for lead in the form of blood lead/ZPP** will be conducted.

9.2 Medical Data Sheet

A medical data sheet is provided in Appendix D. This medical data sheet is voluntary and should be completed by all on-site personnel and will be maintained at the site. Where possible, this medical data sheet will accompany the personnel needing medical assistance. The medical data sheet will be maintained in a secure location, treated as confidential, and used only on a need-to-know basis.

10.0 SAFETY CONSIDERATIONS

10.1 General Health and Safety Work Rules

A list of work rules and general safe work practices has been included from the Foster Wheeler Environmental Health and Safety Program, Section 3-6. These rules have been incorporated as Appendix E. The work rules will be posted in a conspicuous location at the site.

10.2 General Construction Hazards

The following is a list of applicable safety considerations for the major tasks. Further information is provided in the Activity Hazard Analysis and the Foster Wheeler Environmental Health and Safety Program.

- Heavy Equipment
- Hand and Power Tool Usage
- Fire Hazards
- Motors and Pump Usage
- Slips/Trips/Falls
- Steam, Heat
- Punctures/Cuts
- Lifting/Materials Handling

11.0 WASTE DISPOSAL PROCEDURES

All discarded materials, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left on site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal as non-hazardous solid waste.

11.1 Disposal

Decontamination liquids, solids, and used PPE will be placed in DOT-approved 55-gallon drums for disposal off site. The liquid and solid materials will be sampled and characterized in accordance with the waste characterization procedures and the disposal facility's requirements. The materials will then be disposed of off-site by Portsmouth NSY. Used PPE material will generally be disposed of off-site as non-hazardous waste.

12.0 EMERGENCY RESPONSE PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures which are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures.

12.1 Responsibilities

12.1.1 Project Health and Safety Manager (PHSM)

The PHSM is Grey Coppi.

The PHSM oversees and approves the Emergency Response/Contingency Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PHSM acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

12.1.2 Site Health and Safety Officer (SHSO)

The SHSO is John Carroll.

The SHSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The SHSO is required to immediately notify the PHSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the PHSM can notify OSHA within the required time frame. The PHSM will be notified of all OSHA recordable injuries, fires, spills, releases or equipment damage in excess of \$500 within 24 hours. The SHSO also serves as the Alternate Emergency Coordinator.

12.1.3 Emergency Coordinator

The Emergency Coordinator is John Carroll

The emergency coordinator shall make contact with Local Emergency Response personnel prior to beginning work on site. In these contacts the emergency coordinator will inform interested parties about the nature and duration of work expected on the site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. The emergency coordinator shall locate emergency phone numbers and identify hospital routes prior to beginning work on site. The emergency coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator shall implement the Emergency Response/Contingency Plan whenever conditions at the site warrant such action.

12.1.4 Site Personnel

Site personnel are responsible for knowing the requirements of the Emergency Response/Contingency Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency.

12.2 Local Emergency Support Units

In order to be able to deal with any emergency that might occur during remedial activities at the site, Table 12-1 will be posted prominently in the field office and in all places where telephone service is available. Figure 12-1 is a map showing the route to the hospital and will be posted adjacent to the emergency telephone numbers in the field office and in all places where telephone service is available.

**TABLE 12-1
EMERGENCY TELEPHONE NUMBERS**

Contact	Firm or Agency	Telephone Number
Police	Portsmouth Naval Shipyard	(207) 438-2444
Fire	Portsmouth Naval Shipyard	(207) 438-2333
Hospital	Portsmouth Regional Hospital	(603) 436-5110
Ambulance	Portsmouth Naval Shipyard	(207) 438-2333
HAZMAT Response	Portsmouth Naval Shipyard	(207) 438-2555
Site Project Manager (Carl Tippmann)	Foster Wheeler Environmental	(215) 702-4044
PHSM (Grey Coppi)	Foster Wheeler Environmental	(215) 702-4079
SHSO (John Carroll)	Foster Wheeler Environmental	(215) 327-0751 (cellular)
ROICC (Gerry Wallace)	Portsmouth Naval Shipyard	(207) 438-4621
MEDEP Response Bureau		(800) 482-0777
Maine Department of Public Safety		(800) 452-4664
Poison Control Center		(800) 442-6305
Chemtrec		(800) 424-9300
National Response Center		(800) 424-8802
NOS/CDR	SWO IWO	(207) 438-1990 (207) 438-2200
LEPC	York County Courthouse	(207) 324-1756

* SHSO shall verify Emergency Telephone numbers upon mobilization

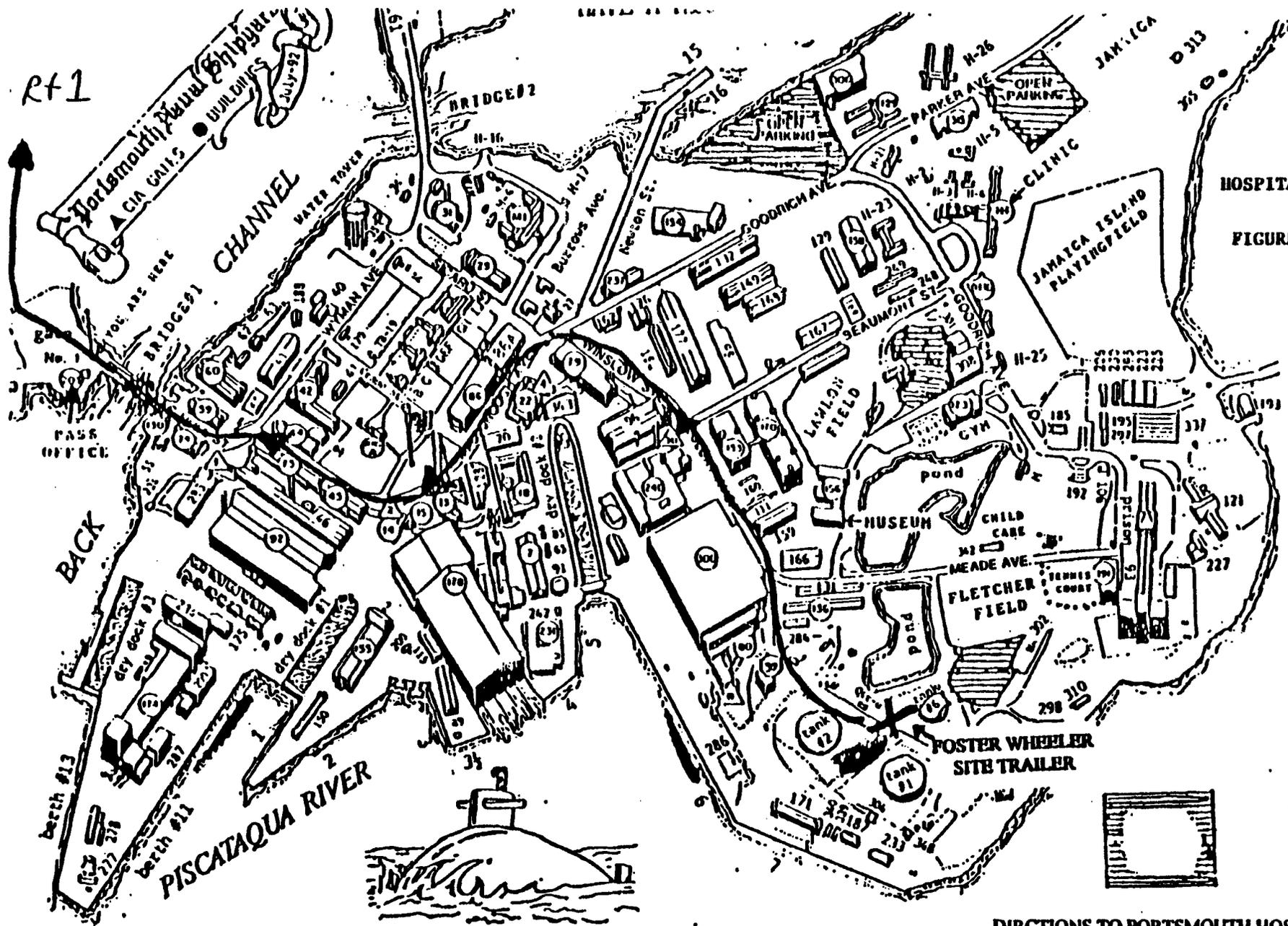
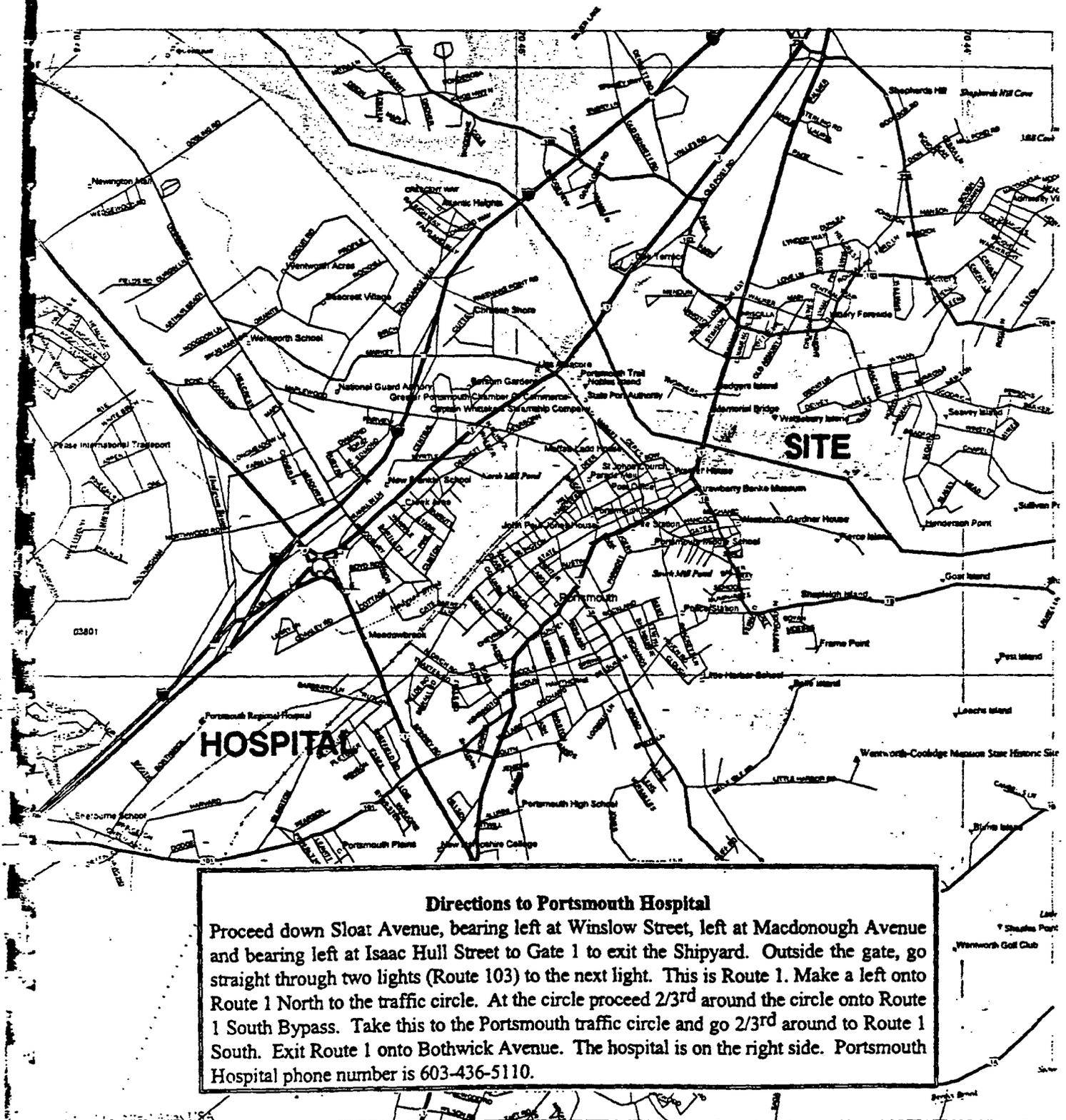


FIGURE 12-1

DIRECTIONS TO PORTSMOUTH HOSPITAL
 PORTSMOUTH, NEW HAMPSHIRE

Hospital Route Map



12.3 Pre-emergency Planning

Foster Wheeler Environmental will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from exposure to any of the contaminants expected to be found on the site. Before the field activities begin, the local emergency response personnel will be notified of the schedule for field activities and the on-site contaminants of concern so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency.

Before field work on the site commences, each person who will be working there or observing the operations will complete a medical data sheet. These data sheets will be filled out during the initial site safety training meeting and will be kept on the site.

In the event of an incident where a team member becomes exposed or suffers from an acute symptom of exposure to site materials and has to be taken to a hospital, a copy of his/her medical data sheet will be presented to the attending physician.

12.4 Emergency Medical Treatment

The procedures and rules in this SHSP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the SHSO immediately.

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. First aid instructions provided by a physician shall be followed prior to the arrival of emergency response personnel. Figure 12-1 shows the route to the hospital.

Foster Wheeler Environmental will provide at least two personnel with current First Aid and CPR certification on each active work shift. When personnel are transported to the hospital, the SHSO will provide a copy of the medical data sheet to the paramedics and treating physician.

Only in non-emergency situations will an injured person be transported to the hospital by means other than an ambulance.

12.5 Emergency Site Evacuation Routes and Procedures

In order to mobilize the manpower resources and equipment necessary to cope with a fire or other emergency, a clear chain of authority will be established. The EC will take charge of all emergency response activities and dictate the procedures that will be followed for the duration of the emergency. The EC will report immediately to the scene of the emergency, assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive. At his/her discretion, the EC also may order the closure of the site for an indefinite period.

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, an air horn will be sounded on the site. The horn will sound continuously for one blast, signaling that immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the designated area.

The EC will give directions for implementing whatever actions are necessary. Any project team member may be assigned to be in charge of emergency communications during an emergency. He/she will attend the site telephone specified by the EC from the time the alarm sounds until the emergency has ended.

After sounding the alarm and initiating emergency response procedures, the EC will check and verify that access roads are not obstructed. If traffic control is necessary, as in the event of a fire or explosion, a project team member, who has been trained in these procedures and designated at the site safety meeting, will take over these duties until local police and fire fighters arrive.

The EC will remain at the site to provide any assistance requested by emergency-response squads as they arrive to deal with the situation. A map showing evacuation routes, meeting places, and location of emergency equipment will be posted in all trailers and used during site-specific training.

12.5.1 Evacuation Drills

Evacuation drills will be conducted to test the emergency system.

The drills will simulate situations that may be likely to occur on-site. A critique of the drill according to Foster Wheeler Environmental Health and Safety Program EHS 2-1 will be conducted.

12.6 **Fire Prevention and Protection**

In the event of a fire or explosion, procedures will include immediately evacuating the site (air horn will sound for a single continuous blast), and notification of local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

12.6.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials
- Storage of flammable liquids and gases away from oxidizers
- No smoking in the exclusion zone or any work area
- No hot work without a properly executed hot work permit

- Shutting off engines to refuel
- Grounding and bonding metal containers during transfer of flammable liquids
- Use of UL-approved flammable liquid storage cans
- Fire extinguishers rated at least 5 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities
- Monthly inspections and documentation of all fire extinguishers

12.7 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet or recommended by the Corporate Medical Consultant will be followed, when necessary.

SKIN AND EYE CONTACT:	Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs.
INHALATION:	Move to fresh air. Decontaminate and transport to hospital or local medical provider.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility.

12.8 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or postponed. The SHSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on-site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

12.9 Accident/Incident reporting

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

- Project Health and Safety Manager
- Delivery Order Manager
- The employer of any injured worker who is not a Foster Wheeler Environmental employee.

Written confirmation of verbal reports are to be submitted within 24 hours. The accident/incident report can be found in the Foster Wheeler Environmental Corporate Health and Safety Program, Section EHS 1-7. If the employee involved is not a Foster Wheeler Environmental employee, his/her employer shall receive a copy of the report.

12.10 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO or designee will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds)
- Limited visibility (fog)
- Potential for electrical storms
- Earthquakes; and
- Other major incidents

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The SHSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

12.11 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed as hazardous waste. An exclusion zone of 50-100 feet around the spill area should be established depending on the size of the spill.

If contaminated soil is released to the river, immediate measures will be taken to contain the release and to stabilize the situation. If the release is determined to be reportable, the release will be reported to the State of Maine Department of Public Safety and the Local Emergency Planning Committee.

The following steps should be taken by the Emergency Coordinator:

- Determine the nature, identity and amounts of major spill components
- Make sure all unnecessary persons are removed from the spill area
- Notify appropriate response teams and authorities
- Use proper PPE in consultation with the SHSO
- If a flammable liquid, gas or vapor is involved, remove all ignition sources and use nonsparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.)
- If possible, try to stop the leak with appropriate material
- Remove all surrounding materials that can react or compound with the spill

12.12 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-site.

- Industrial first aid kit
- Portable eye washes (one per field team) meeting ANSI Z-358.1-1990
- Air horns (one per field team)
- Fire extinguishers (one per trailer/vehicle, and located at hot work locations)
- Two-way radios
- Absorbent Material

12.13 Postings

The following information shall be posted at various, conspicuous locations throughout the site:

- Emergency telephone numbers
- Diagrams showing the location of fire extinguishers and emergency equipment
- Emergency exit, evacuation routes and staging area

12.14 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers
- Refilling medical supplies
- Recharging eyewashes and/or showers
- Replenishing spill control supplies
- Replacing used air horns

13.0 TRAINING

13.1 General Health and Safety Training

In accordance with Foster Wheeler Environmental corporate policy, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations unless otherwise noted in the above reference. At a minimum, the training shall have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training shall not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical).

13.1.1 Three Day Supervised On the Job Training

In addition to the required initial hazardous waste operations training, each employee shall have received three days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform. Workers (craft and FWENC) with previous experience in hazardous waste remediation do not need an additional 3 day OJT review provided the nature and scope of the current task is essentially similar to those performed in the past.

13.2 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for field work

13.3 Eight-Hour Supervisory Training

Foster Wheeler Environmental personnel who supervise others shall have received an additional eight hours of training.

13.4 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include site and facility layout, hazards and emergency services at the site and will highlight all provisions contained within this SHSP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. Workers will be given a two-volume project rules handbook during the site orientation. The contents shall be discussed and workers will be asked to sign the acknowledgement.

13.5 On-Site Safety Briefings

Project personnel and visitors will be given on-site health and safety briefings by the SHSO to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity for the SHSO to periodically update the workers on monitoring results. Prior to starting any new activity, a training session using the AHA will be held for workers involved in the activity.

13.6 First Aid and CPR

The SHSO will identify those individuals requiring first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. It is expected that a minimum of two field persons on-site at any one time will have first aid and CPR training. The training will be consistent with the requirements of the American Red Cross Association. They shall have received instruction in bloodborne pathogens.

13.6 Hazard Communication

Hazard communication training will be provided in accordance with the requirements contained in the Foster Wheeler Environmental Health and Safety Program, Section 4-2.

14.0 LOGS, REPORTS AND RECORD KEEPING

The following is a summary of required health and safety logs, reports and recordkeeping.

14.1 Field Change Request

This form is to be completed for initiating a change to the SHSP. The PHSM and Project Manager or designee approval is required. The original will be kept in the project file. Approved changes will be reviewed with affected field personnel at a safety briefing. Copies will be distributed to the client representative.

14.2 Medical and Training Records

Copies or verification of training (40 hour, 8 hour, supervisor, site specific training and documentation of three day OJT) and medical clearance for hazardous waste site work and respirator use will be maintained onsite. Records for all subcontractor employees will also be kept onsite. All employee medical records will be maintained by the Corporate Medical Consultant - Greaney Medical Group in accordance with Foster Wheeler Environmental Corporation Health and Safety Program, section EHS 1-8.

14.3 On-site Log

A log of personnel on-site each day will be kept by the SS or designee.

14.4 Weekly/Monthly Safety Reports

The SHSO shall complete and submit weekly and monthly safety reports to the PHSM. The report is provided in Appendix F.

14.5 Accident/Incident Reports

The incident reporting and investigation will follow Foster Wheeler Environmental Corporation Health and Safety Program, Section EHS 1-7.

14.6 OSHA Form 200

An OSHA Form 200 will be kept at the project site. All recordable injuries or illnesses will be recorded on this form. At the end of the project, the original will be sent to PHSM for maintenance. Subcontractor employers must also meet the requirements of maintaining an OSHA 200 form. The incident report form referenced in section 14.5 meets the requirements of the OSHA Form 101 (supplemental record) and must be maintained with the OSHA Form 200 for all recordable injuries or illnesses.

14.7 Health and Safety Logbooks

The SHSO will maintain logbooks during site work. The daily site conditions, personnel, monitoring results and significant events will be recorded. The original logbooks will become part of the exposure records file.

14.8 Hazard Communication Program/MSDS

Material Safety Data Sheets (MSDS) will be obtained for applicable indigenous substances as well as those procured for on site use and will be included in the site hazard communication file. The hazard communication program will be maintained onsite in accordance with 29 CFR 1910.1200 and Foster Wheeler Environmental Corporation Health and Safety Program Section EHS 4-2.

14.9 Work Permits

All work permits, such as confined space entry, line breaking, and hot work permits will be maintained in the project files.

14.10 Weekly/Monthly Inspections

The Site Superintendent is responsible to conduct these inspections and to submit them to the PHSM.

16.0 REFERENCES

American Conference of Governmental Industrial Hygienists, Inc., 1992, Documentation of the Threshold Limit Values and Biological Exposure Indices; 6th Ed., ACGIH, Cincinnati, Ohio.

American Conference of Governmental Industrial Hygienists, Inc., 1987, Guidelines For The Selection of Chemical Protective Clothing; Third Edition, ACGIH, Cincinnati, Ohio, February 1987.

American Conference of Governmental Industrial Hygienists, Inc., 1999, Threshold Limit Values For Chemical Substances And Physical Agents In The Work Environment And Biological Exposure Indices; ACGIH, Cincinnati, Ohio.

Federal Acquisition Regulation, F.A.R. Clause 52.236-13: Accident Prevention.

Foster Wheeler Environmental Corporation, Foster Wheeler Environmental Corporation Health and Safety Program.

NIOSH/OSHA/USCG/EPA, 1985, Occupational Safety and Health, Guidance Manual For Hazardous Waste Site Activities; October 1985.

Sax, N. Irving, 1992, Dangerous Properties of Industrial Materials, 8th Ed; Van Nostrand Reinhold Co. Inc., New York, NY.

U.S. Army Corps of Engineers, 1996, Safety and Health Requirements Manual; EM 385-1-1.

U.S. Department of Labor, Occupational Safety and Health Administration, 1989, 29 CFR Part 1910 Hazardous Waste Operations and Emergency Response, draft rule, March 6, 1989; Construction Industry Standards, 29 CFR 1926; and General Industry Standards, 29 CFR 1910.

U.S. Environmental Protection Agency, Standard Operating Safety Guides; July 1988.

U.S. Environmental Protection Agency, no date, Response Safety Decision-Making; Course Manual, Office of Emergency and Remedial Response, Hazardous Response Support Division.

APPENDIX A
FIELD CHANGE REQUEST FORM

**FOSTER WHEELER ENVIRONMENTAL
FIELD CHANGE REQUEST FORM**

PROJECT:

CHANGE NUMBER:

PROJECT LOCATION:

DESCRIPTION OF CHANGE:

REASON FOR CHANGE:

RECOMMENDED DISPOSITION:

SITE MANAGER: _____
Signature

Date

PROGRAM HEALTH AND SAFETY MANAGER:

Signature

Date

DISTRIBUTION: Program Health and Safety Manager
Site Health and Safety Officer
Quality Assurance Representative
Field Operation Leader

HASP FIELD CHANGE

Field Change Number: _____

Date Effective: _____

Pen and Ink changes to be made in the HASP to alert the reader of this change:

Reason for the change to be incorporated into the HASP:

TEXT OF CHANGE TO BE INCORPORATED:

APPENDIX B
ACTIVITY HAZARD ANALYSES

ACTIVITY HAZARD ANALYSIS

Project: <u>DRMO Shoreline Stabilization</u>		Location: <u>Plymouth Naval Shipyard, Kittery, ME</u>
Activity: <u>Installation of Erosion and Sediment Controls</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Construct diversion berm on the upgradient side of the slope (Hazards and controls 1 - 12 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
2. Cover all disturbed areas with 3/8 stone or poly, daily (Hazards and controls 1 - 12 apply)	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and when moving equipment.
	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.
	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.
	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers
	7. Temperature extremes	7. Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.
	8. Eye Injuries	8. Safety glasses meeting ANSI Standard Z87 will be worn.
	9. Heavy Equipment (overhead hazards, spills, struck by or against)	9. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.
	10. Fire	10. ABC type fire extinguishers shall be readily available; no smoking in work area.
	11. Pinch/Cut/Smash	11. Cut resistant kevlar work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	12. Working Near Water's Edge	12. If personnel are working within 10 feet of the water's edge, personal floatation devices will be worn
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

Project: DRMO Shoreline Stabilization
Activity: Installation of Erosion and Sediment Controls

Location: Plymouth Naval Shipyard, Kittery, ME

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<ol style="list-style-type: none">1. Heavy Equipment2. Appropriate PPE3. First Aid Kits4. Portable Eyewash5. Fire Extinguishers	<ol style="list-style-type: none">1. Inspections will be performed on equipment prior to each use.2. Inspections will be performed on PPE prior to each use.3. Monthly inspections will be performed on first aid kits.4. Portable eye wash will be inspected monthly5. Monthly inspections will be performed on fire extinguishers.	<ol style="list-style-type: none">1. Personnel have read and comply with SHSP2. Site specific training3. Qualified operators will be used for equipment operation4. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training5. Instruct personnel on proper use of fire extinguishers

ACTIVITY HAZARD ANALYSIS

Project: <u>DRMO Shoreline Stabilization</u> Activity: <u>Curb and Fence Removal</u>		Location: <u>Portsmouth Naval Shipyard, Kittery, ME</u>	
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS	
1. Remove existing curb (Hazards and controls 1 - 12 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.	
2. Use existing stone to create a temporary diversion berm over the GCL cap (Hazards and controls 1- 12 apply)	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards, be aware when walking on/working in soft material.	
3. Remove existing fence (Hazards and controls 1 - 12 apply)	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and when moving equipment.	
	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.	
	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.	
	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers	
	7. Temperature extremes	7. Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.	
	8. Eye Injuries	8. Safety glasses meeting ANSI Standard Z87 will be worn.	
	9. Heavy Equipment (overhead hazards, spills, struck by or against)	9. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.	
	10. Fire	10. ABC type fire extinguishers shall be readily available; no smoking in work area.	
	11. Pinch/Cut/Smash	11. Cut resistant kevlar work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.	
	12. Working Near Water's Edge	12. If personnel are working within 10 feet of the water's edge, personal flotation devices will be worn	
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	

Project: DRMO Shoreline Stabilization
Activity: Curb and Fence Removal

Location: Portsmouth Naval Shipyard, Kittery, ME

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
<ol style="list-style-type: none">1. Heavy Equipment2. Appropriate PPE3. First Aid Kits4. Portable Eyewash5. Fire Extinguishers	<ol style="list-style-type: none">1. Inspections will be performed on equipment prior to each use.2. Inspections will be performed on PPE prior to each use.3. Monthly inspections will be performed on first aid kits.4. Portable eye wash will be inspected monthly5. Monthly inspections will be performed on fire extinguishers.	<ol style="list-style-type: none">1. Personnel have read and comply with SHSP2. Site specific training3. Qualified operators will be used for equipment operation4. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training5. Instruct personnel on proper use of fire extinguishers

ACTIVITY HAZARD ANALYSIS

Project: DRMO Shoreline Stabilization Activity: Removal of Keel Blocks and Debris		Location: Portsmouth Naval Shipyard, Kittery, ME
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Remove keel blocks and other debris using excavator w/ thumb attachment (Hazards and controls 1 - 13 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and when moving equipment.
	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.
	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.
	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers
	7. Temperature extremes	7. Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.
	8. Eye Injuries	8. Safety glasses meeting ANSI Standard Z87 will be worn.
	9. Heavy Equipment (overhead hazards, spills, struck by or against)	9. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.
	10. Fire	10. ABC type fire extinguishers shall be readily available; no smoking in work area.
	11. Pinch/Cut/Smash	11. Cut resistant kevlar work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	12. Excavation and Trenching	12. All trenching and excavation activities will be conducted in accordance with 29 CFR 1926, Subpart P and EHS 6-3. This includes, but is not limited to: excavations and trenches must be inspected daily by a competent person, atmospheric testing must be done prior to entry for trenches or excavations 4 feet deep or greater, a protective system must be used when an excavation or trench is 5 feet deep or greater or when depth is less

Project: DRMO Shoreline Stabilization
 Activity: Removal of Keel Blocks and Debris

Location: Plymouth Naval Shipyard, Kittery, ME

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	13. Working Near Water's Edge	<p>than 5 feet and inspection by a competent person reveals conditions that may result in cave-ins; travel distance between ladders must be no more than 25 linear feet.</p> <p>13. If personnel are working within 10 feet of the water's edge, personal flotation devices will be worn</p>
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none"> 1. Heavy Equipment 2. Appropriate PPE 3. First Aid Kits 4. Portable Eyewash 5. Fire Extinguishers 	<ol style="list-style-type: none"> 1. Inspections will be performed on equipment prior to each use. 2. Inspections will be performed on PPE prior to each use. 3. Monthly inspections will be performed on first aid kits. 4. Portable eye wash will be inspected monthly 5. Monthly inspections will be performed on fire extinguishers. 	<ol style="list-style-type: none"> 1. Personnel have read and comply with SHSP 2. Site specific training 3. Qualified operators will be used for equipment operation 4. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training 5. Instruct personnel on proper use of fire extinguishers

ACTIVITY HAZARD ANALYSIS

Project: DRMO Shoreline Stabilization
 Activity: Regrade Existing Embankment

Location: Portsmouth Naval Shipyard, Kittery, ME

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Consolidate and regrade existing embankment rock (Hazards and controls 1 - 13 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
2. Regrade exposed slope (Hazards and controls 1 - 13 apply)	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and when moving equipment.
	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.
	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.
	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers
	7. Temperature extremes	7. Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.
	8. Eye Injuries	8. Safety glasses meeting ANSI Standard Z87 will be worn.
	9. Heavy Equipment (overhead hazards, spills, struck by or against)	9. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.
	10. Fire	10. ABC type fire extinguishers shall be readily available; no smoking in work area.
	11. Pinch/Cut/Smash	11. Cut resistant kevlar work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	12. Chemical Exposure	12. Appropriate protective clothing per Table 6-1 will be worn during site activities; air monitoring as per Tables 7-1 and 7-2 will be conducted; skin will be rinsed with water if contact with hazardous material occurs; a portable eye wash station will be located by work area.

Project: <u>DRMO Shoreline Stabilization</u> Activity: <u>Regrade Existing Embankment</u>		Location: <u>Fortsmouth Naval Shipyard, Kittery, ME</u>
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	13. Working Near Water's Edge	13. If personnel are working within 10 feet of the water's edge, personal floatation devices will be worn
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none"> 1. Heavy Equipment 2. Appropriate PPE 3. First Aid Kits 4. Portable Eyewash 5. Fire Extinguishers 	<ol style="list-style-type: none"> 1. Inspections will be performed on equipment prior to each use. 2. Inspections will be performed on PPE prior to each use. 3. Monthly inspections will be performed on first aid kits. 4. Portable eye wash will be inspected monthly 5. Monthly inspections will be performed on fire extinguishers. 	<ol style="list-style-type: none"> 1. Personnel have read and comply with SHSP 2. Site specific training 3. Qualified operators will be used for equipment operation 4. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training 5. Instruct personnel on proper use of fire extinguishers

ACTIVITY HAZARD ANALYSIS

Project: <u>DRMO Shoreline Stabilization</u> Activity: <u>Shoreline Stabilization</u>		Location: <u>Portsmouth Naval Shipyard, Kittery, ME</u>
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Cover exposed soil at top of embankment with 3/8 stone (Hazards and controls 1 - 14 apply)	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
2. Place geotextile along the slope (Hazards and controls 1 - 12, 14 apply)	2. Slips/Trips/Falls	2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
3. Place stone layers over geotextile (Hazards and controls 1 - 12, 14 apply)	3. Vehicular Traffic	3. Spotters will be used when backing up trucks and heavy equipment and when moving equipment.
4. Replace concrete curb (Hazards and controls apply)	4. Overhead Hazards	4. Personnel will be required to wear hard hats that meet ANSI Standard Z89.1. All ground personnel will stay clear of suspended loads. All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. All overhead hazards will be identified prior to commencing work operations.
5. Remove temporary berm (Hazards and controls apply)	5. Dropped Objects	5. Steel toe boots meeting ANSI Standard Z41 will be worn.
6. Replace section of GCL (Hazards and controls 1 - 14 apply)	6. Noise	6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers
6. Return material to its original position as backfill against the curb (Hazards and controls apply)	7. Temperature extremes	7. Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.
7. Install fence (Hazards and controls apply)	8. Eye Injuries	8. Safety glasses meeting ANSI Standard Z87 will be worn.
	9. Heavy Equipment (overhead hazards, spills, struck by or against)	9. Equipment will have seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; spill and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; ground personnel will stay out of the swing radius; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; all equipment will be equipped with backup alarms.
	10. Fire	10. ABC type fire extinguishers shall be readily available; no smoking in work area.
	11. Pinch/Cut/Smash	11. Cut resistant kevlar work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	12. Chemical Exposure	12. Appropriate protective clothing per Table 6-1 will be worn during site activities; air monitoring as per Tables 7-1 and 7-2 will be conducted; skin will be rinsed with water if contact with hazardous material occurs; a portable eye wash station will be located by work area; conduct hazard communication training for decontamination and sample

Project: DRMO Shoreline Stabilization
 Activity: Shoreline Stabilization

Location: Furtsmouth Naval Shipyard, Kittery, ME

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
	13. Excavation and Trenching 14. Working Near Water's Edge	preservation chemicals. 13. All trenching and excavation activities will be conducted in accordance with 29 CFR 1926, Subpart P and EHS 6-3. This includes, but is not limited to: excavations and trenches must be inspected daily by a competent person, atmospheric testing must be done prior to entry for trenches or excavations 4 feet deep or greater, a protective system must be used when an excavation or trench is 5 feet deep or greater or when depth is less than 5 feet and inspection by a competent person reveals conditions that may result in cave-ins; travel distance between ladders must be no more than 25 linear feet. 14. If personnel are working within 10 feet of the water's edge, personal floatation devices will be worn
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Heavy Equipment 2. Appropriate PPE 3. First Aid Kits 4. Portable Eyewash 5. Fire Extinguishers 6. Air Monitoring Equipment	1. Inspections will be performed on equipment prior to each use. 2. Inspections will be performed on PPE prior to each use. 3. Monthly inspections will be performed on first aid kits. 4. Portable eye wash will be inspected monthly 5. Monthly inspections will be performed on fire extinguishers. 6. Air monitoring equipment will be pre- and post calibrated according to manufacturer's specifications.	1. Personnel have read and comply with SHSP 2. Site specific training 3. Qualified operators will be used for equipment operation 4. At least two individuals on-site will have current CPR, First aid and bloodborne pathogen training 5. Instruct personnel on proper use of fire extinguishers 6. Qualified individuals will use air monitoring equipment.

APPENDIX C
DUST ACTION LEVEL CALCULATION

DUST EXPOSURE CALCULATION WORKSHEET

South Bay III

Safety Factor for this site = 1

Chemical	Exposure Limit (mg/m ³)	Maximum Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (EL Mix, mg/m ³)	Dust Quotient for Each Compound (level/limit)
Aluminum	5	1.E-9	5.E+15	2.00E-10
Antimony	0.5	1.E-9	5.E+14	2.00E-09
Arsenic	0.01	1.E-9	1.E+13	1.00E-07
Barium	0.5	1.E-9	5.E+14	2.00E-09
Beryllium	0.002	1.E-9	2.E+12	5.00E-07
Cadmium	0.005	1.E-9	5.E+12	2.00E-07
Chlordane	1	1.E-9	1.E+15	1.00E-09
Chromium	0.5	1.E-9	5.E+14	2.00E-09
Chrome (hex)	0.01	1.E-9	1.E+13	1.00E-07
Cobalt	0.02	1.E-9	2.E+13	5.00E-08
Copper	1	23,000	43.48	2.30E+04
Cyanides	5	1.E-9	5.E+15	2.00E-10
Endosulfan	0.1	1.E-9	1.E+14	1.00E-08
Fluorides	2.5	1.E-9	2.5E+15	4.00E-10
Lead	0.05	255,000	.2	5.10E+06
Manganese	1	1.E-9	1.E+15	1.00E-09
Mercury	0.05	1.E-9	5.E+13	2.00E-08
Nickel	1	4,200	238.1	4.20E+03
Oil Mist	5	1.E-9	5.E+15	2.00E-10
PCBs	0.5	1.E-9	5.E+14	2.00E-09
PNAs	0.2	1.E-9	2.E+14	5.00E-09
Phthalates	5	1.E-9	5.E+15	2.00E-10
RDX	1.5	1.E-9	1.5E+15	6.67E-10
Selenium	0.2	1.E-9	2.E+14	5.00E-09
Silica	0.05	1.E-9	5.E+13	2.00E-08
Silver	0.01	1.E-9	1.E+13	1.00E-07
Thallium	0.1	1.E-9	1.E+14	1.00E-08
Tin	2	1.E-9	2.E+15	5.00E-10
Titanium	10	1.E-9	1.E+16	1.00E-10
Trinitrobenzene	0.07	1.E-9	7.E+13	1.43E-08
Trinitrotoluene	0.5	1.E-9	5.E+14	2.00E-09
Vanadium	0.05	1.E-9	5.E+13	2.00E-08
Zinc	5	14,000	357.14	2.80E+03
			Sum	5.13E+06
Dust Exposure Level at Mixture PEL =			0.195	

APPENDIX D
MEDICAL DATA SHEET

APPENDIX E
WORK RULES



Foster Wheeler Environmental Corporation

MEDICAL DATA SHEET

The brief medical data sheet shall be completed by all on-site personnel and will be kept in the Support Zone by the HSO as a project record during the conduct of site operations. It accompanies any personnel when medical assistance is needed or if transport to a hospital is required.

Project: _____

Name: _____ Home Telephone: _____

Address: _____

Age: _____ Height: _____ Weight: _____ Blood Type: _____

Name and Telephone Number of Emergency Contact: _____

Drug or Other Allergies: _____

Particular Sensitivities: _____

Do You Wear Contacts? _____

Provide A Check List Of Previous Illnesses: _____

What Medications Are You Presently Using? _____

Do You Have Any Medical Restrictions? _____

Name, Address, And Phone Number Of Personal Physician: _____

HEALTH AND SAFETY WORK RULES CONTINUED

16. No one may enter an excavation greater than four feet deep unless authorized by the Competent Person. Excavations must be sloped or shored properly. Safe means of access and egress from excavations must be maintained.
17. Ladders and scaffolds shall be solidly constructed, in good working condition, and inspected prior to use. No one may use defective ladders or scaffolds.
18. Fall protection or fall arrest systems must be in place when working at elevations greater than six feet for temporary working surfaces and four feet for fixed platforms.
19. Safety belts, harnesses and lanyards must be selected by the Supervisor. The user must inspect the equipment prior to use. No defective personal fall protection equipment shall be used. Personal fall protection that has been shock loaded must be discarded.
20. Hand and portable power tools must be inspected prior to use. Defective tools and equipment shall not be used.
21. Ground fault interrupters shall be used for cord and plug equipment used outdoors or in damp locations. Electrical cords shall be kept out walkways and puddles unless protected and rated for the service.
22. Improper use, mishandling, or tampering with health and safety equipment and samples is prohibited.
23. Horseplay of any kind is prohibited.
24. Possession or use of alcoholic beverages, controlled substances, or firearms on any site is forbidden.
25. All incidents, no matter how minor, must be reported immediately to the Supervisor.
26. All personnel shall be familiar with the Site Emergency Response Plan.

The above Health and Safety Rules are not all inclusive and it is your responsibility to comply with all regulations set forth by OSHA, the FWENC Environmental, Health and Safety Programs, the EHS plan(s), the client, FWENC Supervisors, and the HSO.



**FOSTER WHEELER ENVIRONMENTAL CORPORATION
GENERAL HEALTH AND SAFETY RULES**

1. All site personnel must attend each day's Daily Briefing.
2. Any individual taking prescribed drugs shall inform the HSO of the type of medication. The HSO will review the matter with the PHSM and the Corporate Medical Consultant (CMC), who will decide if the employee can safely work on-site while taking the medication.
3. The personal protective equipment specified by the HSO and in the EHS plan(s) shall be worn by all site personnel. This includes hard hats and safety glasses which must be worn at all times in active work areas.
4. Facial hair (beards, long sideburns or mustaches) which may interfere with a satisfactory fit of a respirator mask is not allowed on any person who may be required to wear a respirator.
5. All personnel must sign the site log and the exclusion zone log when used at the site.
6. Personnel must follow proper decontamination procedures and shower at the end of the work shift.
7. Eating, drinking, chewing tobacco or gum, smoking and any other practice that may increase the possibility of hand-to-mouth contact is prohibited in the exclusion zone or the contamination reduction zone. (Exceptions may be permitted by the PHSM to allow fluid intake during heat stress conditions.)
8. All lighters, matches, cigarettes and other forms of tobacco are prohibited in the Exclusion Zone.
9. All signs and demarcations shall be followed. Such signs and demarcation shall not be removed, except as authorized by the HSO.
10. No one shall enter a permit-required confined space without a permit. Confined space entry permits shall be implemented as issued.
11. All personnel must follow Hot Work Permits as issued.
12. All personnel must use the Buddy System in the Exclusion Zone.
13. All personnel must follow the work-rest regimens and other practices required by the heat stress program.
14. All personnel must follow lockout/tagout procedures when working on equipment involving moving parts or hazardous energy sources.
15. No person shall operate equipment unless trained and authorized.

APPENDIX F
WEEKLY HEALTH AND SAFETY REPORTS

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
US NAVY RAC
WEEKLY HEALTH AND SAFETY REPORT**

REAL TIME AIR MONITORING						
Major Activity	Location(s)	Worker Occupation Monitored	FID/PID Range and Readings	CGI/02 Range and Readings	PDM Range and Readings	Other
PERSONAL AIR MONITORING						
Activity Monitored	Location	Occupation	Type of Sample	Analyte	Result	
SUBCONTRACTORS ON SITE						
Company Name	Task or Function			Return to Site Next Week (Y/N)	Performed Subcontractor Review (Y/N)	
_____ Health and Safety Officer - Signature			_____ Date			