

N00174.AR.001062
NSWC INDIAN HEAD
5090.3a

FINAL WORK PLAN REMEDIAL ACTION SITE 12 NSWC INDIAN HEAD MD
6/21/2002
SHAW ENVIRONMENTAL, INC.

**FINAL
WORK PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

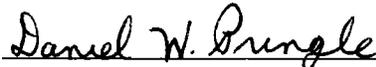
Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

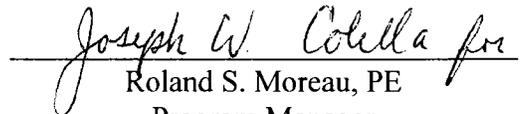
Prepared by:

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:



Daniel W. Pringle
Project Manager



Roland S. Moreau, PE
Program Manager

Project No. 809401

June 21, 2002

TABLE OF CONTENTS

LIST OF FIGURES.....	iii
LIST OF ACRONYMS.....	iv
1.0 INTRODUCTION.....	1-1
1.1 PURPOSE.....	1-1
1.2 PROJECT BACKGROUND.....	1-1
1.3 GENERAL SCOPE AND OBJECTIVES.....	1-1
2.0 ORGANIZATION OF PROJECT.....	2-1
2.1 LABOR REQUIREMENTS.....	2-1
2.2 MANAGEMENT APPROACH TO CONSTRUCTION.....	2-1
2.3 PERSONNEL - DUTIES AND RESPONSIBILITIES.....	2-1
2.3.1 Shaw Environmental, Inc. Responsibilities.....	2-1
2.3.2 Responsibilities of Shaw Environmental, Inc.'s Project Management Team....	2-2
2.3.3 Project Manager.....	2-2
2.3.4 Site Superintendent.....	2-3
2.3.5 Site QC Manager.....	2-3
2.3.6 Site Safety Officer.....	2-4
2.3.7 Project Business Administrator.....	2-4
2.3.8 Senior UXO Specialist.....	2-5
3.0 DESCRIPTION OF ACTIVITIES.....	3-1
3.1 MOBILIZATION AND SITE SETUP.....	3-1
3.2 SITE PREPARATION.....	3-1
3.2.1 Utility Search.....	3-1
3.2.2 Initial Site Survey.....	3-2
3.2.3 Delineation of Work Zones.....	3-2
3.2.4 Lowering Pool Elevations of Ponds.....	3-2
3.2.5 Dust Control.....	3-2
3.2.6 Air Monitoring.....	3-2
3.3 EROSION AND SEDIMENT CONTROLS.....	3-3
3.3.1 Super Silt Fence.....	3-3
3.3.2 Silt Fence.....	3-3
3.3.3 Stabilized Construction Entrances.....	3-3
3.3.4 Materials Handling Pads.....	3-4
3.3.5 Decontamination Pads.....	3-4
3.3.6 Portable Sediment Tanks.....	3-4
3.3.7 Conveyance Channels.....	3-4
3.3.8 Erosion Control Matting.....	3-4
3.3.9 Rock Check Dams.....	3-5
3.3.10 Vegetation.....	3-5
3.4 CLEARING AND GRUBBING.....	3-5
3.5 MONITORING WELL ABANDONMENT.....	3-5
3.6 PROOFROLLING.....	3-5
3.7 WASTE REMOVAL.....	3-5

TABLE OF CONTENTS

3.8	REGRAIDING AND SOIL COVER INSTALLATION.....	3-6
3.8.1	Landfill Regrading	3-6
3.8.2	Soil Cover Installation.....	3-6
3.8.2.1	Select Fill	3-7
3.8.2.2	Topsoil	3-7
3.9	ATKINS ROAD EXTENSION MODIFICATION.....	3-7
3.10	MONITORING WELL INSTALLATION	3-7
3.11	SITE RESTORATION.....	3-7
3.11.1	Permanent Seeding.....	3-8
3.11.2	Wetlands Restoration	3-8
3.11.3	Sign Installation	3-8
3.11.4	Final Survey	3-8
3.12	SITE INSPECTION	3-8
3.13	DEMOBILIZATION.....	3-9
3.13.1	Decontamination of Equipment	3-9
3.13.2	Site Cleanup	3-9
3.13.3	Demobilization of Resources	3-9
3.14	CLOSEOUT REPORT.....	3-9

FIGURES

APPENDIX A – EXCAVATION AND MATERIAL HANDLING PLAN

APPENDIX B – ENVIRONMENTAL PROTECTION/POLLUTION PREVENTION PLAN

APPENDIX C – QUALITY CONTROL PLAN

APPENDIX D – SITE-SPECIFIC HEALTH AND SAFETY PLAN

APPENDIX E – DESIGN DRAWINGS AND SPECIFICATIONS

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
1-1	Site Location Map
2-1	Organizational Chart
3-1	Project Schedule

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society for Testing and Materials
BTEX	benzene, toluene, ethyl benzene, and xylene
E&S	erosion and sediment
ECM	erosion control matting
EMHP	Excavation and Material Handling Plan
EP/PP Plan	Environmental Protection/Pollution Prevention Plan
GIS	Geographic Information System
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
MDE	Maryland Department of the Environment
NTR	Navy Technical Representative
OSHA	Occupational Safety and Health Administration
PBA	Project Business Administrator
PPE	personal protective equipment
ppm	part(s) per million
psi	pound(s) per square inch
QC	quality control
QCP	Quality Control Plan
ROICC	Resident Officer in Charge of Construction
Site 12	Site 12 - Town Gut Landfill
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
UXO	unexploded ordnance

1.0 INTRODUCTION

Shaw Environmental, Inc. was contracted by the Navy to install a soil cap at the existing Town Gut Landfill, Site 12 at the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC) in Indian Head, Maryland. This work will be performed under Contract No. N62470-97-D-5000, Delivery Order No. 0062. The cap design for this remedial action was prepared by Tetra Tech NUS, Inc. (TtNUS)

1.1 PURPOSE

This plan describes in detail the tasks to be performed and the techniques that will be utilized during earthmoving activities for the installation of a soil barrier layer at the Site 12, Town Gut Landfill (Site 12) at the IHDIV-NSWC. Included as appendices to this plan are the following:

- Appendix A - Excavation and Material Handling Plan (EMHP)
- Appendix B - Environmental Protection/Pollution Prevention Plan (EP/PP Plan)
- Appendix C - Quality Control Plan (QCP)
- Appendix D - Site-Specific Health and Safety Plan (SSHASP)
- Appendix E - Design Drawings and Specifications

In addition to the documents listed above, an Unexploded Ordnance (UXO) Support Plan was prepared, finalized and submitted with this Final Work Plan as a separate document.

1.2 PROJECT BACKGROUND

The IHDIV-NSWC is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, DC. The IHDIV-NSWC provides services in energetics, ordnance devices and components, and other related ordnance engineering standards, including chemicals, propellants, and their propulsion systems, explosives, pyrotechnics, warheads, and simulators.

Site 12 is located in the central area of the IHDIV-NSWC (Figure 1-1). It covers approximately 4 acres of undeveloped land and includes two areas of waste, two ponds, and is crossed by Atkins Road Extension. The two areas of waste are separated by the northern pond. The northern waste area stretches from the north shore of the northern pond to Atkins Road. The southern waste area stretches from the south shore of the northern pond to the southern pond. It is bisected by Atkins Road Extension, under which a 78-inch culvert connects the northern and southern ponds. Existing conditions of the site are shown on Sheet C-1 of the Design Drawings.

1.3 GENERAL SCOPE AND OBJECTIVES

The objective of this plan is to present all necessary information to perform the remediation activities at Site 12. This remedial action includes lowering the water levels of the ponds and excavating waste along their shorelines, segregating the waste requiring off-site disposal, and consolidating the remaining waste within the limits of the cover; placing and grading common fill over the existing cover soils; and placing a soil cover system over the regraded area. The work covered under this plan includes construction of erosion and sediment (E&S) controls, waste relocation/regrading, placement of barrier soil over the landfill, reconstruction of the Atkins Road Extension, and planting wetland plants along the pond perimeters.

A description of the specific work activities for the above scope is presented in Section 3.0.

2.0 ORGANIZATION OF PROJECT

This section discusses project labor requirements and the Shaw Environmental, Inc. project organization.

2.1 LABOR REQUIREMENTS

Personnel from a variety of disciplines will be utilized to form an efficient and knowledgeable team. The proposed work requires that small work crews be on site at the same time to perform all of the remediation activities. Shaw Environmental, Inc. estimates separate crews may be required for construction of E&S structures, shoreline excavation, and soil cover installation. The crews will be augmented as necessary to perform the above-mentioned tasks in an efficient manner.

2.2 MANAGEMENT APPROACH TO CONSTRUCTION

Shaw Environmental, Inc.'s approach to project management is to place the management at a level close to the client. Shaw Environmental, Inc.'s Project Manager will work directly with the client to achieve the client's satisfaction with the project. Therefore, the Project Manager will have overall project responsibility to the client from a schedule, cost, and resources aspect. Shaw Environmental, Inc. will assign a Site Superintendent to be responsible for accomplishing the work in the field. The Site Superintendent will report directly to the Project Manager and will be responsible for the day-to-day activities in the field.

2.3 PERSONNEL - DUTIES AND RESPONSIBILITIES

The following sections outline Shaw Environmental, Inc.'s overall responsibilities for this project as well as the individual responsibilities of the project team.

2.3.1 Shaw Environmental, Inc. Responsibilities

The responsibilities of Shaw Environmental, Inc. are:

- Perform the remedial activities defined in the Work Plan and required under this task order.
- Prepare and submit to the Navy monthly status reports containing such information regarding percentage of completion, unresolved delays (encountered or anticipated) that may affect the schedule and a description of efforts made to mitigate those delays or anticipated delays, revised construction schedule, listing of activities scheduled for the next month, and other information relating to the progress of construction as is customary in the industry.
- Initiate, maintain, and supervise all safety precautions and programs in connection with the work.
- If conflict, error, or discrepancy is found in contract documents, report to the Navy Technical Representative (NTR) in writing before proceeding to obtain a written interpretation or clarification from the Navy.
- Notify the NTR in writing of any subsurface or latent physical conditions encountered that differ materially from those specified or indicated.
- Implement the QCP and establish chain of command.
- Provide a Site Superintendent, who will not be replaced without written notice to the Navy; the Site Superintendent will be Shaw Environmental, Inc.'s on-site representative/manager.

ORGANIZATION OF PROJECT

- If materials or equipment, or specific means, methods, techniques, sequences, or procedures of construction are indicated in or required by the Contract Documents, furnish or utilize a substitute acceptable to the NTR if needed.
- Procure subcontractor services; submit these services to the Navy for acceptance.
- Maintain at the site two record copies of all as-built drawings, one copy of specifications, addenda, written amendments, change orders, work directive changes, field test records, field orders, and written interpretations and clarifications. Upon completion of the work, deliver these records to the Navy. At completion of the work, provide a report on the construction activities.
- Prepare submittals in accordance with the basic contract and Project Specifications.

2.3.2 Responsibilities of Shaw Environmental, Inc.'s Project Management Team

The remedial action at Site 12 will be led by a project-dedicated team who is responsible for the management and completion of the overall project remediation. The organization chart (Figure 2-1) defines the primary "chain of command."

The Project Manager will have the overall responsibility for project efforts including technical, schedule, and budget aspects. The Project Manager will be responsible for the day-to-day management and integration of all elements of the project and will be accountable for each activity. Supporting the Project Manager as a separate entity will be the Site Quality Control (QC) Manager for technical and site monitoring functions. Also supporting the Project Manager in the field will be the Site Superintendent, Site Safety Officer (SSO), Project Business Administrator (PBA), and other support personnel as needed.

Separate from the project management chain of command is the QC chain of command under the direction of the QC Program Manager. The Site QC Manager will report, independently of the Shaw Environmental, Inc. project team, as shown on the Organizational Chart on Figure 2-1.

Responsibilities and authority of the Project Manager and supporting field personnel fundamental to the project are discussed in the following sections.

2.3.3 Project Manager

The Project Manager is the person in charge of the overall project and has full authority for coordination and direction of the project. The Project Manager will communicate directly with the NTR. Specific responsibilities of the Project Manager include the following:

- Interpret and plan overall work effort.
- Approve work products, plans, and deliverables.
- Overall responsibility for preparation and planning of documents for the work.
- Respond to resource requirements by defining resource needs and securing the commitments for staff and equipment.
- Monitor subcontractor performance, schedules, budgets, and invoices.
- Develop, review, and meet work schedule and budget objectives.
- Ensure technical adequacy of field, laboratory, data management, and construction activities.
- Prepare for and attend meetings with the Navy, as required.
- Manage and coordinate group interfaces.
- Document the need for contract modifications, if needed.

To carry out these functions, the Project Manager will have the authority to:

ORGANIZATION OF PROJECT

- Make work assignments for project personnel and subcontractors.
- Allocate additional personnel as needed.
- Establish work budgets and schedules with milestones.
- Approve subcontractor work and invoices.
- Communicate with the Site Superintendent about day-to-day activities and alert the Program Manager and/or Site QC Manager to potential problems.
- Maintain Shaw Environmental, Inc. quality standards.

2.3.4 Site Superintendent

The Site Superintendent is the Shaw Environmental, Inc. contact at the site and is responsible for performing the remediation activities in accordance with the Work Plan and other project plans and specifications. The Site Superintendent's responsibilities include, but are not limited to:

- Implementing the day-to-day aspects of the SSHASP.
- Coordinating engineering activities at the site as directed by the Project Manager.
- Managing the day-to-day execution of the project at the site including administrative and procurement activities.
- Monitoring work progress and schedule, and advise Project Manager of variances.
- Implementing state and federal regulations pertinent to the work.
- Assisting in preparation of work progress schedules, project reports, "as-built" drawings, and required compliance submittals.
- Compiling the daily logs into a weekly report which will be forwarded to the Project Manager.
- Attending work progress meetings.
- Reporting to the Project Manager changes desired in the Contract Documents so that required review and approval can be accomplished prior to when the change is made, and reporting for review and approval changes necessitated by unanticipated site conditions.
- Procuring, with approval of the Project Manager, subcontractor services.
- Ensuring that remedial rework is subjected to the same quality requirements as the original work.

2.3.5 Site QC Manager

The Site QC Manager will be responsible for coordinating inspection and surveillance activities. The Site QC Manager will conduct daily inspections and/or surveillance to monitor completion and corrections of work performed on site. The results of inspections and surveillance will be documented in a report describing the events reviewed that day. The Site QC Manager will also be responsible for:

- Coordinating day-to-day technical activities.
- Reviewing results of on-site verification testing and inspection reports.
- Implementing appropriate provisions of this plan.
- Serving as the collection point for remediation-related nonconformance.
- Performing, or causing to be performed, daily inspections and tests of the scope and character necessary to achieve the quality of construction outlined in the plans and specifications for work under the contract performed on or off site.
- Maintaining the latest applicable drawings and specifications with amendments and/or approved modifications at the job site and assuring that they are used for shop drawings, fabrication, construction, inspections, and testing.

ORGANIZATION OF PROJECT

- Maintaining marked-up drawings at the site depicting as-built conditions. The drawings will be available for review by the government at all times.
- Holding and presiding over biweekly quality review meetings of the site work being performed, and review proposed work procedures and type of work scheduled.
- Maintaining a contractor-generated submittal register, ENG Form 4288, for the duration of the contract. A review of the register will be performed at least every 14 days in conjunction with the scheduled dates on the register and in relation to the actual work status. Appropriate actions will be undertaken should slippages or other changes be necessary.
- Reviewing shop drawings and/or other submittals for compliance with the contract requirements prior to their transmission to the government.
- Establishing and maintaining a Rework Item List of work that does not conform to specifications. Tracking and monitoring the items on the list to assure the rework inspection and testing activities and frequencies are in accordance with the contract requirements
- Attending and assisting the government at the pre-final inspection and the final acceptance inspection.
- Confirming the quality and quantity of materials delivered to the site as referenced by the Project Specifications and/or Design Drawings.

2.3.6 Site Safety Officer

The SSO is responsible for implementing the SSHASP, which satisfies federal, state, and local regulations and is consistent with site conditions. The SSO may take actions independent of the project group to stop the project, if required, for compliance with the SSHASP.

The Site Superintendent has overall responsibility for the day-to-day implementation of the SSHASP during site activities, however, the SSO will oversee this day-to-day implementation, including the following responsibilities:

- Directing the entrance and exit medical physical requirements, if required.
- Approval of personal protective equipment (PPE) and safety procedures specified in the SSHASP.
- Overseeing the maintenance and use of field monitoring equipment necessary to define on-site hazards associated with remediation.
- Designating appropriate personal protection level, determining protection level upgrades and downgrades as site conditions permit.
- Providing necessary guidance to the project staff so they can safely perform their functions in accordance with federal and state regulations.

2.3.7 Project Business Administrator

The responsibilities of the PBA are:

- Assist the Project Manager in preparation of schedules, budgets, and invoices.
- Establish tracking systems to track costs and budget variances.
- Provide weekly progress reports on budget and schedule status to the Project Manager.
- Prepare daily report deliverables.
- Audit weekly postings of charges to work budgets.
- Assist the Project Manager in communicating work procedures and goals to Shaw Environmental, Inc.'s staff.
- Assist the Site Superintendent in procurement activities.

ORGANIZATION OF PROJECT

2.3.8 Senior UXO Specialist

The Senior UXO Specialist will monitor all excavation activities where a potential exists of uncovering UXO related items. He may be supported in the field by a UXO technician. He directly controls the excavation operations and will spend most of the day at the excavation monitoring the soil removal in order to achieve maximum operational safety and efficiency. He will implement the approved UXO Support Plan in the field and will review any changes proposed to the approved plan. The Senior UXO Specialist can temporarily stop work in order to correct unsafe conditions or procedures.

3.0 DESCRIPTION OF ACTIVITIES

This section discusses in detail the major field activities associated with the landfill closure of Site 12. These activities include:

- Mobilization and site setup
- Site preparation
- E&S controls installation
- Clearing and grubbing
- Monitoring well abandonment
- Waste removal and segregation
- Regrading and soil cover installation
- Atkins Road Extension modification
- Monitoring well installation
- Site restoration
- Site inspection
- Demobilization
- Closeout report.

The sequencing and duration for each of these activities as well as other related activities, is shown on the project schedule (Figure 3-1).

3.1 MOBILIZATION AND SITE SETUP

Shaw Environmental, Inc. will mobilize personnel, equipment, and resources necessary to complete the project as defined in this Work Plan, the Project Specifications, and the Sequence of Construction on Sheet C-3 of the Design Drawings of Appendix E. Initially, key individuals and equipment will be dispatched to the site to receive trailers and other equipment essential to perform the project. Initial site setup will include preparing an area where the Contractor's trailers will be located, installing the Contractor's trailers, and connecting utilities.

Upon completion of the initial site setup, Shaw Environmental, Inc. will continue mobilization. This will include mobilization of excavation, grading, and hauling equipment and all other equipment and personnel necessary to complete the project. Support facilities, including sanitation facilities, trash dumpsters, and staging areas, will be setup and additional support facilities will be installed if and when they are needed. The project needs and logistics will be coordinated through Shaw Environmental, Inc.'s Pittsburgh, Pennsylvania and Windsor, New Jersey offices.

3.2 SITE PREPARATION

Once mobilization and site setup are complete, site preparation activities will begin.

3.2.1 Utility Search

Underground utilities exist adjacent to Atkins Road and Atkins Road Extension and lie within the limits of disturbance. Shaw Environmental, Inc. will request a utility mark out from the Resident Officer in Charge of Construction (ROICC) NTR prior to beginning ground disturbance activities. A dig permit, including a Geographic Information System (GIS) map of the area, will be obtained from the Public

DESCRIPTION OF ACTIVITIES

Works Department. In addition, Shaw Environmental, Inc. will conduct a utility search using two passive detection methods. A field inspection to verify the locations and depths of utilities will be conducted to prepare the site for construction operations. All utilities will be adequately marked and protected before any earth disturbing activities. It is not anticipated that any above or below ground utility will require relocation due to the proposed remedial action. If any untraceable utilities that are not shown on the GIS map are damaged during construction, the government will be responsible for the repair/replacement of the damaged portion.

3.2.2 Initial Site Survey

Shaw Environmental, Inc. will perform a topographic survey of the existing conditions at Site 12 to confirm that its current condition conforms to the lines and grades shown on Sheet C-1 of the Design Drawings. A registered surveyor will perform the initial topographic survey as well as establish construction control points and mark the limits of disturbance. Other survey work may be included as determined by the Site Superintendent.

3.2.3 Delineation of Work Zones

Shaw Environmental, Inc. will mark all work zones in accordance with Occupational Safety and Health Administration (OSHA) guidelines and the SSHASP of Appendix D. All specific work zones will be delineated with orange plastic safety fencing with metal posts and appropriate warning signs will be strategically placed. Caution tape, roping, and other fencing devices will be used, as specific project tasks require.

3.2.4 Lowering Pool Elevations of Ponds

The pool elevations of the ponds will have to be lowered to expose the waste limits indicated on the Design Drawings. The pool elevations are controlled by a weir located at the discharge (southern) end of the southern pond and by conditions in Mattawoman Creek, located south of the ponds. The pool elevations are currently abnormally high, possibly because a beaver dam upstream of the weir may be blocking the flow. Initially, Shaw Environmental, Inc. will lower the water level using 5-inch or 6-inch trash pumps to pump the water over the weir. The pond water will be lowered to an elevation slightly lower than the work elevation. A cutting torch will then be used to remove a portion of the weir. While this work is being completed, the beaver dam will be removed and the culvert unblocked. After the remedial work is complete, a steel plate will be welded back onto the existing weir.

3.2.5 Dust Control

A water truck with a sprinkler attachment or other similar equipment will be utilized to control dust in all excavation areas and haul roads and during placement of material. The water source for the truck will be determined by the base ROICC. Water will be applied in sufficient quantity to prevent the creation of dust, but excessive watering that may result in a muddy condition will not be permitted. Determination of the need for dust control will be the responsibility of the Shaw Environmental, Inc. Site Superintendent as dictated by changes in site conditions on a continuing basis.

3.2.6 Air Monitoring

Shaw Environmental, Inc. will perform perimeter air monitoring in accordance with the SSHASP. Air monitoring will start with the intrusive activities and continue through placement of the general fill layer. The SSO will be responsible for monitoring and maintaining the monitoring equipment on a daily basis.

DESCRIPTION OF ACTIVITIES

3.3 EROSION AND SEDIMENT CONTROLS

This section describes the various E&S controls that will be used during earthmoving activities at the site. All controls will comply with the manufacturer's installation specifications and will be installed as directed by the Shaw Environmental, Inc. Site Superintendent in accordance with Sheets C-2, C-3, and C-5 of the Design Drawings. All E&S control structures will remain in place until vegetation is established and authorization to remove them is obtained from the Maryland Department of the Environment (MDE).

The installation of E&S control measures will allow the soil cover layer and site grading activities to take place while minimizing any threat to the adjacent waterways. Work covered under this task includes installation of super silt fence, silt fence, stabilized construction entrances, material handling and decontamination pads, rock check dams, erosion control matting, and seeding. The maintenance of these structures for the duration of the remediation project is included as part of this task.

3.3.1 Super Silt Fence

Super silt fence will be installed at the locations shown on Sheet C-2 of the Design Drawings in accordance with Detail 1 on Sheet C-5. It will be placed along the shoreline of both ponds as indicated to protect the ponds during sediment removal and soil cover placement. It is assumed that the water level in the ponds can be lowered to allow placement of the super silt fence outside the landfill limits. No ground disturbance other than what is necessary to install the super silt fence will occur in an area until the area's super silt fence is in place. The super silt fence will be inspected weekly and after each rain event. It will be checked for undermining, fabric deterioration, and sediment accumulation. The accumulated sediment will be removed if it causes the fabric to bulge or if it accumulates to half of the fabric height. Any accumulated sediment that is removed prior to placement of the first lift of the cover soil will be spread on the uncovered area. All sediment collected after the first lift of cover soil is placed will be stockpiled for off-site disposal. The super silt fence will remain in place for the duration of the remedial activities and will be removed following the establishment of permanent vegetation and MDE approval.

3.3.2 Silt Fence

Silt fence will be installed at the location shown on Sheet C-2 of the Design Drawings and wherever deemed necessary by the Site Superintendent. At a minimum, silt fence will be installed as shown along the slope of the landfill and to protect the stabilized construction entrances and decontamination pads. It will be installed in accordance with Detail 2 on Sheet C-5 as part of the site preparation work. The silt fence will be inspected weekly and after each rain event for undermining, deterioration, and accumulation of sediment. Sediment will be removed if it causes bulging of the geotextile or accumulates to half the height of the silt fence. The silt fence will remain in place until the areas it protects are stabilized and approval for removal is obtained from the MDE. Any accumulated sediment that is removed prior to placement of the first lift of the cover soil will be spread on the uncovered area. All sediment removed after the first lift of cover soil is placed will be stockpiled for off-site disposal.

3.3.3 Stabilized Construction Entrances

To reduce the amount of soil transported onto paved public roads by motor vehicles or runoff, a stone pad with a filter fabric underliner will be constructed at two points of vehicular ingress and egress. The construction entrances will be installed in the locations shown on Sheet C-2 and in accordance with Detail 3 on Sheet C-5 of the Design Drawings. The construction entrances will be inspected regularly and

DESCRIPTION OF ACTIVITIES

new stone will be added as necessary or existing soil will be washed off, so that the stone at the entrance will perform its intended function of removing soil from the vehicle tires. No other points of egress off the landfill will be permitted.

3.3.4 Materials Handling Pads

The materials handling pads will be installed at locations approved by the ROICC and MDE to provide drying areas for the excavated materials. The locations will be situated within the limits of waste and the water resulting from the waste draining will be allowed to infiltrate into the site. Each pad will be constructed by first grading a 40- by 75-foot area, then constructing a soil berm around the pad to a height of approximately 2 feet. A 6-inch layer of American Association of State Highway and Transportation Officials (AASHTO) #1 coarse aggregate will be installed across the base of each pad. One pad will be used for dewatering construction debris and other large items. The other pad will be used for excavated soil and sediment from along the pond perimeters. Once the debris has been removed from the site or no longer requires dewatering, the pad may then be used to store excavated sediments.

3.3.5 Decontamination Pads

Decontamination pads will be installed in accordance with Detail 4 on Sheet C-5 of the Design Drawings at locations chosen by Shaw Environmental, Inc. and approved by the ROICC and MDE. The pads will be used to decontaminate equipment and possibly large debris removed from the ponds before they leave the site. Water used in the decontamination process will be collected, stored, and later used for dust control within the waste limits prior to soil cover placement. Once the cover is in place, any decontamination water collected will be containerized and tested to determine whether it can be disposed on site or require off-site disposal.

3.3.6 Portable Sediment Tanks

Once the soil cover is being installed, decontamination and sediment water will be sent through the portable sediment tanks. These tanks will allow any solids temporarily suspended in the decontamination water to settle out. The water and sediment will then be tested (if necessary) to determine an appropriate disposal method. In the event that the water and sediment can be discharged on the site, the water will be broadcast over an approved vegetated area of the site and the sediment incorporated into the soil cover. If the water and sediment require off-site treatment and disposal, they will be sent to an appropriate facility.

3.3.7 Conveyance Channels

Permanent conveyance channels will be installed along the eastern sides of both the northern and southern landfill areas as shown on Sheet C-2 of the Design Drawings. The channels will divert off-site runoff away from the cap and collect runoff from the cap in order to reduce erosion. The channels will be installed according to Detail 9 shown on Sheet C-9 of the Design Drawings. The northern landfill channel will be lined with erosion control matting (ECM), but riprap will be placed at the critical locations as shown. The southern landfill channel will be lined with riprap for the eastern half and ECM for the remainder. Rock check dams will be installed as described in Section 3.3.9 to help protect the channels until vegetation is established.

3.3.8 Erosion Control Matting

ECM that can withstand flow velocities up to 6 feet per second will be installed in the drainage channels as shown on Sheet C-9 of the Design Drawings to temporarily stabilize the channels until

DESCRIPTION OF ACTIVITIES

vegetation is established. This ECM will be installed according to the manufacturer's recommendations and Detail 9 on Sheet C-9 of the Design Drawings.

3.3.9 Rock Check Dams

Rock check dams will be installed within the drainage channels at the locations shown on Sheets C-2 and C-5 of the Design Drawings. They will reduce the flow velocities within the channels to non-erosive rates and prevent channel erosion. Inspections will occur weekly and after each rain event. Sediment collected by the dams will be removed and placed within the limits of the cap when the sediment reaches half of the original height of the check dam. Erosion caused by high flows around the edges of the dams will be corrected immediately. The rock check dams will remain in place throughout construction and will be removed once permanent vegetation has been established.

3.3.10 Vegetation

Temporary seeding may be utilized during construction activities to temporarily stabilize disturbed areas that remain disturbed for more than 30 days without any work being performed in the specific area. The temporary seeding (if required) will conform to the specifications listed on Sheet C-4 of the Design Drawings. Permanent seeding, mulch, and/or plantings will be placed as described in Section 3.11, Site Restoration.

3.4 CLEARING AND GRUBBING

Shaw Environmental, Inc. personnel will perform the clearing and grubbing within the limits of disturbance, which are shown on Sheet C-2 of the Design Drawings, once the E&S controls are installed. Clearing will consist of the removal of aboveground vegetation. Saleable timber will be cut into manageable lengths and removed from the site to a location on Base approved by the ROICC. The remaining cleared material will be chipped and stockpiled for use as mulch around plants in the wetlands restoration activities or mixed in with the excavated sediment and placed within the limits of the landfill under the soil cover. Grubbing will consist of the removal of stumps and root systems within the limits of disturbance. Grubbed material will be chipped, then placed within the landfill limits under the cover.

3.5 MONITORING WELL ABANDONMENT

Six monitoring wells within the limits of disturbance as shown on Sheet C-2 of the Design Drawings will be abandoned prior to installation of the soil cap. A driller licensed in the state of Maryland will be subcontracted to abandon the wells in accordance with state requirements.

3.6 PROOFROLLING

Once the clearing and grubbing is complete, all disturbed areas outside the limits of the landfill and the landfill itself will be proofrolled in order to provide a firm base for material placement. Proofrolling will be conducted using a tracked dozer (or other appropriate compaction equipment) with a ground pressure of at least 8 pounds per square inch (psi).

3.7 WASTE REMOVAL

Details of the waste removal and handling around the ponds are included in the EMHP (Appendix A). Once the water levels of the ponds are lowered, material along the ponds' shorelines will be excavated to the limits of disturbance shown on Sheet C-2 of the Design Drawings at the toe of the soil

DESCRIPTION OF ACTIVITIES

cover. Wetland areas within the limits of waste will be excavated to a depth of two feet. Additionally, visible waste and debris will be removed from the pond and wetland areas during the excavation. Visible waste outside of the limits of disturbance will be removed when dictated by the client. Soil and small objects will be consolidated on site. Large items of exposed waste and debris within the ponds and wetlands will be removed for off-site disposal. Materials requiring off-site disposal that contain free liquids will be placed on a materials handling pad and allowed to dewater naturally prior to removal from the site. Free liquids will either be allowed to infiltrate to the groundwater. The materials will then be stockpiled and tested for characterization before transport for off-site disposal. It is expected that all large items of waste and debris will be disposed at a nonhazardous waste landfill. UXO personnel will monitor all excavation activities for UXO. Any ordnance-related devices that are found during excavation activities will be handled in accordance with the UXO Support Plan. This UXO Support Plan will initially be submitted as a separate document for review purposes. Once this document is finalized and approved, it will be incorporated into this Work Plan document as Appendix F.

3.8 REGRAIDING AND SOIL COVER INSTALLATION

The on-site materials excavated from around the ponds will be regraded once the material has dried to establish the interim grades, then the soil cover will be installed over the landfill limits.

3.8.1 Landfill Regrading

The landfill areas, including waste, sediment, and any existing cover soil requiring excavation, will be regraded to establish the interim grades indicated on Sheet C-6 of the Design Drawings. The excavated material will be spread in 8-inch loose lifts and compacted with a minimum of 4 passes of the proofrolling compaction equipment. The compactive effort while placing this material will be visually monitored. No in-situ density tests will be obtained during placement because of the varied nature and optimum densities of the material being placed.

If the regraded on-site material does not meet the designed interim grade shown on Sheet C-6 of the Design Drawings, field modifications to the grading plan will be made. If on-site material is insufficient, additional off-site material will not be used to meet the grades. If the quantity of on-site material exceeds the designed grade, the excess material will not be sent off site for disposal. In either case, the site will be graded to meet the design parameters, including the 4 percent minimum grade and 25 percent maximum grade, and maintain the intended drainage patterns. The design interim grade will be modified to accommodate what material is available and the actual interim grade will be surveyed and the changes will be documented in the record drawings. At the completion of the interim grading, a topographic survey of the landfill contours will be conducted. The results of this survey will be used to document the elevation and lateral limits of the placed sediment and waste.

3.8.2 Soil Cover Installation

The soil cover will serve to reduce the possibility of exposure to receptors, eliminate physical hazards, reduce erosion, and improve aesthetics. The soil cover will be installed according to Detail 1 shown on Sheet C-9 of the Design Drawings. The soil cover will consist of 18 inches of select fill and 6 inches of topsoil. Both the select fill and topsoil will be obtained from approved off-site borrow sources. Prior to delivery to the site, the borrow material will be tested for full Toxicity Characteristic Leaching Procedure (TCLP) parameters, including ignitability, corrosivity, and reactivity, total petroleum hydrocarbons (TPH) content, and the sum of benzene, toluene, ethyl benzene, and xylene (BTEX). The results shall contain less than 100 parts per million (ppm) of TPH, less than 10 ppm of the sum of BTEX, and fall within the allowable concentrations for the TCLP analysis.

DESCRIPTION OF ACTIVITIES

3.8.2.1 Select Fill

An 18-inch layer of select fill will be placed over the limits of waste following the grading of existing site materials. Select fill will be classified as SM, SC, or ML with a maximum particle size of 3 inches. Select fill will be placed in 8-inch loose lifts resulting in an approximate 6-inch lift after compaction. Each lift of select fill will be compacted to 85 percent of American Society of Testing and Materials (ASTM) D 698 with a smooth drum roller or other appropriate placement/compaction equipment. The surface of the select fill will then be scarified using the dozer tracks in preparation of topsoil placement.

3.8.2.2 Topsoil

A 6-inch layer of topsoil will be placed on the select fill layer. Topsoil will be of medium texture (loam, sandy loam, loamy sand, silt loam, or silt), it will contain less than 8 percent organic matter, it will have a pH between 6.0 and 7.5, and its soluble salt content will be less than or equal to 500 ppm. The topsoil will be spread evenly with a dozer to provide positive drainage following the grades shown on Sheet C-7 of the Design Drawings. No compactive effort other than what is achieved with the placement equipment will be required. Debris and stones larger than 1 inch in any dimension will be removed prior to fertilization and seeding.

3.9 ATKINS ROAD EXTENSION MODIFICATION

Atkins Road Extension will be reconstructed (elevated) to coincide with the 2-foot soil cover placed over the entire landfill. The road will serve as a ridge line and surface water divide for the soil cover. Clean common fill meeting the requirements of Project Specification Section 02315, "Excavation and Fill," will be used to raise the road. The final roadway section will include common fill, a 10-inch subbase layer, a 2-inch base layer, and a 1-inch wearing course. The road will be 21 feet wide and have a 2-foot shoulder on each side. The road will be constructed in accordance with Detail 5 of Sheet C-9 of the Design Drawings and Project Specification Section 02742, "Pavement with a Bituminous Concrete Surface." The section of road to be reconstructed will span from Station 0+20 to Station 2+95 as shown on Sheet C-6 of the Design Drawings.

3.10 MONITORING WELL INSTALLATION

A total of seven groundwater monitoring wells will be installed at the locations shown in the Long-Term Monitoring Plan (TtNUS) prior to the completion of the soil cover. The new wells will be installed according to Detail 6 on Sheet C-9 of the Design Drawings. The new wells will be installed by a licensed well driller according to the requirements of Project Specification Section 02525, "Monitoring Wells." All cutting and drilling material solids will be disposed of under the landfill cap prior to its completion. Drilling equipment will be cleaned prior to drilling and between boreholes, and decontaminated before leaving the site.

3.11 SITE RESTORATION

Restoration will involve activities associated with returning the site to pre-excavation conditions as best as practical in preparation for demobilization. These actions, which include seeding and mulching the disturbed areas, restoring the wetlands by planting wetland plants, and installing warning signs around the landfill, are discussed in detail below.

DESCRIPTION OF ACTIVITIES

3.11.1 Permanent Seeding

Seed and mulch will be applied to all disturbed areas within the site limits. A subcontractor will apply the seed, mulch, and nutrients based on the results of the nutrient testing on the topsoil and in accordance with Sheet C-4 of the Design Drawings and the Maryland Erosion and Sedimentation Control Handbook guidelines. All temporary E&S structures will remain in place while vegetation is being established at the site.

3.11.2 Wetlands Restoration

Approximately one-half acre of wetlands will be disturbed during the waste excavation. The disturbed areas of the wetlands will be restored to their pre-existing condition by backfilling the excavation areas and planting wetland vegetation with equal or greater value to wildlife. The backfilling activity will coincide with the placement of select fill and topsoil in these areas. The chosen plants are fast growing and will form dense stands capable of stabilizing the pond shoreline and releasing nutrients to the ponds. Wetlands restoration will be performed in accordance with the planting schedule on Sheet C-7 of the Design Drawings and Project Specification Section 02951, "Mitigated Wetlands Area, Shrubs, Plants, and Grass."

3.11.3 Sign Installation

Aluminum warning signs will be installed at 100-foot intervals around the perimeter of the landfill at the locations designated by the ROICC. The signs will be installed according to Detail 8 and will contain the verbage shown on Detail 7 of Sheet C-9 of the Design Drawings. The signs will designate the limits of the landfill, warn that unauthorized excavation and groundwater use are prohibited, and provide a contact number for additional information.

3.11.4 Final Survey

At the completion of the field activities, which involve site grading or installation/removal of structures, a final topographic survey of the project site will be conducted by a registered land surveyor. The final survey will include site topography, elevation/location of existing structures, and the elevation/location of new structures such as the new wells, warning signs, and boundaries of the wetland restoration areas. The results of the final survey will be used to generate the as-built site conditions, which will be included in the Closeout Report as a hard copy and in electronic format. Pertinent survey data from the final survey will also be provided electronically in ASCII format.

3.12 SITE INSPECTION

A pre-final inspection will be held in anticipation of the closure of the project. The Navy will be given 14 days advance notice of the inspection. This inspection will be conducted by, at a minimum, the Site QC Representative, Site Superintendent, Base personnel, and the NTR. A complete list of deficiencies discovered during the inspection and corrections to each deficiency will be compiled.

After Shaw Environmental, Inc. has completed correcting all deficiencies on the pre-final inspection list, and any other deficiencies discovered after the inspection, the NTR and other involved parties will be offered an opportunity to inspect these areas before Shaw Environmental, Inc. demobilizes from the site. The purpose for this inspection is to verify that the tasks detailed in the contract have been completed to the Navy's satisfaction and that all previously identified deficiencies have been rectified. At the completion of this inspection, there should be no unacceptable work remaining. The completion of

DESCRIPTION OF ACTIVITIES

this task should constitute final acceptance of the project and the maintenance period will begin on that date, which will include removing the temporary E&S controls once vegetation is established.

3.13 DEMOBILIZATION

Shaw Environmental, Inc. will demobilize labor, equipment, and materials from the site upon completion of the work activities and after having met the project objectives. Demobilization will occur in stages as various work activities are completed, and will include those activities discussed below.

3.13.1 Decontamination of Equipment

All site equipment that comes in contact with waste materials will be decontaminated using high-pressure washing before leaving the site. The resulting decontamination water will be sampled for disposal purposes. The equipment will be decontaminated as the grading of the waste is completed. Once the select fill layer is in place, the area will be designated a clean area. Any equipment decontamination from that point on will be conducted as a dry decontamination since the presence of contaminated soil on equipment will no longer be an issue.

3.13.2 Site Cleanup

Temporary utilities will be disconnected as they are no longer needed. The site will be cleaned up by removing traces of temporary construction facilities such as work areas, structures, stockpiles of excess or waste materials, and other signs of construction. Temporary roads and parking areas will be graded to conform to the surrounding contours, or left intact based on the Base needs. Seed and mulch will be applied to all disturbed areas in accordance with Sheet C-4 of the Design Drawings. The Site Superintendent will verify the site is clean and restored to a level acceptable to the ROICC before demobilizing the remaining site resources.

The only remaining temporary structures not removed prior to demobilization will be the temporary E&S controls (i.e., silt fence, super silt fence, and rock check dams). These temporary structures will not be removed until the newly planted vegetation is established and approval is given from MDE to remove the structures. It is expected that establishment of vegetation at the site will require at least a month after Shaw Environmental, Inc. demobilizes the site. At that time, arrangements will be made with MDE's field inspector for a site visit to determine when the temporary E&S controls can be removed. Shaw Environmental, Inc. will then make arrangements to have a small crew remove the structures.

3.13.3 Demobilization of Resources

All equipment will be visually inspected for proper decontamination prior to leaving the site. Additional materials not utilized will be removed from the site, or stored on Base if the materials can be used in the future at the site or other Base activities. Construction equipment will be demobilized from the site as work phases are completed and the equipment is no longer needed. The equipment and materials (if appropriate) will be returned to their location of origin. After all the equipment and temporary facilities have been removed, Shaw Environmental, Inc. will demobilize the remaining work force from the site.

3.14 CLOSEOUT REPORT

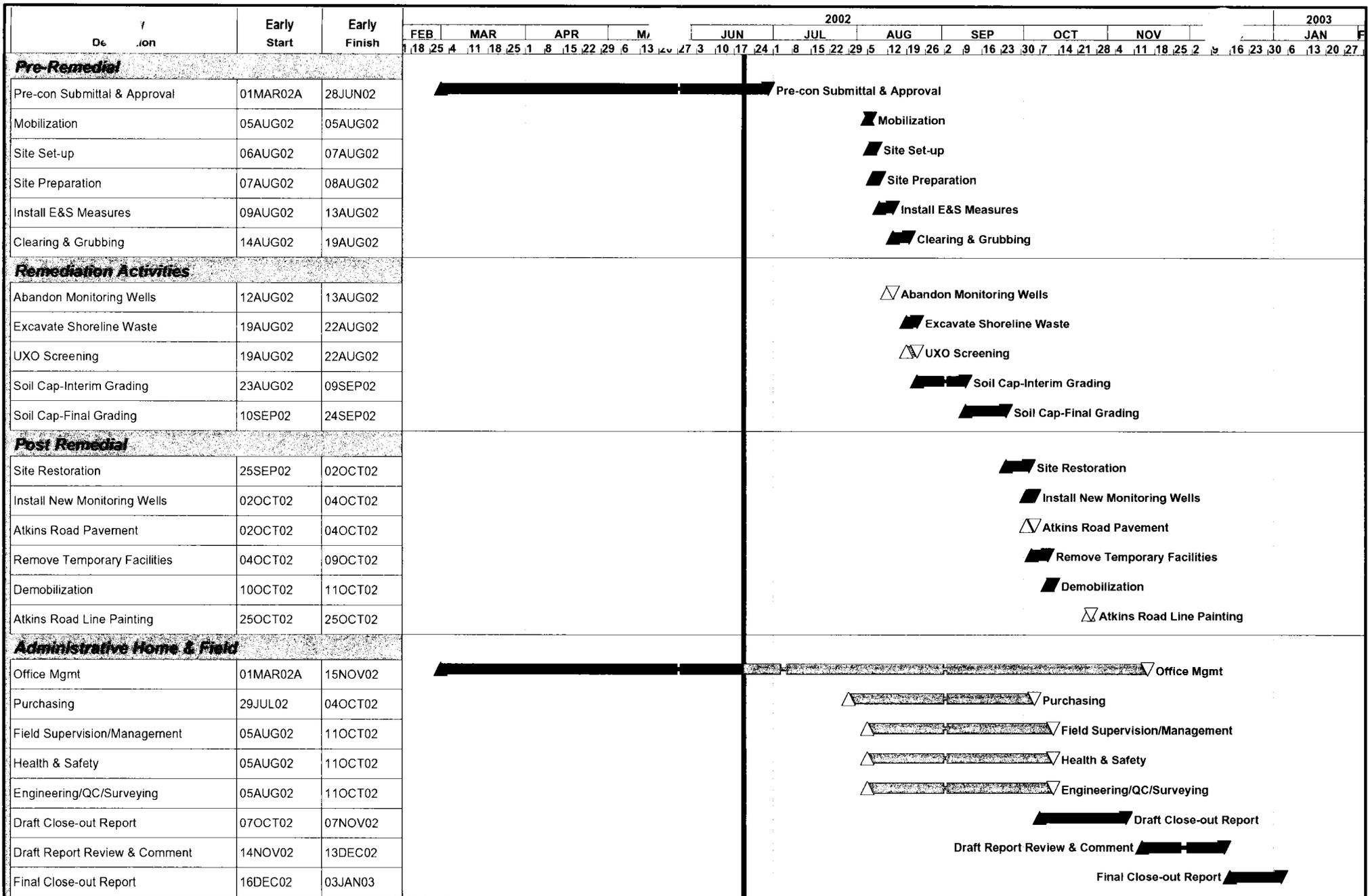
Following demobilization, Shaw Environmental, Inc. will prepare a closeout report describing the activities performed for this remedial action. The report will include the following:

DESCRIPTION OF ACTIVITIES

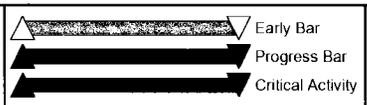
- Summary of action
- Final health and safety report
- Summary of Record Drawings
- Field changes and contract modifications
- Final documents
- Complete set of field test and laboratory analytical results
- Documentation of off-site transportation and treatment of materials
- QC Summary Report
- Surveyed as-built drawings
- Color photographs documenting each major task of the project
- Final cost data

The report will be submitted in hard copy and electronic format. It will be initially submitted in hard copy draft form, then the final report will be submitted in hard copy and on compact disc (CD) after the Navy and agency comments to the draft are addressed. The hard copy will include report text, tables, figures, as-built drawings, and photograph documentation. The electronic CD will include the hard copy contents and the other items listed above.

FIGURES



Start Date 15FEB02
 Finish Date 03JAN03
 Data Date 20JUN02
 Run Date 20JUN02 14:52



**Site 12-Town Gut Landfill
 NSWC-Indian Head, Maryland
 Target Schedule
 Figure 3-1**



APPENDIX A
EXCAVATION AND MATERIAL HANDLING PLAN

**EXCAVATION AND MATERIAL HANDLING PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

Prepared by:

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:

Daniel W. Pringle

Daniel W. Pringle
Project Manager

Joseph W. Colella for

Roland S. Moreau, PE
Program Manager

Project No. 809401

June 21, 2002

TABLE OF CONTENTS

LIST OF FIGURES.....	ii
LIST OF ACRONYMS.....	iii
1.0 INTRODUCTION.....	1-1
1.1 SCHEDULE.....	1-1
1.2 SEQUENCE OF OPERATIONS.....	1-1
1.3 CONSTRUCTION EQUIPMENT.....	1-2
2.0 DESCRIPTION OF ACTIVITIES.....	2-1
2.1 POTENTIAL CONSTRUCTION DEWATERING.....	2-1
2.2 DEBRIS REMOVAL AND EXCAVATION.....	2-1
2.2.1 Debris Removal.....	2-1
2.2.2 Sediment Excavation.....	2-2
2.3 MATERIAL SEPARATION AND HANDLING.....	2-2
2.4 LOADING AND HAULING.....	2-2
2.5 MATERIAL TESTING REQUIREMENTS.....	2-3
3.0 FILL MATERIAL.....	3-1
4.0 HEALTH AND SAFETY.....	4-1

LIST OF FIGURES

Figure

Title

1

Truck Haul Route

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
CFR	Code of Federal Regulations
EMHP	Excavation and Material Handling Plan
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
psi	pound(s) per square inch
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
Site 12	Site 12 - Town Gut Landfill
SSHASP	Site Specific Health and Safety Plan
TLCP	Toxicity Characteristic Leaching Procedure
UXO	unexploded ordnance

1.0 INTRODUCTION

This Excavation and Material Handling Plan (EMHP) has been prepared for the excavation, handling, and placement of waste and sediment removed from the edges of the ponds at Site 12 - Town Gut Landfill (Site 12) at the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC) in Indian Head, Maryland.

This EMHP describes the various handling aspects of dealing with the waste and sediments, including the following:

- Schedule
- Excavation and handling activities
- Off-site material
- Safety precautions and requirements.

1.1 SCHEDULE

The proposed construction sequence for the excavation of waste and sediment is presented in Section 3.0 of the Work Plan and shown on Sheet C-3 of the Design Drawings. The field work is expected to begin August 5, 2002 and to be completed in October 2002.

1.2 SEQUENCE OF OPERATIONS

Prior to initiating the waste excavation activity, the weir located at the southern end of the southern pond will be adjusted in order to reduce the water levels of the ponds. Trash pumps will be used to pump water over the weir to initially lower the water level to expose the waste along the shorelines. A portion of the weir will then be removed with a cutting torch to keep the water level low. Once the pond levels have lowered, the following activities will be conducted:

- Remove the large debris from the shoreline to the adjusted pond water level and stage the debris on the material drying pad.
- Conduct visual screening of removed debris for any unexploded ordnance (UXO) items using a UXO Specialist.
- Remove shoreline sediment and waste to the lines and grades shown on the Design Drawings and temporarily stage on the material drying pad if necessary.
- Conduct visual screening of excavated sediment and waste for any UXO items using a UXO Specialist.
- Remove large debris and other items from the site which will not be incorporated into the fill under the soil cover.
- Spread excavated material over designated areas of the landfill.
- Construct soil cover system over landfill using off-site fill material (select fill and topsoil).
- Reconstruct Atkins Road Extension according to the Design Drawings.

The activities listed above are discussed in detail in Sections 2.0 and 3.0 of this document. Activities not associated with excavation or material handling are described in the Work Plan.

1.3 CONSTRUCTION EQUIPMENT

Conventional earthmoving construction equipment will be used to excavate and transport the contaminated soils and debris from each excavation site to the staging or placement site. The equipment may include, but is not limited to, tracked excavators, wheeled front-end loaders, backhoes, bulldozers, compaction equipment, and tandem dump trucks (if necessary). If Safety Department approval is obtained, each piece of equipment will be equipped with two-way radios to allow the equipment operators to be in constant communication with each other.

2.0 DESCRIPTION OF ACTIVITIES

This section describes the various activities involved with the excavation and handling of the site materials.

2.1 POTENTIAL CONSTRUCTION DEWATERING

Due to the excavation of waste and sediment along the shores of the ponds, the water level of the ponds will be lowered to expose the limits of waste. Pumps will be used to initially lower the water level, then a portion of the weir located at the southern end of the south pond will be removed to keep the water level low. If the water level cannot be lowered to expose the limits of waste, material will be excavated to the edges of the water, after the water has been lowered to the weir limits, removing large items of waste and debris along the shores of the ponds. Once the large debris has been removed, the designated sediment will be excavated from around the ponds and placed on the material handling pad for dewatering.

The excavated materials will be dewatered prior to placement within the cover limits or sent off site for disposal. The materials will be placed on the material handling pads and the water will be allowed to drain onto the site and infiltrate into the ground.

2.2 DEBRIS REMOVAL AND EXCAVATION

The material removal from along the shore of the ponds will be conducted in two phases. The first phase will include the removal of large items from the shoreline. The second phase will involve the excavation of potentially contaminated sediment to the limits designated on the Design Drawings. Specific details for the excavation activities for these phases are discussed below.

2.2.1 Debris Removal

Debris removal activities will begin once the pond levels have been lowered and the super silt fence has been installed along the perimeter of the ponds at the locations shown on the Design Drawings. The exposed large debris located along the perimeter of the ponds will be removed using a hydraulic excavator working from the shoreline. As the debris is being removed, it will temporarily be held over the removal area and allowed to dewater as much as practical. Partially buried debris will be removed in the same manner in order to allow loose sediment and water to fall back into the excavation area. Debris that is completely below the lowered pond water level will be left in place unless otherwise directed by the Resident Officer in Charge of Construction (ROICC), Indian Head Installation Restoration Team, or the Navy Remedial Project Manager (RPM).

As the debris is being removed, a UXO Specialist will be on hand to visually inspect the debris at the removal location. If a suspect UXO item is uncovered, the UXO Specialist will immediately inspect the item and determine if it is safe to move. If so, it will be taken to the material pad for further evaluation. If the UXO Specialist determines that the item may not be safe to move, removal operations will stop and the field crew will be removed from the area until the UXO Specialist can examine the item more closely. The specific procedures to be followed when a UXO item is found are presented in the UXO Support Plan in Appendix F of the Work Plan document.

DESCRIPTION OF ACTIVITIES

2.2.2 Sediment Excavation

Sediment excavation will begin once the large debris has been removed from the entire shoreline of the pond or within a designated zone along the shoreline. An excavator will be used to excavate the sediment to the lines and grades identified on the Design Drawings. The sediment will be placed into the bucket of the front-end loader and transported to one of the material drying pads. During the excavation activity, the UXO Specialist will again visually inspect the sediment for possible UXO items at the point of removal.

2.3 MATERIAL SEPARATION AND HANDLING

Material will be separated into four possible categories as it is excavated: salvageable material, material for off-site disposal, UXO, and fill material. Salvageable materials, including metals and recyclables, will be decontaminated and dewatered then stockpiled for off-site disposal at a recycling facility. Materials for off-site disposal include construction debris, such as concrete and wood, and other large items. These materials will be placed on a material handling pad to dry and sampled for Toxicity Characteristic Leaching Procedure (TCLP) waste characterization for off-site disposal. UXO items will be handled in accordance with the UXO Support Plan. Fill material will be placed on the second material handling pad to dry, then hauled to the fill areas. Arrangements will be made as early as feasible for the removal from the site of the materials for off-site disposal. Once those materials are taken off site, the material handling pad where they were stored will also be used for dewatering the fill material.

Prior to placement of the soil cover, any water used for decontaminating the salvageable material or collected during dewatering activities will be allowed to be placed within the limits of waste for dust control. Once the soil cover is in place, decontamination water will be collected and tested for off-site disposal.

Material separation will be performed using the excavating equipment to the maximum extent practical, thereby minimizing the need for personnel exposure and manual material handling. Material separation activities will be conducted within the limits of excavation when possible.

2.4 LOADING AND HAULING

The excavated material that will be disposed off site will be loaded into the haul trucks using an excavator or front-end loader. The trucks will be positioned adjacent to the material drying pad for loading. Once filled, the truck tires and outside bed will be decontaminated at the equipment decontamination area (if necessary) located at the exit point of the excavation area. The trucks will then drive over the stabilized construction entrance prior to leaving the site.

At the decontamination area, any remaining loose materials will be removed from the truck tires and undercarriage to minimize the accumulation of sediments on the road. This will minimize the potential for sediments to dry and become airborne. The truck beds will also be equipped with auto/retractable covers to prevent spillage, dispersion, and blowing of debris.

After the decontamination, the trucks will travel along the truck-hauling routes, shown on Figure 1, on their way to leaving the Base. The truck drivers will obey posted speed limits and all other traffic signs. Shaw Environmental, Inc. will track the number of truck trips per day to monitor truck traffic. Information regarding safe driving practices, driver personal protective equipment (PPE), and maximum driving speed limits is presented in the Site-Specific Health and Safety Plan (SSHASP) included as Appendix D of the Work Plan.

DESCRIPTION OF ACTIVITIES

2.5 MATERIAL TESTING REQUIREMENTS

Materials testing includes the waste characterization of the materials to be disposed off site. Details on material testing are included in the Quality Control Plan as Appendix C of the Work Plan.

3.0 FILL MATERIAL

Once the fill material is dry, it will be removed from the material handling pads and hauled to areas requiring fill in order to reach the interim grade, as indicated on Sheet C-6 of the Design Drawings. The fill material will be placed in 8-inch loose lifts, or as required to achieve acceptable compaction. Each lift will be compacted with a minimum of 4 complete passes with ROICC-approved compaction equipment. Equipment used for regraded sediment and waste shall be a 40,000-pound (minimum) track-type tractor with a minimum ground contact pressure of 8 pounds per square inch (psi), or equipment as appropriate for materials encountered.

4.0 HEALTH AND SAFETY

The work will be performed in accordance with Shaw Environmental, Inc.'s SSHASP included as Appendix D of the Work Plan. The SSHASP has been prepared in compliance with current Occupational Safety and Health Administration (OSHA) guidelines as specified in 29 Code of Federal Regulations (CFR) 1910.120. The SSHASP defines the health and safety requirements and designates the protocols to be followed at the project site during remedial action activities. These activities include the excavation and handling of contaminated soils.

FIGURES

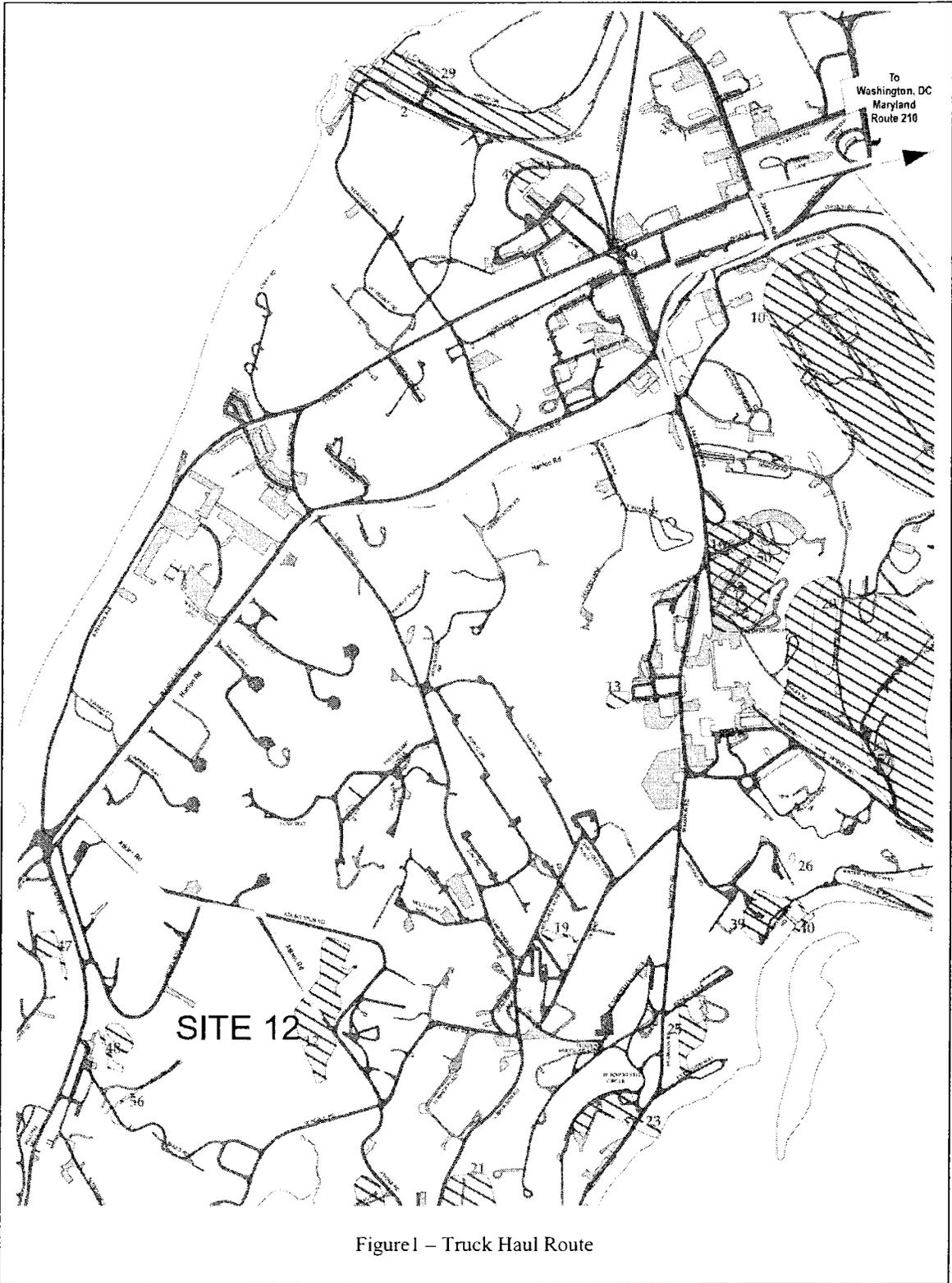


Figure1 – Truck Haul Route

APPENDIX B
ENVIRONMENTAL PROTECTION/POLLUTION
PREVENTION PLAN

**ENVIRONMENTAL PROTECTION/POLLUTION PREVENTION PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

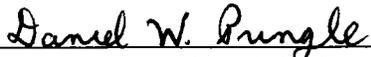
Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

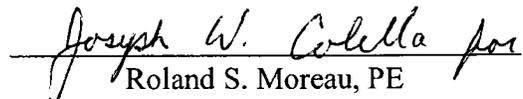
Prepared by:

Shaw Environmental, Inc.
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:



Daniel W. Pringle
Project Manager



Roland S. Moreau, PE
Program Manager

Project No. 809401

June 19, 2002

TABLE OF CONTENTS

LIST OF TABLES	iii
LIST OF FIGURES	iv
LIST OF ACRONYMS	v
1.0 INTRODUCTION.....	1-1
1.1 PRECONSTRUCTION SURVEY.....	1-1
1.2 LANDFILL CLOSURE ACTIVITIES.....	1-2
1.3 PERMITTING REQUIREMENTS	1-2
2.0 ORGANIZATION STRUCTURE FOR IMPLEMENTATION	2-1
2.1 RESPONSIBLE PARTIES	2-1
2.1.1 The U.S. Navy.....	2-1
2.1.2 Shaw Environmental, Inc.	2-1
2.2 EMERGENCY SERVICES	2-1
2.2.1 Police.....	2-1
2.2.2 Fire Department	2-1
2.3 COORDINATION RESPONSIBILITIES	2-1
2.3.1 Project Manager	2-2
2.3.2 Site Safety Officer.....	2-2
2.3.3 Site Superintendent	2-2
2.3.4 Emergency Coordinator	2-2
2.3.5 Site Personnel.....	2-2
3.0 MATERIALS INVENTORY COMPATIBILITY	3-1
3.1 ON-SITE MATERIALS.....	3-1
3.2 ORGANIC VAPOR RELEASES.....	3-1
3.3 FUEL AND FLAMMABLE LIQUIDS	3-1
3.4 OTHER MATERIALS OF CONCERN.....	3-1
3.5 MATERIAL COMPATIBILITY	3-2
3.6 ACTIVITY HAZARDOUS WASTE MANAGEMENT PLAN.....	3-2
3.7 HAZARDOUS MATERIALS.....	3-2
4.0 EMERGENCY AND DECONTAMINATION EQUIPMENT	4-1
4.1 SMALL-SCALE EMERGENCY EQUIPMENT.....	4-1
4.2 LARGE-SCALE EMERGENCY EQUIPMENT	4-1
4.3 DECONTAMINATION EQUIPMENT.....	4-1
5.0 SITE EXCAVATION PLAN.....	5-1
5.1 SITE EVACUATION SIGNAL.....	5-1
5.2 SITE EVACUATION AND ROUTES	5-1
5.3 POST-EVACUATION ACTIONS.....	5-1
5.4 SITE EVACUATION DRILL.....	5-1
6.0 SPILL PREVENTION AND RESPONSE.....	6-1

TABLE OF CONTENTS

6.1	POTENTIAL SPILL SOURCES AND PREVENTION PRACTICES	6-1
6.2	EXCAVATION AREAS.....	6-1
6.3	FUEL STORAGE.....	6-1
6.4	ON-SITE MATERIAL TRANSPORTATION	6-1
6.5	EXTERNAL FACTORS.....	6-1
6.5.1	Power Outages.....	6-2
6.5.2	Severe Weather	6-2
6.6	PROTECTION OF NATURAL RESOURCES	6-2
6.6.1	Dust Control and Erosion Protection	6-2
6.6.2	Control Measures	6-3
6.6.2.1	Temporary Control Measures	6-3
6.6.2.2	Permanent Control Measures.....	6-3
6.7	MAINTENANCE.....	6-3
6.8	RUNOFF	6-3
7.0	PREVENTATIVE ACTIONS.....	7-1
7.1	INSPECTION.....	7-1
7.2	EQUIPMENT MAINTENANCE.....	7-1
7.3	CALIBRATION OF MONITORING EQUIPMENT	7-1
7.4	HOUSEKEEPING PROGRAM	7-1
7.4.1	Small Spillage	7-2
7.4.2	Trucking	7-2
7.4.3	Temporary Vehicle Decontamination Pad.....	7-2
7.4.4	Worker Training.....	7-2
8.0	AIR MONITORING REQUIREMENTS.....	8-1
9.0	EARTHMOVING ACTIVITIES	9-1
9.1	SITE PREPARATION	9-1
9.2	SOIL EXCAVATION.....	9-1

TABLES

FIGURES

LIST OF TABLES

<u>Table</u>	<u>Title</u>
1	Material Inventory
2	Equipment List

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
1	Emergency Evacuation Plan

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
COE	Corps of Engineers
E&S	erosion and sediment
EC	Emergency Coordinator
EP/PP Plan	Environmental Protection/Pollution Prevention Plan
ESCP	Erosion and Sediment Control Plan
FADL	Field Activity Daily Log
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
MSDS	Material Safety Data Sheet
Navy	U.S. Navy
NTR	Navy Technical Representative
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
PID	photoionization detector
PM	Project Manager
ROICC	Resident Officer in Charge of Construction
Site 12	Site 12 - Town Gut Landfill
SPCCP	Spill Prevention, Control and Countermeasures Plan
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
SWPP Plan	Storm Water Pollution Prevention Plan
TtNUS	Tetra Tech NUS, Inc.

1.0 INTRODUCTION

This Environmental Protection/Pollution Prevention (EP/PP) Plan has been prepared by Shaw Environmental, Inc. for the Department of the Navy, Engineering Field Activity, Chesapeake, Naval Facilities Engineering Command, Washington, DC. The purpose of the EP/PP Plan is to present information needed to minimize the hazards to human health and the environment from fires, explosions, spills, or any unplanned or sudden release of constituents of concern during the soil cap project being performed at Site 12, Town Gut Landfill (Site 12) at the Indian Head Division - Naval Surface Warfare Center (IHDIV-NSWC) in Indian Head, Maryland.

This plan fulfills the requirements set forth in Section C, Part 4.0 of the Basic Contract, as well as meeting requirements outlined in Section 01115, Paragraph 1.3.d. "Environmental Protection Plan;" Section 01575N, Paragraph 1.9, "Environmental Protection Plan;" Section 01115, Paragraph 1.20.1, "Storm Water Pollution Prevention Plan;" and in the following documents:

- Code of Federal Regulations (CFR)
 - 29 CFR 1910 - Subpart G: Occupational Health and Environmental Control
 - 40 CFR 112: Oil Pollution Prevention
 - 40 CFR 261: Identification and Listing of Hazardous Waste
 - 40 CFR 262: Generators of Hazardous Waste
 - 40 CFR 263: Transporters of Hazardous Waste
 - 40 CFR 268: Land Disposal Restrictions
 - 40 CFR 279: Used Oil Regulations
 - 49 CFR 178: Shipping Container Specification

- COMAR 26.13: Department of the Environment, Disposal of Controlled Hazardous Substances

- Corps of Engineers (COE)
 - COE EP-1165-2-304: 1976 Flood Plain Regulations for Flood Plain Management

This plan is intended for use during the construction phase of the landfill closure at Site 12. This plan establishes guidelines that must be followed by Shaw Environmental, Inc. during activities at the site and must be used in conjunction with the other Project Plans, Project Specifications, and Design Drawings. Shaw Environmental, Inc. will implement this plan in conjunction with the Storm Water Pollution Prevention Plan (SWPP Plan) presented in Tetra Tech NUS, Inc.'s (TiNUS) Final Design Submittal.

1.1 PRECONSTRUCTION SURVEY

Shaw Environmental, Inc. will conduct a preconstruction survey with the Resident Officer in Charge of Construction (ROICC)/Navy Technical Representative (NTR) prior to the start of work. The results of the survey will be submitted to the ROICC/NTR in an Environmental Conditions Report.

1.2 LANDFILL CLOSURE ACTIVITIES

The landfill closure activities for the site generally consist of the following:

- Excavate contaminated soil and debris
- Place excavated soil within the cap area
- Construct a soil cover over the site
- Abandon/Install monitoring wells
- Install and maintain erosion and sediment controls
- Perform all work in accordance with applicable federal, state and local regulations.

Cap construction will consist of installing a soil cover consisting of the following layers from top to bottom:

- 6 inches of topsoil
- 18 inches of vegetative support select fill layer.

1.3 PERMITTING REQUIREMENTS

No permits are required for remedial action at Site 12 because all actions will be conducted on site. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 (e) exempts any response action conducted entirely on site from federal, state, and local permit application procedures. On-site actions need only comply with the substantive aspects of environmental regulations outlined in the Environmental Permits Report of the Final Design Submission from TtNUS.

2.0 ORGANIZATION STRUCTURE FOR IMPLEMENTATION

This section describes the personnel and required chain of command that will control and direct environmental protection activities at the site.

2.1 RESPONSIBLE PARTIES

The U.S. Navy (Navy) is the Owner of the project site and the responsible party for the landfill closure activities. The Navy has contracted Shaw Environmental, Inc. to perform the landfill closure activities. Throughout the duration of the landfill closure activities, Shaw Environmental, Inc. will notify the Navy of any environmental protection incident as soon as possible. For all spills Shaw Environmental, Inc. will contact the Fire Protection Division at (301) 744-4333 immediately.

2.1.1 The U.S. Navy

The Navy is responsible for all notifications to local, state, and federal authorities. The ROICC will oversee Shaw Environmental, Inc.'s execution of environmental protection.

2.1.2 Shaw Environmental, Inc.

Shaw Environmental, Inc. is responsible for implementing environmental protection procedures and is responsible for all information contained in this document and as described in the Site-Specific Health and Safety Plan (SSHASP).

2.2 EMERGENCY SERVICES

A summary of local and state emergency service agencies is listed in the SSHASP. Individual emergency agencies and responsibilities are as follows.

2.2.1 Police

The Security Department will provide police support for blocking traffic and other related duties during environmental protection situations. Unlawful entry into the project site will also be reported to Security. The phone numbers for the Security Department are (301) 744-4381 and (301) 744-4565.

2.2.2 Fire Protection Division

All environmental protection situations requiring Fire Protection Division personnel and equipment will be reported to the local Fire Protection Division at (301) 744-4333.

2.3 COORDINATION RESPONSIBILITIES

All environmental protection provisions will be implemented by means of Shaw Environmental, Inc.'s organizational structure. Shaw Environmental, Inc. is responsible for coordination, training, drills, notification to the Navy, and other aspects of the EP/PP Plan.

ORG. STRUCTURE FOR IMPLEMENTATION

2.3.1 Project Manager

The Project Manager (PM) is ultimately responsible for completion of the project in accordance with the plans. He delegates the authority for the implementation, maintenance, and compliance of the project activities with this document and the SSHASP to the Site Safety Officer (SSO), or Site Superintendent in the absence of the SSO.

2.3.2 Site Safety Officer

The SSO will be responsible for all environmental health and safety activities including air monitoring activities, overseeing the decontamination of equipment and clothing, decontamination procedures and emergency response procedures. The SSO will also be responsible for training of on-site personnel as may be necessary. The SSO has the authority to stop any operation that threatens the health and/or safety of the team or surrounding populace. The weekly environmental protection inspections and daily health and safety activities may be conducted by the SSO or the Site Superintendent. The Site Superintendent is responsible for assuring that the daily environmental protection is performed.

2.3.3 Site Superintendent

The Site Superintendent is responsible for field implementation of the environmental procedures and the health and safety program when the SSO is not present. This responsibility includes advising site workers of the specific health and safety requirements and consulting with the SSO regarding appropriate changes to the environmental protection section and the SSHASP.

2.3.4 Emergency Coordinator

The Emergency Coordinator (EC) will implement and coordinate all environmental procedures during spills and releases. During an emergency, the EC will activate alarm systems, notify the Fire Protection Division, notify the ROICC, identify the problem, assess the health or environmental hazards, and take all reasonable measures to stabilize the situation. The EC will also be responsible for follow-up activities after the incident such as treating, storing, or disposing of residues and impacted soil, decontamination and maintenance of emergency equipment, and submission of any reports. The EC is also responsible for personnel training and evacuation drills. The Site Superintendent or the SSO, depending on who is on site, will be the EC. The EC will be on-site during all remediation operations.

2.3.5 Site Personnel

All personnel will be responsible for working in a safe and healthy manner. They will be required to comply with all applicable local, state, and federal rules and regulations, as defined in the SSHASP.

3.0 MATERIALS INVENTORY COMPATIBILITY

This section contains information regarding the materials that may be involved in a spill or release. Table 1 lists quantities of the materials present on-site by their type.

3.1 ON-SITE MATERIALS

The suspect constituents that potentially could be encountered during excavation activities are methane and other volatile gases associated with organic decay of municipal solid waste. The presence of metals (arsenic and iron) were found in soil samples and are chemicals of concern (COC) for human receptors. The COCs for shallow groundwater table are dichloroethene, vinyl chloride, arsenic, iron, and manganese, based on human health protection. On-site materials consist of, but are not limited to, landscaping waste, fill material, rubble, mixed solid waste materials, tree stumps, demolition debris, paints, varnishes, and other chemical wastes.

3.2 ORGANIC VAPOR RELEASES

Organic vapor releases may occur during excavation activities. Organic vapor concentrations in the air during excavation activities will be monitored using air-monitoring equipment such as a photoionization detector (PID). Air monitoring requirements are described in the SSHASP.

3.3 FUEL AND FLAMMABLE LIQUIDS

To complete the project, Shaw Environmental, Inc. will contain on-site fuels and oils for construction vehicles. The types of materials that may be stored at the fuel depot are as follows:

- Diesel fuel
- Gasoline
- Motor transmission oils
- Greases
- Used oil
- Hydraulic fluid.

3.4 OTHER MATERIALS OF CONCERN

Other materials necessary to complete the project that have the potential for spills and releases are listed below. The exact quantity and type of these materials will be determined during remedial activities:

- Portland cement
- Bentonite
- Agricultural lime
- Fertilizer

These materials will be used as construction and landscaping materials during the construction and restoration period.

MATERIALS INVENTORY COMPATIBILITY

3.5 MATERIAL COMPATIBILITY

The materials mentioned in Sections 3.1 to 3.4 are not anticipated to be mixed or combined during site operations, and will be stored so as to prevent accidental mixing in the event of a spill/release.

3.6 ACTIVITY HAZARDOUS WASTE MANAGEMENT PLAN

The transportation and disposal coordinator for Shaw Environmental, Inc. on site will organize sampling and analysis and transportation and disposal activities. All procedures will comply with federal and state regulations. In accordance with station regulation, Shaw Environmental, Inc. will substitute materials as necessary to reduce the generation of hazardous waste.

3.7 HAZARDOUS MATERIALS

Hazardous materials to be brought on site and used during remedial action activities are included in Table 1. Material Safety Data Sheets (MSDS) for each material are included in the SSHASP. A copy of the MSDSs will be available on site.

4.0 EMERGENCY AND DECONTAMINATION EQUIPMENT

This section discusses the types of emergency equipment to be used in the event of a spill or other emergency situation.

4.1 SMALL-SCALE EMERGENCY EQUIPMENT

Small-scale emergency equipment will include the following:

- Dry chemical, ABC-rated fire extinguishers
- Spill control equipment
- Absorbent materials
- Decontamination equipment
- Air purifying respirators
- Radio and telephone equipment
- Windssocks
- Various hand tools

This equipment will be made accessible to all on-site workers. Locations of such equipment will be posted at the Shaw Environmental, Inc. office trailer. A list of small equipment is provided in Table 2.

4.2 LARGE-SCALE EMERGENCY EQUIPMENT

Large-scale emergency equipment will include the same equipment used in the ongoing construction activities. The equipment will include front-end loaders, bulldozers, and excavators if equipment of such size is necessary. Other emergency equipment may be obtained from the local Fire Protection Division or other emergency response agencies, if required. A list of large equipment proposed for on-site use is provided in Table 2.

4.3 DECONTAMINATION EQUIPMENT

Equipment necessary for decontamination activities will be provided, installed, and verified in working order prior to any site operations. Equipment for the decontamination area includes the following items:

- Decontamination pad and sump
- Clean water supply
- Detergent solution
- Containers for used decontamination solution and decontamination residues/solids
- Brushes
- Waste containers

The decontamination pad will be a polyvinyl lined platform and frame constructed of wood that will be configured to drain to an integral 55-gallon drum. A sump pump will be installed in the drum.

EMERGENCY AND DECON EQUIPMENT

The pump will discharge through a hose to a 1,000-gallon poly-tank. The platform will be sufficiently reinforced to allow for heavy vehicle ingress and egress from the decontamination pad.

5.0 SITE EVACUATION PLAN

This section details the procedures to be followed in the event that the site needs to be evacuated.

5.1 SITE EVACUATION SIGNAL

All site personnel, including equipment operators, technicians, and supervisors, will evacuate the site upon hearing the evacuation signal. The signal will consist of a continuous blast from an air horn. The blast will be at least 15 seconds in duration, and will be sounded from a location that broadcasts clearly to the entire site. The signal will be repeated at least two times to alert all personnel. Radio base station personnel will also broadcast a verbal evacuation command over the site channel to alert operators who may not hear the air horn signal. A visual signal (clutching the throat with the hands) will indicate a site evacuation.

5.2 SITE EVACUATION ROUTES

After the evacuation signal is sounded, all personnel will immediately proceed to the predetermined meeting points. One of the meeting points will be located near the Shaw Environmental, Inc. office trailer. Radio contact will be maintained with all management staff. Wind direction will be noted during the evacuation by observing the windsocks. All attempts to reach the upwind meeting location must be taken. All equipment, trucks, and other internal combustion engines will be shut down prior to personnel evacuation if the equipment can be reached without risking personal safety. The evacuation routes will depend on project phase and generally the most direct route to a meeting point. Figure 1 shows site evacuation routes and locations.

The EC will contact the Fire Protection Division and the Navy ROICC to inform that officer of the nature and extent of the emergency. A meeting point coordinator will be chosen at the meeting point. This person will be the most senior person (e.g., SSO, EC, foreman, or other supervisor) at the location. The meeting point coordinator will follow actions described in Section 5.3.

5.3 POST-EVACUATION ACTIONS

A head count of personnel assembled at the meeting point will be taken by the meeting point coordinator after the evacuation and provided to the EC. Information regarding missing and/or injured personnel will be brought to the immediate attention of the meeting point coordinator, who is the person in charge at the meeting point. No personnel will attempt to re-enter the site at this time. The EC or appointed representative will coordinate activities with the Navy. After the emergency has been resolved, the EC will indicate when personnel can enter the site and resume work.

5.4 SITE EVACUATION DRILL

All site personnel must be familiar with the evacuation signal and evacuation procedures prior to any site operations. The evacuation plan will be executed during an announced drill within 10 days after major activities (i.e., excavation, water treatment, etc.) have begun at the site. The EC will announce the drill time to all site personnel and will notify the Navy authorities as to the nature and time of the drill. The drill will include contacting authorities to verify communication procedures.

6.0 SPILL PREVENTION AND RESPONSE

This section discusses the techniques that will be utilized to minimize the potential for spills and will describe the measures that will be implemented in response to a spill.

6.1 POTENTIAL SPILL SOURCES AND PREVENTION PRACTICES

The following includes the detailed Shaw Environmental, Inc. procedures for activities that include containment, collection, and material disposal or reuse. In the event of a release or spill of oil or a hazardous substance, Shaw Environmental, Inc. will follow the procedure outlined in Project Specification Section 01575N, Paragraph 3.5.5.

6.2 EXCAVATION AREAS

The excavation areas contain contaminated soil and construction debris that will be excavated and placed under the cap. The potential spill source is runoff, or water from the excavation. The excavation areas will be bermed if necessary to contain all source material within the excavation area. The Erosion and Sediment Control Plan (ESCP) outlines practices to divert run-on from entering the excavations and prevent contaminated precipitation/leachate generated within the face of the landfill from running off.

6.3 FUEL STORAGE

Vehicle fuels and oils will be stored in fuel depot areas in approved storage containers. The fuel tanks will be anchored to the ground, stabilized on skids, or placed on saddles to prevent overturning and rolling. Containers will be placed outside of the maximum turning radius of all vehicles, as well as turnaround or unloading zones. Secondary containment is required for all fuel containers larger than 5 gallons. Secondary containment will be 110 percent of the aggregate storage volume. All tanks will be placarded with the National Fire Safety system for hazardous material classification and the tanks will be electrically grounded. A Spill Prevention, Control and Countermeasures Plan (SPCCP), required under 40 CFR 112, already exists for Indian Head and covers contractors. A separate SPCCP will not be prepared.

6.4 ON-SITE MATERIAL TRANSPORTATION

All source material will be transported on site haul roads. Practices for preventing material spills will include not overfilling trucks, drivers traveling at posted speeds, and having haul roads maintained in good condition. Additional information is provided in the SSHASP.

6.5 EXTERNAL FACTORS

The following describes actions to be taken to alleviate effects to public health and safety or the environment from factors external to the site.

SPILL PREVENTION AND RESPONSE

6.5.1 Power Outages

Power will be from utility service drops and/or Shaw Environmental, Inc.-supplied generators. Shaw Environmental, Inc. will have access to a backup generator in case of failure of the primary service drops and/or generator(s) where such failure may impact the public health or safety of the environment.

6.5.2 Severe Weather

Short-duration, high-intensity rain showers may create unexpected erosion and drainage problems such as slope and containment berm erosion. After such events, all containment devices will be closely inspected for structural and practical integrity. In addition, spillage or leakage will be immediately corrected. Repair to these containment devices will be made as soon as possible or at least before construction continues and will be logged in the Site Superintendent's daily report.

6.6 PROTECTION OF NATURAL RESOURCES

Shaw Environmental, Inc. will limit the extent of clearing and grubbing operations to the areas shown on the Design Drawings. All reasonable attempts will be made to minimize landscape defacement beyond the limits of disturbance. This will include the trimming of trees and brush instead of removal, wherever possible. Operation of equipment will be limited to the confines of the work area to minimize the potential for residual damage to landscape features.

Although Shaw Environmental, Inc. will take all reasonable measures to assure no residual damage beyond the limits of disturbance, it is inevitable that some damage will occur. In the event that damage is done to the landscape beyond the limits of disturbance, the affected area or feature will be restored to the satisfaction of the Client's representative as soon as the restoration is deemed practical. Damaged trees and shrubs will be treated with approved measures by experienced workers. Plant life or trees damaged beyond repair will be cleared and replaced as directed. Vegetation removed as part of the planned clearing will be replaced in accordance with the Project Specifications.

Fish and wildlife resources along with water flows and native habitats adjacent to the project will not be disturbed. The ROICC's approval is required before any equipment is permitted to cross live streams. In areas where frequent crossings are required, temporary culverts or bridges will be installed. The ROICC's approval is required prior to the installation of these temporary structures. They will be removed upon completion of work and the area will be repaired to its original condition.

Historical and archaeological items or human skeletal remains discovered during the remedial action activities will be protected in place and reported immediately to the ROICC. Work will be stopped in the immediate area of any discovery until directed by the ROICC to resume work. The Government will retain ownership and control over any historical and archaeological resource encountered at the site.

6.6.1 Dust Control and Erosion Protection

Water trucks with sprinkling attachments will be utilized, as necessary, to control dust in the excavation areas and haul roads, and during placement of fill materials in the excavation area. The water source for the trucks will be approved by the Client prior to utilization. Water will be applied in sufficient quantity to prevent creation of dust, but excessive watering that may result in a muddy condition that may be transferred to the haul roads will not be permitted. Determination of the need for

SPILL PREVENTION AND RESPONSE

dust control will be the responsibility of the Shaw Environmental, Inc. Site Superintendent as dictated by changes in site conditions on a continuing basis. The Navy or ROICC may suspend work if necessary due to dust generation that causes a safety or air quality problem.

6.6.2 Control Measures

The following sections discuss the temporary and permanent erosion and sediment (E&S) control measures that will be installed during cap construction activities. All control measures will be installed as described in Section 01575N of the Project Specifications and shown on the Design Drawings.

6.6.2.1 Temporary Control Measures

Temporary E&S control measures will be installed prior to any intrusive work, and will remain in place until permanent vegetation has been established.

Super silt fence is utilized along the shorelines of both ponds and silt fence is utilized along the side slopes of the landfill limits and along the downslope sides of the stabilized stone construction entrances, material laydown pads, decontamination pads, and material handling pads/stockpiles.

Stabilized stone construction entrances will be provided at the ingress/egress to each of the two landfill areas. Construction vehicles will be cleaned before exiting the site at the decontamination pad.

All regraded areas that will be left dormant for extended periods of time will be seeded with temporary vegetation and mulched as described in the Design Drawings. Diversion ditches, benches, berms, silt fence, and straw bales will be used to retard and divert runoff to protected drainage courses as needed during site activities.

6.6.2.2 Permanent Control Measures

Permanent E&S control measures will include establishing vegetation and installing permanent channels. These measures will be implemented prior to the completion of site activities. Permanent channels will be installed along the eastern sides of the northern and southern landfills to divert off-site runoff away from the cap edge and to collect runoff from the cap in order to reduce erosion.

6.7 MAINTENANCE

Shaw Environmental, Inc. will be responsible for the proper maintenance of all new planted and seeded areas for ten weeks after formal acceptance by the ROICC.

6.8 RUNOFF

All runoff from the disturbed project areas will pass through E&S control facilities.

7.0 PREVENTATIVE ACTIONS

This section discusses the preventative measures that will be utilized to minimize the possibility of a spill or discharge.

7.1 INSPECTION

Inspections of site areas will be performed by Shaw Environmental, Inc.'s Site Superintendent to verify that procedures for proper storage, handling, and transport of materials are being followed. Inspection and monitoring methods will be through visual observation. Monitoring equipment as described in Section 8.0 will be used when necessary. Such areas include the following:

- Excavation areas
- Fuel depots – various fuels and oils.

Other areas and items that will be monitored and noted in the site logbook include:

- Evidence of spilled materials along drainage ditches
- Effectiveness of housekeeping practices
- Various shipping and storage containers used throughout the site
- Staging areas
- Proper placards and labeling of truck and tank contents.

Inspections will be conducted weekly of hazardous material containers and documented in the SSO's Field Activity Daily Log (FADL).

7.2 EQUIPMENT MAINTENANCE

All construction equipment will be properly maintained to facilitate safe operation. Equipment (especially trucks) will be properly maintained to minimize spillage or leakage that may occur during on-site transport operations. Further preventive maintenance on trucks is described in Section 7.4.2. Maintenance of heavy equipment is performed by the equipment vendor who is disposing of waste oil. Spill kits will be ready and available during all maintenance activities.

7.3 CALIBRATION OF MONITORING EQUIPMENT

It is important that all environmental monitoring equipment be calibrated so that accurate readings of potential spilled or leaked materials may be detected upon inspection. Calibration frequency and procedures will be followed as per the manufacturer's recommendations. Shaw Environmental, Inc. will retain calibration records on site.

7.4 HOUSEKEEPING PROGRAM

Shaw Environmental, Inc.'s housekeeping program includes neat and orderly storage of materials and equipment; proper truck and tank placards; prompt removal of spillage, regular refuse pickup and disposal; and maintenance of roads and surfaces.

7.4.1 Small Spillage

Small spills (less than 10 gallons) may include solid materials or liquid materials being mishandled, dumped, leaked, knocked over, etc. Any material spillage will be immediately contained and collected and placed on the drying pad for later disposal. Excavation of pits will be performed such that exposed source material remains within the limits of excavation or below the limits of temporarily constructed soil berms. All spilled liquids will be contained and collected by absorbent materials and the materials taken to the decontamination pad area. Spilled fuel and impacted soil will be placed on the decontamination pad for later disposal. The EC will notify the Fire Protection Division at (301) 744-4333 and the ROICC in the event of any spill of hazardous material or petroleum product. The spill will be cleaned up in accordance with Navy and Maryland Department of the Environment requirements.

7.4.2 Trucking

All hauling vehicles will be maintained in good operating condition. Tires will be properly inflated and will have adequate tread depth as per the tire manufacture's recommendations. Trucks will not be overloaded, since overloaded trucks increase the possibility of material spillage. Truck end gates will be inspected to confirm that they close and seal properly. The tires and undercarriages of all trucks leaving the construction sites shall be visually checked by Shaw Environmental, Inc. to minimize the tracking of soil and dust onto the facility's roads. Trucks entering from off site with loads will be tarped to prevent excessive dust.

7.4.3 Temporary Vehicle Decontamination Pad

A vehicle decontamination pad will be provided at the site exit to wash materials from vehicle tires. This reduces the amount of material that falls onto adjoining roads, which will be removed as described in Section 7.4.1.

7.4.4 Worker Training

All employees with the potential of exposure to hazardous substances will be required to attend and complete the Occupational Safety and Health Administration (OSHA) 40-hour health and safety course (Hazardous Waste Operations and Emergency Response) as per 29 CFR 1910.120. All site employees requiring 40-hour health and safety training will be current with respect to 8-hour annual refresher training. Employee training documentation is included in the SSHASP.

The site-specific training program will involve at least one hour of instruction per employee. At a minimum, the training program will ensure that personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures and emergency equipment systems including, where applicable:

- Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment
- Key parameters for automatic cut-off systems
- Communication and alarm procedures
- Response to fires and explosions
- Site evacuation procedures
- Shut-down operation.

PREVENTATIVE ACTIONS

In addition, the employee-training program will address other aspects of the environmental protection section, such as preventive maintenance, inspection and monitoring, housekeeping practices, etc.

Job-specific environmental protection and health and safety instructions will be reviewed before beginning each new phase of work. Weekly, or more often if conditions require, the SSO or Site Superintendent will conduct follow-up training related to a change in operations or any other training deemed necessary by the SSO. Shaw Environmental, Inc. will hold daily safety meetings at the beginning of each shift to discuss current considerations.

Site evacuation training will be provided as described in Section 5.0 of this plan.

8.0 AIR MONITORING REQUIREMENTS

Air monitoring will be performed as required in the SSHASP. A PID will be used to provide real-time, semi-quantitative data on total organic vapor concentrations in and around the breathing zone of workers and downwind of site activities at the perimeter of the site. This instrument will be calibrated daily and organic vapor concentration will be monitored during site activities.

The Shaw Environmental, Inc. SSHASP identifies additional air monitoring instrumentation. The SSHASP also defines action levels for upgrading employee protection and instituting emergency actions. The air monitoring will determine concentrations of site contaminants within the ambient air and workers' breathing zones. The air monitoring measurements will be compared to OSHA standards, which are the basis for defining the site action levels. The SSO will make the decision regarding equipment upgrades and emergency action based on the air quality measurements.

A windsock will be installed to monitor the wind direction. The wind direction will be noted by the EC and other evacuation leaders so that evacuation procedures place personnel upwind of the situation. The windsock will be placed in the project trailer area.

9.0 EARTHMOVING ACTIVITIES

The project activities that require E&S controls are site preparation, soil excavation, and soil placement. Earthmoving activities for Site 12 will be performed in such a manner as to minimize the extent of surface area disturbed at any one time. These are described in the following sections.

9.1 SITE PREPARATION

Construction activities that will impact runoff during site preparation include the following:

- Clearing and grubbing
- Waste excavation/regrading
- Atkins Road Extension modification
- Select fill and topsoil placement
- Wetlands restoration
- Permanent seeding.

All excavations will be graded such that all runoff passes through E&S control structures, either permanent or temporary, prior to discharge from the site.

9.2 SOIL EXCAVATION

Soil excavation will be performed as required to construct haul roads, conveyance collection channels, berms, and the soil cap. At a minimum, prior to excavation, silt fence will be installed on the downslope side of the fill area. Additionally, as a backfill is placed, the fill area will be graded such that all runoff passes through E&S control structures. Any E&S control structure that is installed/constructed during soil placement activities will remain in place until cap installation activities are complete and the site is vegetated.

TABLES

Table 1				
Material Inventory				
Material	Unit	Quantity	Location	Hazard Class
Impacted Soil/Construction Rubble	Cubic Yard	(1)	Landfill Area	N/A
Diesel Fuel	Gallons	(1)	Project Trailer Area	Combustible
Gasoline	Gallons	(1)	Project Trailer Area	Flammable
Portland Cement	Pounds	(1)	Project Trailer Area	Corrosive
Bentonite	Pounds	(1)	Project Trailer Area	N/A
Lime, Fertilizer	Pounds	(1)	Project Trailer Area	Corrosive
Motor Transmission Oils	Gallons	(1)	Project Trailer Area	Flammable
Greases	Tubes	(1)	Project Trailer Area	Flammable
Hydraulic Fluid	Gallons	(1)	Project Trailer Area	Flammable

Notes: (1) Ongoing activity. Quantities to be determined during construction activities.

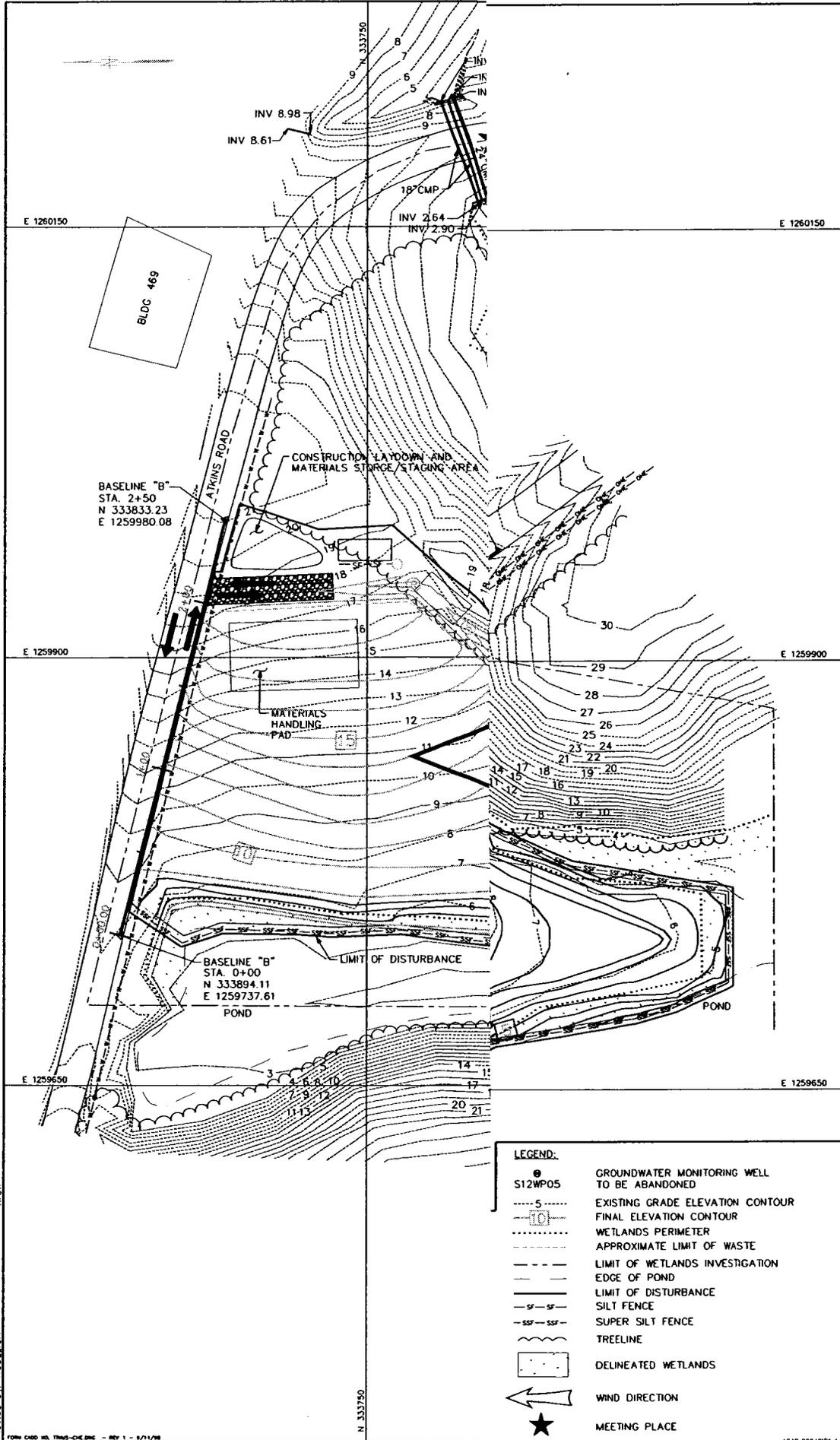
Table 2 Equipment List		
Equipment	Use	Location
LARGE EQUIPMENT:		
Front-end Loader		
Excavator		
Dozer (2)		
Water Tank Truck		
Office Trailer		
Storage Trailer		
Over-the-Road Diesel Tractor		
Truck - Two Ton Stake		
Pickup Truck		
Pickup Trucks (2)		
Van		
15-Ton Pneumatic Roller		
Brush Chipper - 12-Inch		
SMALL EQUIPMENT:		
Absorbent Materials		
Basket Stretchers		
Camera/Photo Equipment		
Chainsaw		
Decontamination Equipment with a Clean Water Supply (70-80°F)		
First-Aid Supplies		
ABC-Rated Portable Fire Extinguishers		
2-Way Radios		
Generator - 10 kW		

Table 2 Equipment List		
Equipment	Use	Location
High Resolution Metal Detector		
Aerosol Monitor		
Mini-Ram		
Photoionization Detector		
LEL 3 Gas Meter		
Trash Pumps (2) - Diesel - 2-Inch		
Trash Pump - Diesel - 4-Inch		
Pressure Washer - 2,000 psi		
Ditchwitch		
Note: (1) ABC-rated portable fire extinguishers to include two 20-pound units per trailer, one 10-pound unit in each piece of mobile equipment, and one 20-pound unit at each major mechanical operation.		

FIGURES

Project: Projects\Naval Yard\Tero Tech\809401D1.dwg, 06/18/2002 11:33:47

C:\Project\LANDIV\Projects\Naval Yard\809401D1.dwg
 Plot Date/Time: 06/18/02 11:28am
 Plotted by: BULLICA



LEGEND:

- S12WP05 GROUNDWATER MONITORING WELL TO BE ABANDONED
- 5 --- EXISTING GRADE ELEVATION CONTOUR
- --- FINAL ELEVATION CONTOUR
- --- WETLANDS PERIMETER
- --- APPROXIMATE LIMIT OF WASTE
- --- LIMIT OF WETLANDS INVESTIGATION
- --- EDGE OF POND
- --- LIMIT OF DISTURBANCE
- --- SILT FENCE
- --- SUPER SILT FENCE
- --- TREELINE
- DELINEATED WETLANDS
- ↖ WIND DIRECTION
- ★ MEETING PLACE

		PROJECT NO. 809401 CHECKED BY D. PRINGLE 3/11/02 APPROVED BY ---	
DESIGNED BY J. STAZAK 3/11/02 DRAWN BY R. WEIBLE 3/11/02		REVISIONS	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON NAVY YARD ATLANTIC DIVISION WASHINGTON, D.C. NAVAL SURFACE WARFARE CENTER INDIAN HEAD, MARYLAND REMEDIAL ACTION SITE 12 TOWN GUT LANDFILL EMERGENCY EVACUATION PLAN			
SCALE:	AS SHOWN	SIZE:	D
DELIVERY ORDER NO. 0062			
CONSTR. CONTRACT NO. N62470-97-D-5000			
NAVFAC DRAWING NO.			
SHEET I.D.			
FIGURE 1			

APPENDIX C
QUALITY CONTROL PLAN

**QUALITY CONTROL PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

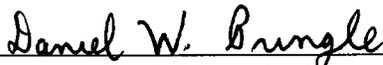
Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

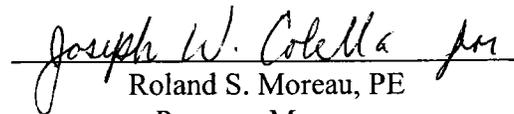
Prepared by:

Shaw Environmental, Inc.
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:



Daniel W. Pringle
Project Manager



Roland S. Moreau, PE
Program Manager

Project No. 809401

June 19, 2002

TABLE OF CONTENTS

LIST OF FIGURES.....	ii
LIST OF ACRONYMS.....	iii
STATEMENT OF QC PROGRAM.....	iv
I. QUALITY CONTROL ORGANIZATION	1
II. NAMES AND QUALIFICATIONS	1
III. DUTIES, RESPONSIBILITIES, AND AUTHORITIES OF QC PERSONNEL.....	1
IV. OUTSIDE ORGANIZATIONS.....	1
V. APPOINTMENT LETTERS.....	1
VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER	1
VI.1 SUBMITTAL PROCEDURES	1
VI.2 INITIAL SUBMITTAL REGISTER.....	1
VII. TESTING LABORATORY INFORMATION	1
VIII. TESTING PLAN AND LOG	2
IX. PROCEDURES TO COMPLETE REWORK ITEMS	2
X. DOCUMENTATION PROCEDURES	2
XI. LIST OF DEFINABLE FEATURES	2
XII. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL	2
XIII. PERSONNEL MATRIX	2
XIV. PROCEDURES FOR COMPLETION INSPECTION.....	3

FIGURES

EXHIBIT IV-1 – APPROVED CONSULTANT AND SUBCONTRACTOR LIST	
EXHIBIT VI-1 – LIST OF PERSONNEL AUTHORIZED TO REVIEW AND CERTIFY SUBMITTALS	
EXHIBIT VI-2 – SUBMITTAL REGISTER	
EXHIBIT VIII-1 – TESTING PLAN AND LOG	
EXHIBIT XI-1 – QUALITY CONTROL INSPECTION PLAN	
EXHIBIT XII-1 – PERSONNEL MATRIX	

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
I-1	Quality Control Organizational Chart
II-1	Site QC Manager/Representative Resume
V-1	Site QC Manager/Representative - Letter of Appointment

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
CO	Contracting Officer
QC	Quality Control
QCP	Quality Control Plan

STATEMENT OF QC PROGRAM

Shaw Environmental, Inc. will provide and maintain an effective Quality Control (QC) Program. This Program will be performed in accordance with the approved Program Quality Control Plan (QCP) developed specifically to be responsive to the contract specification, Contract No. N62470-97-D-5000, Atlantic Division, Naval Facilities Engineering Command and to the Task Order specification(s) made applicable to each project, task, or work activity. Shaw Environmental, Inc. will perform the inspections and tests required to ensure that materials, workmanship, and construction conform to drawings, specifications, and contract requirements.

NOTE TO EMPLOYEES

QC should not be considered a person or an organization of personnel, but a concept to perform in such a manner that the end product of our efforts meet established criterion, the customer's needs. The QC individual or group cannot inspect quality into the final product, but only inspect and document the results of our efforts. The only people that can build quality into the product are the individuals performing the task of producing the end product.

It should be noted by all employees that the documentation requirements of Shaw Environmental, Inc. procedures, plans, and the task order specifications are considered equally as important as the end product itself. When it is stated that the documentation will be approved prior to the start of work, this is exactly what is intended. To eliminate problems in this area requires careful planning and execution by everyone.

We would do well to remember that our livelihood depends on how well we satisfy our customer. To accomplish this requires teamwork and attention to detail by all employees and contractors.

QUALITY CONTROL PLAN

I. QUALITY CONTROL ORGANIZATION

The QC organization is depicted in the Organizational Chart, Figure I-1.

II. NAMES AND QUALIFICATIONS

Figure II-1 provides the resume of the Site QC Manager/Representative. The resumes of any additional QC staff members will be submitted to the Contracting Officer (CO) for approval prior to assignment. This action will be performed in accordance with Contract Specification Section C, Part 6.5.

III. DUTIES, RESPONSIBILITIES, AND AUTHORITIES OF QC PERSONNEL

The duties, responsibilities, and authorities of each person in the QC organization are described in the Work Plan.

IV. OUTSIDE ORGANIZATIONS

A list of outside organizations such as architectural and consulting engineering firms, and subcontractors employed by Shaw Environmental, Inc. for work under this task order is provided in Exhibit IV-1. This list provides each firm's name and address and a description of the services each firm will provide. This list will be maintained current and will be available for review.

V. APPOINTMENT LETTERS

The Site QC Manager/Representative appointment letter is provided as Figure V-1. Similar letters will be provided when necessary to describe the duties and authorities of personnel assigned to the position of Alternate or Assistant QC Manager.

VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER

VI.1 SUBMITTAL PROCEDURES

Procedures for reviewing, approving, and managing submittals will be performed in accordance with Contract Specification Section C, Part 7.4. Personnel authorized to review and certify submittals are identified on Exhibit VI-1. Any additional personnel assigned to perform submittal review and certification must be approved by the CO, prior to performance.

VI.2 INITIAL SUBMITTAL REGISTER

The initial submittal register is provided as Exhibit VI-2.

VII. TESTING LABORATORY INFORMATION

A testing laboratory will be chosen based on the requirements in Contract Specification Section C, Parts 6.12.1 and 6.12.2, and Project Specification Section 01450N, Paragraphs 1.10.1 and 1.10.2.

VIII. TESTING PLAN AND LOG

A Testing Plan and Log has been prepared for this Task Order and is provided as Exhibit VIII-1.

IX. PROCEDURES TO COMPLETE REWORK ITEMS

The Site QC Manager/Representative will maintain a list of work that does not comply with the contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. A copy of the Contractor Rework Items List will be attached to the last Daily Contractor Quality Control Report of each month.

X. DOCUMENTATION PROCEDURES

Current and complete records of on-site and off-site QC program operations and activities will be maintained as specified in Contract Specification Section C, Part 6.14.

XI. LIST OF DEFINABLE FEATURES

The Quality Control Inspection Plan, Exhibit XI-1, lists each specification section and definable feature of work with provisions for recording the corresponding checklist/report for each phase of the three-phase control process. As each control phase is satisfactorily performed, the Site QC Manager/Representative will record the corresponding checklist/report number.

Note: A definable feature of work is a task which is separate and distinct from other tasks and requires separate control procedures.

This list has been prepared and maintained in accordance with Contract Specification Section C, Part 6.7 and will be agreed upon during the Coordination and Mutual Understanding Meeting. The list will be keyed to the construction schedule. Each preparatory, initial, and follow-up phase checklist/report will reflect the construction activity number derived from the construction schedule, and will reference the procedures followed for each control phase.

XII. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL

The three phases of control shall adequately cover both on-site and off-site work and shall include the information specified in Contract Specification Section C, Part 6.10 for each definable feature of work.

XIII. PERSONNEL MATRIX

The Site QC Manager/Representative will prepare and maintain the personnel matrix, Exhibit XII-1, showing each section of the task order specification with identification of who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document testing. This matrix should be completed as much as possible prior to and during site mobilization. The matrix will be maintained current by the Site QC Manager/Representative and will be available for review.

QUALITY CONTROL PLAN

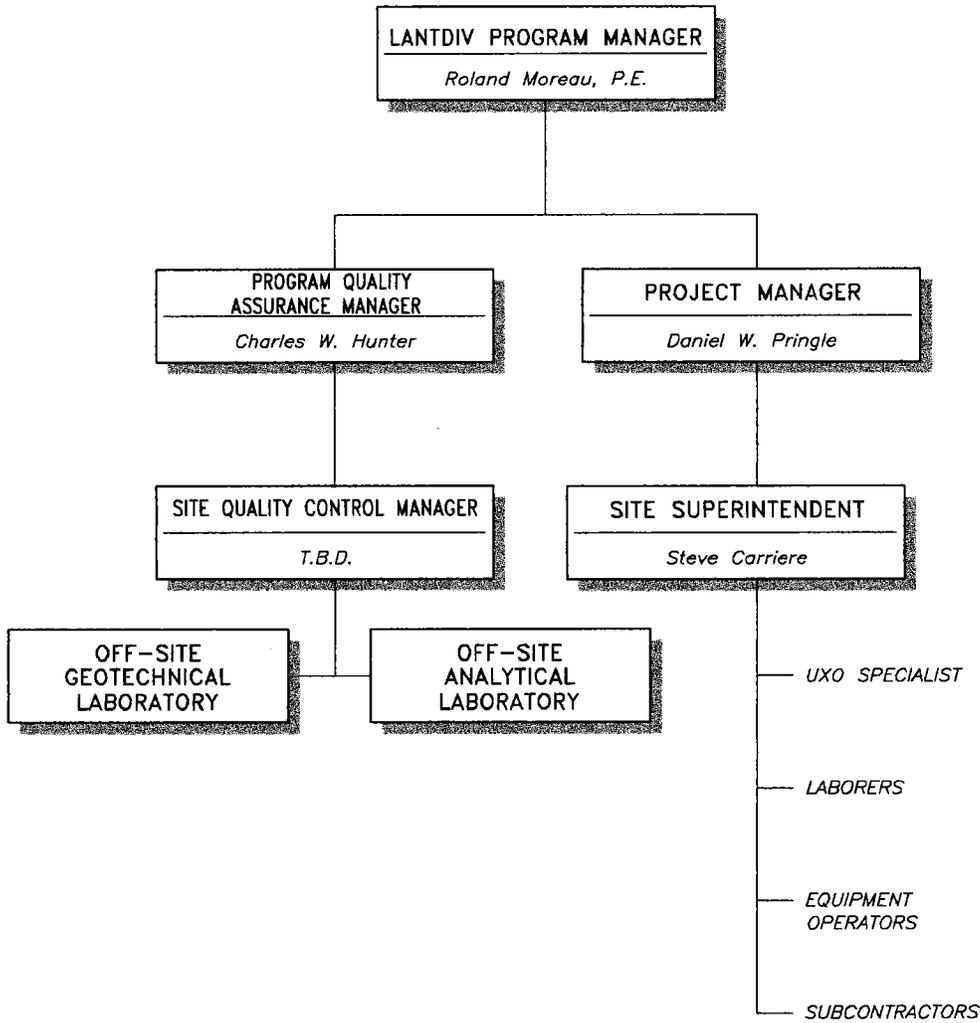
XIV. PROCEDURES FOR COMPLETION INSPECTION

The completion inspection is discussed in the Quality Management Procedure 10.1 in the Contract.

FIGURES

O:\Project\LANTDIV Projects\Indian Head\809401\809401A3.dwg
 Plot Date/Time: 06/18/02 10:36am Image: .
 Plotted by: RCULLIGA Xref: .

OFFICE
 Pittsburgh, PA
 DRAWING NUMBER
 809401 - A3



T.B.D. = TO BE DETERMINED



DEPARTMENT OF THE NAVY WASHINGTON NAVY YARD NAVAL SURFACE WARFARE CENTER ATLANTIC DIVISION REMEDIAL ACTION SITE 12 TOWN GUT LANDFILL		NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON, D.C. INDIAN HEAD, MARYLAND	
SCALE:	AS SHOWN	SIZE:	A
DELIVERY ORDER NO. 008			
CONSTR. CONTRACT NO. N62470-97-D-5000			
NAVFAC DRAWING NO.			
SHEET 1.D.			
FIGURE I-1			

REV	DATE	BY	CHK'D	APR'D	DESCRIPTION/ISSUE

DESIGNED BY	---	CHECKED BY	D.W. Pringle	7/27/98
DRAWN BY	B.B. O'Conner	APPROVED BY	---	---

REVISIONS

FIGURE II-1

SITE QC MANAGER / REPRESENTATIVE RESUME

To Be Determined

FIGURE V-1

SITE QC MANAGER / REPRESENTATIVE - LETTER OF APPOINTMENT

June 19, 2002

(Name of Site QC Manager/Representative)
Shaw Environmental, Inc.
200 Horizon Center Boulevard
Trenton, NJ 08691-1904

RE: Site QC Manager
Contract N62470-97-D-5000
Task Order 0062
Site 12, Town Gut Landfill
Indian Head, Maryland

Dear (Name):

This letter will serve as your appointment as the Site Quality Control Manager on the referenced project and will also clarify your duties and authority in this position. In this position, you will be authorized to use available resources to satisfy all applicable requirements of the Program and Task Order Quality Control Plans.

This authorization specifically gives you the authority to direct removal and replacement or correction of nonconforming materials or work and stop work authority when continuation would be unsafe to personnel, harmful to the environment, or result in a significant degradation of quality.

You will be expected to work closely with the Project Manager, Site Superintendent and other project personnel, but you will not be directly responsible to anyone but myself for resolution of quality issues when working in the capacity of Site Quality Control Manager.

If you have any question in this matter, please call me at (609) 584-6840.

Sincerely,

Charles W. Hunter
Program QC Manager
LANTDIV RAC Program

EXHIBITS

EXHIBIT IV-I

APPROVED CONSULTANT AND SUBCONTRACTOR LIST

Company Name and Address	Description of Services Provided
TBD	Well drilling/abandonment Hydroseeding Analytical Testing Laboratory Geotechnical Testing Laboratory

EXHIBIT VI-1

LIST OF PERSONNEL AUTHORIZED TO REVIEW AND CERTIFY SUBMITTALS

Specification Section	Submittal Type	Authorized Personnel
All	All	Project Manager
All	All	Site QC Manager

I T VI-2
SUBMITTAL REGISTER
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

Task Order 0062
Contract No. N624790-97-D-5000

Project No. 809401
Project Title: Site 12, Town Gut Landfill, IHDIV-NSWC

Location: Indian Head, Maryland
Contractor: Shaw Environmental, Inc.

Activity Number	Transmittal Control Number	Spec. Section Number	SD No. and Type of Submittal Product	Material or Paragraph Number	Classification Approval by Gvmt. or A/E Reviewer	Contractor Schedule Dates			Contractor Action			Other Reviewer		Approving Authority			Received from Approving Authority	Remarks	
						Planned Submittal Date	Approval Needed By	Material Needed By	Action Code	Date of Action	Date Forwarded to Other Reviewer	Date Received from Contractor	Date Forwarded to Approving Authority	Date Received from Other Reviewer	Date of Action	Action Code			Date Forwarded to Contractor
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
		01115	SD-01 Preconstruction Submittals																
			Work Plan	1.3															
			SD-11 Closeout Submittals																
			As-Built Records	1.4.1															
			Environmental Conditions Report	1.4.2															
			Status Reports	1.4.3															
			QC Meeting Minutes	1.4.4															
			Test Results Summary Report	1.4.5															
			Contractor Production Report	1.4.6															
			QC Report	1.4.7															
			Rework Items List	1.4.8															
			Permits	1.4.9															
			Storm Water Pollution Prevention Plan	1.20.1															
			Notice of Intent	1.20.1															
			Notice of Termination	1.20.1															
			Contractor's Closeout Report	1.4.10															
		01450N	SD-01 Preconstruction Submittals																
			QC Plan	1.6															
		01525	SD-07 Certificates																
			Accident Prevention Plan	1.4.1															
			Activity Hazard Analysis	1.4.2															
			Health and Safety Plan	1.4.3															
			SD-11 Closeout Submittals																
			Daily Confined Space Entry Permit Reports	3.3.7 1.17															
		11575N	SD-01 Preconstruction Submittals																
			Environmental Protection Plan	1.9															
			Sediment and Erosion Control Plan	1.4															
			SD-06 Test Reports																
			Laboratory Analysis	1.5															
			Laboratory Analysis	1.6.2															
			SD-11 Closeout Submittals																
			Solid Waste Disposal Permit	1.6.1															
			Waste Determination Documentation	1.6.2															
			Waste Determination Documentation	3.5.1															
			Disposal Documentation for Hazardous and Regulated Waste	1.6.3															
			Contractor 40 CFR Employee Training Records	1.6.4															
			Regulatory Notification	1.6.5															
			Erosion and Sediment Control Inspection Reports	1.6.6															
			Solid Waste Disposal Report	1.6.7															
			Contractor Hazardous Material Inventory Log	1.11															
		02223	SD-07 Certificates																
			Treatment Facility Permits	1.2.1.1															
			SD-11 Closeout Submittals																
			Shipment Manifests	1.2.2.1															
			Delivery Certificates	1.2.2.2															
			Disposal Site Decontamination Certificates	1.2.2.3															
			Work Site Decontamination Certificates	1.2.2.4															
			Treatment and Disposal Certificates	1.2.2.5															
		02224	SD-11 Closeout Submittals																
			Buried Utility Location Plan	2.1															
			Survey Report	2.2															
			GIS CADD File(s)	2.3															
			F-Size Plot	2.4															

T VI-2
SUBMITTAL REGISTER
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

Task Order 0062
Contract No. N624790-97-D-5000

Project No. 809401
Project Title: Site 12, Town Gut Landfill, IHDIV-NSWC

Location: Indian Head, Maryland
Contractor: Shaw Environmental, Inc.

Activity Number	Transmittal Control Number	Spec. Section Number	SD No. and Type of Submittal Product	Material or	Spec. Paragraph Number	Classification Approval by Gvmt. or A/E Reviewer *	Contractor Schedule Dates			Contractor Action			Other Reviewer		Approving Authority			Received from Approving Authority	Remarks
							Planned Submittal Date	Approval Needed By	Material Needed By	Action Code	Date of Action	Date Forwarded to Other Reviewer	Date Received from Contractor	Date Forwarded to Approving Authority	Date Received from Other Reviewer	Date of Action	Action Code		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
		02315	<i>SD-06 Test Reports</i>																
			Borrow Site Testing		1.6														
			Common Fill		3.11.2.1														
			Select Fill		3.11.2.2														
			Density Tests		3.11.2.3														
			<i>SD-07 Certificates</i>																
			Excavation and Handling Work Plan		1.3.1														
			Dewatering Work Plan		3.2.1														
		02525	<i>SD-02 Shop Drawings</i>																
			Well Construction		1.6.1														
			<i>SD-03 Product Data</i>																
			Well Riser		2.1														
			Well Screen		2.2														
			Filter Pack		2.3														
			Cement/Bentonite Grout		2.4.2														
			Bentonite Pellet Seal		2.4.1														
			<i>SD-07 Certificates</i>																
			Well Drilling/Development Material Handling Plan		1.6.2														
			Field Sampling and Laboratory Testing Plan		1.6.4														
			Treatment Facility Permit		1.6.5														
			Installation Survey Report		3.7														
			Well Development Report		1.6.6														
			Well Abandonment Report		1.6.7														
			Borehole Analysis Report		3.2.2														
			<i>SD-11 Closeout Submittals</i>																
			Well Construction Permit		1.6.8														
		02742	<i>SD-06 Test Reports</i>																
			Subbase Material Density		3.2														
			Shoulder Material Density		3.6														
			Subbase Course		3.8.1														
			Bituminous Concrete Courses Test		3.8.2														
			<i>SD-07 Certificates</i>																
			Subbase materials		2.1														
			Tack Coat		2.4														
			Bituminous Concrete		2.2														
		02915	<i>SD-06 Test Reports</i>																
			Erosion Control Measures		2.11														
			Topsoil		2.2														
			<i>SD-07 Certificates</i>																
			Nursery Certifications		2.1.1														

* Navy Notes:

Action Code: (Others may be prescribed by Transmittal Form)

Approved by:
G: Contracting Officer
Blank: Contractor's QC Manager

NR: Not Reviewed
A: Approved
AN: Approved as Noted
RR: Disapproved; Revise and Resubmit

EXHIBIT VIII-1

TESTING PLAN AND LOG

Page 1 of 3

CONTRACT NUMBER N62470-97-D-5000		PROJECT TITLE AND LOCATION Site 12, Town Gut Landfill, Naval Surface Warfare Center, Indian Head, Maryland						CONTRACTOR Shaw Environmental, Inc.				
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETE	DATE FORWARDED TO CONTRACTING OFFICER	REMARKS
			YES	NO			ON SITE	OFF SITE				
02223 3.2.1		Waste material: Analyses shall conform to local, state, and federal criteria as well as to the requirements of the disposal facility							As required by disposal facility			
02223 3.2.2		Waste liquid: Analyses shall conform to local, state, and federal criteria as well as to the requirements of the disposal facility							As required by disposal facility			
02315 1.6		Off-site borrow soil and aggregate materials: - Full TCLP, USEPA SW-846, Method 1311 - TPH, USEPA 600/4-79-020 Method 418.1 - BTEX, USEPA SW-846, Method 5030/8020							One composite per borrow site			
02315 2.1.1		Common fill material: - ASTM D 2487 - ASTM D 4318 - ASTM D 1140										
02315 2.1.3		Select fill material: - ASTM D 2487										
02315 3.11.2.1		Common fill material: - ASTM D 698							One per source			
02315 3.11.2.2		Select fill material: - ASTM C 136 for conformance to ASTM D 2487 - ASTM D 1140 - ASTM D 4318							One per source			

EXHIBIT VIII-1

TESTING PLAN AND LOG

Page 2 of 3

CONTRACT NUMBER N62470-97-D-5000		PROJECT TITLE AND LOCATION Site 12, Town Gut Landfill, Naval Surface Warfare Center, Indian Head, Maryland						CONTRACTOR Shaw Environmental, Inc.				
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETE	DATE FORWARDED TO CONTRACTING OFFICER	REMARKS
			YES	NO			ON SITE	OFF SITE				
02315 3.11.2.3		Subgrade density: - ASTM D 1556 or - ASTM D 2922 and ASTM D 3017							Each lift at randomly selected locations every 2,500 square feet			When ASTM D 2922 and ASTM D 3017 are used, verify density test results by performing an ASTM D 1556 density test at a location already ASTM D 2922 and ASTM D 3017. Perform an ASTM D 1556 at the start of the job, and for every 10 ASTM D 2922 and ASTM D 3017 density tests thereafter.
02315 3.11.2.3		Common fill density: - ASTM D 1556 or - ASTM D 2922 and ASTM D 3017							Each lift at randomly selected locations every 2,500 square feet and a minimum of 3 tests per lift			When ASTM D 2922 and ASTM D 3017 are used, verify density test results by performing an ASTM D 1556 density test at a location already ASTM D 2922 and ASTM D 3017. Perform an ASTM D 1556 at the start of the job, and for every 10 ASTM D 2922 and ASTM D 3017 density tests thereafter.
02742 3.2		Subbase course: - ASTM D 1557 or - ASTM D 4253 and ASTM D 4254										
02742 3.6		Shoulder material: - ASTM D 1557										
02742 3.8.1.1		Subbase course: - Smoothness Tests							As work progresses			

EXHIBIT VIII-1

TESTING PLAN AND LOG

Page 3 of 3

CONTRACT NUMBER N62470-97-D-5000		PROJECT TITLE AND LOCATION Site 12, Town Gut Landfill, Naval Surface Warfare Center, Indian Head, Maryland						CONTRACTOR Shaw Environmental, Inc.				
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETE	DATE FORWARDED TO CONTRACTING OFFICER	REMARKS
			YES	NO			ON SITE	OFF SITE				
02742 3.8.1.2		Subbase course: - Density Test ASTM D 2950							One test per 100 square yards of binder and wearing, with a minimum of three tests each course			Thin layer nuclear density gauge readings shall be taken on a control strip to determine the number of coverages to obtain optimum density. Optimum density is defined when the average density does not change by more than 1.0 percent between successive coverages.
02742 3.8.1.3		Subbase course: - Thickness Tests							One test per 100 square yards, minimum of 3 tests			
02742 3.8.2.1		Bituminous: - Concrete Course Smoothness Tests							As work progresses			
02742 3.8.2.2		Bituminous: - Concrete Course Density Test ASTM D 1188 ASTM D 2950							One ASTM D 1188 per project One ASTM D 2950 per 100 square yards of bituminous concrete binder and wearing courses, with a minimum of three tests			
02742 3.8.2.3		Bituminous: - Concrete Course Thickness Tests										
02951 2.2		Topsoil: - DOA classification - Organic content - pH - Soluble salts - Nitrogen - Phosphorus - Potassium										

EXHIBIT XI-1

QUALITY CONTROL INSPECTION PLAN

Definable Feature of Work	Activity Number	Control Check Verification		
		Preparatory Phase Checklist/Report No.	Initial Phase Checklist/Report No.	Follow-up Phase Checklist/Report No.
Site Preparation <ul style="list-style-type: none"> • Location of Underground Utilities • Delineation of Work Zones • Lowering Pool Elevation of Ponds 				
Erosion and Sediment Controls <ul style="list-style-type: none"> • Super Silt Fence • Silt Fence • Stabilized Construction Entrances • Materials Handling Pad • Decontamination Pad • Portable Sediment Tanks • Conveyance Channels • Erosion Control Matting • Rock Check Dams • Vegetation 				
Clearing and Grubbing				
Monitoring Well Abandonment				
Waste Removal <ul style="list-style-type: none"> • UXO Screening • Shoreline Excavation • Wetlands Excavation • Dewatering 				
Transportation and Disposal				
Regrading and Soil Cover Installation <ul style="list-style-type: none"> • Waste Regrading • Select Fill Placement • Topsoil Placement 				
Atkins Road Extension Modification <ul style="list-style-type: none"> • Common Fill Material • Aggregate Subbase • Aggregate Base • Shoulder • Bituminous Concrete Binder Course • Bituminous Concrete Wearing Course • Tack Coat 				
Monitoring Well Installation				
Restoration <ul style="list-style-type: none"> • Permanent Seeding • Wetlands Restoration • Sign Installation • Temporary Facilities Removal 				

APPENDIX D
SITE-SPECIFIC HEALTH AND SAFETY PLAN

**SITE-SPECIFIC HEALTH AND SAFETY PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

Prepared by:

Shaw Environmental, Inc.
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:

Daniel W. Pringle

Daniel W. Pringle
Project Manager

Warren Nosenan, CIH

for Robert Brooks, CSP
Program Health and Safety Manager

Project No. 809401

June 19, 2002

TABLE OF CONTENTS

LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF ACRONYMS	vi
1.0 INTRODUCTION.....	1-1
1.1 OBJECTIVE.....	1-1
1.2 POLICY STATEMENT	1-1
1.3 REFERENCES	1-1
1.4 DISCLAIMER.....	1-2
2.0 SITE HISTORY/SCOPE OF WORK	2-1
2.1 SITE HISTORY/BACKGROUND	2-1
2.2 SCOPE OF WORK	2-1
3.0 KEY PERSONNEL AND MANAGEMENT	3-1
3.1 PROJECT SAFETY RESPONSIBILITIES	3-1
3.2 KEY SAFETY PERSONNEL.....	3-1
4.0 ACTIVITY HAZARD ANALYSIS	4-1
4.1 CHEMICAL HAZARDS	4-1
4.2 SPECIAL SITE-SPECIFIC HAZARDS	4-3
4.3 HAZARD COMMUNICATION.....	4-3
4.3.1 Container Labeling.....	4-3
4.3.2 Material Safety Data Sheets.....	4-3
4.3.3 Employee Information and Training	4-3
4.4 PHYSICAL HAZARDS.....	4-4
4.4.1 Exposure to Cold.....	4-4
4.4.1.1 Cold Stress Conditions and Symptoms.....	4-4
4.4.1.2 Monitoring and Preventative Actions	4-5
4.4.2 Heat Stress.....	4-7
4.4.3 Noise	4-8
4.4.4 Biological Hazards.....	4-8
4.4.4.1 Poison Ivy (<i>RHUS RADICANS</i>).....	4-8
4.4.4.2 Ticks.....	4-9
4.4.4.3 Lyme Disease.....	4-11
4.4.5 Lightning.....	4-11
4.4.6 Severe Weather	4-12
4.5 VEHICLE AND HEAVY EQUIPMENT SAFETY MANAGEMENT	4-12
4.5.1 Vehicle Safety	4-12
4.5.2 Heavy Equipment Safety.....	4-13
4.6 ACTIVITY HAZARD ANALYSES.....	4-14
5.0 WORK AND SUPPORT AREAS.....	5-1

TABLE OF CONTENTS

6.0	PROTECTIVE EQUIPMENT.....	6-1
6.1	ANTICIPATED PROTECTION LEVELS	6-1
6.2	PROTECTION LEVEL DESCRIPTIONS	6-2
6.2.1	Level D.....	6-2
6.2.2	Modified Level D.....	6-2
6.2.3	Level C	6-3
6.3	AIR PURIFYING RESPIRATORS	6-3
6.4	CARTRIDGE CHANGEOUT SCHEDULE.....	6-3
6.5	INSPECTION AND CLEANING	6-3
6.6	FIT TESTING	6-3
6.7	FACIAL HAIR.....	6-3
6.8	CORRECTIVE LENSES	6-3
6.9	MEDICAL CERTIFICATION.....	6-3
6.10	SITE-SPECIFIC PERSONAL PROTECTIVE EQUIPMENT PROGRAM.....	6-3
7.0	DECONTAMINATION PROCEDURES.....	7-1
7.1	PERSONNEL HYGIENE PROCEDURES	7-1
7.1.1	Level D+ Decontamination	7-1
7.1.2	Level C Decontamination.....	7-1
7.1.3	Suspected Contamination.....	7-1
7.1.4	Personal Hygiene.....	7-1
7.2	EQUIPMENT DECONTAMINATION.....	7-2
7.3	DISPOSAL.....	7-2
8.0	AIR MONITORING.....	8-1
8.1	WORK AREA AIR MONITORING	8-1
8.2	INSTRUMENTATION.....	8-2
8.2.1	Lower Explosive Limit/Oxygen Meter	8-2
8.2.1.1	Type and Operational Aspects.....	8-2
8.2.1.2	Calibration Methods/Frequencies.....	8-2
8.2.1.3	Preventative Maintenance.....	8-3
8.2.2	Photoionization Detector.....	8-3
8.2.2.1	Type and Operational Aspects.....	8-3
8.2.2.2	Calibration Methods/Frequencies.....	8-3
8.2.2.3	Preventative Maintenance.....	8-4
8.2.3	Portable Total Dust Monitor	8-4
8.2.3.1	Type and Operational Aspects.....	8-4
8.2.3.2	Calibration Methods/Frequencies.....	8-4
8.2.3.3	Preventative Maintenance.....	8-4
8.2.4	Vinyl Chloride (0.5 to 5 ppm) Colorimetric Detector Tubes.....	8-4
8.2.4.1	Principle of Operation.....	8-4
8.2.4.2	Calibration Methods/Frequencies.....	8-5
8.2.4.3	Preventative Maintenance.....	8-5
8.3	AIR MONITORING RECORDKEEPING	8-5
8.4	CALIBRATION REQUIREMENTS	8-5
8.5	AIR MONITORING RESULTS	8-5

TABLE OF CONTENTS

9.0	EMERGENCY RESPONSE	9-1
9.1	PRE-EMERGENCY PLANNING	9-1
9.2	EMERGENCY RECOGNITION AND PREVENTION	9-2
9.3	PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS	9-3
	9.3.1 Emergency Coordinator	9-3
	9.3.2 On-Site Emergency Coordinator Duties	9-4
9.4	SAFE DISTANCES AND PLACES OF REFUGE	9-4
9.5	EVACUATION ROUTES AND PROCEDURES	9-5
9.6	EMERGENCY SPILL RESPONSE PROCEDURES AND EQUIPMENT	9-5
	9.6.1 Notification Procedures	9-5
	9.6.2 Procedure for Containing/Collecting Spills	9-6
	9.6.3 Emergency Response Equipment	9-6
	9.6.4 Emergency Spill Response Cleanup Materials and Equipment	9-7
9.7	EMERGENCY CONTINGENCY PLAN	9-7
9.8	MEDICAL EMERGENCY CONTINGENCY MEASURES	9-7
	9.8.1 Response	9-7
	9.8.2 Notification	9-9
9.9	FIRE CONTINGENCY MEASURES	9-9
9.10	HAZARDOUS WEATHER CONTINGENCY MEASURES	9-9
	9.10.1 Response	9-10
	9.10.2 Notification	9-10
9.11	SPILL/RELEASE CONTINGENCY MEASURES	9-10
10.0	TRAINING REQUIREMENTS	10-1
11.0	MEDICAL SURVEILLANCE PROGRAM	11-1
	ATTACHMENT A - SAFETY PLAN ACKNOWLEDGEMENT	
	ATTACHMENT B - ACTIVITY HAZARD ANALYSES	
	ATTACHMENT C - ACCIDENT PREVENTION PLAN	
	ATTACHMENT D - MATERIAL SAFETY DATA SHEETS	
	ATTACHMENT E - HURRICANE PREPAREDNESS PLAN	
	ATTACHMENT F - HEALTH AND SAFETY PLAN AMENDMENT FORM	
	ATTACHMENT G - SITE-SPECIFIC HEALTH AND SAFETY PROCEDURES	
	ATTACHMENT H - ROUTE TO HOSPITAL	

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
4-1	Potential Chemical Hazards	4-1
4-4A	Cold Weather Injuries	4-4
4-4B	Cold Stress Prevention	4-5
4-4C	Cold Weather Clothing	4-6
4-4D	Wind Chill Chart	4-6
4-4E	TLVs Work/Warm-up Schedule for Four-Hour Shift	4-7
4-4F	Hearing Protection Action Levels	4-8
6-1	Protection Levels	6-1
8-1	Air Monitoring Information	8-1
9-1	ERCPS Situations	9-1
9-2A	Potential Site Hazards	9-2
9-2B	Emergency Telephone Numbers	9-3
9-6	Direct Reading Instrumentation	9-7
10-1	Site Orientation	10-1

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
2-1	Site Location Map	2-2
4-1	Poisonous Plants	4-10

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
°C	degrees Celsius
°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CNS	Central Nervous System
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
dBA	A-weighted decibels
E&S	erosion and sediment
EMA	Emergency Management Agency
EMS	Emergency Response Services
ERCPC	Emergency Response and Contingency Plan
eV	electron volt
EZ	Exclusion Zone
HAZMAT	Hazardous Material
HSM	Health and Safety Manager
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
LANTDIV	Department of the Navy, Atlantic Division
LEL	lower explosive limit
mg/kg	milligram(s) per kilogram
mg/m ³	milligram(s) per cubic meter
mph	mile(s) per hour
MSDS	Material Safety Data Sheet
MSA	Mine Safety Appliance
NIOSH	National Institute for Occupational Safety and Health
NRR	Noise Reduction Rating
O ₂	Oxygen
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
ppm	part(s) per million
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Program Manager
Site 12	Site 12 - Town Gut Landfill
SOP	Standard Operating Procedure
SS	Site Superintendent
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
SZ	Support Zone
TLV	Threshold Limit Value
TWA	time-weighted average

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
UEL	upper explosive limit
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
UV	ultraviolet
UXO	unexploded ordnance

1.0 INTRODUCTION

1.1 OBJECTIVE

The objective of this plan is to provide a mechanism for establishing safe working conditions during the installation of a soil cap at the existing Site 12, Town Gut Landfill (Site 12) at the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC) in Indian Head, Maryland. The safety organization, procedures, and protective equipment have been established based upon a review of the proposed procedures and their potential hazard.

1.2 POLICY STATEMENT

The policy of Shaw Environmental, Inc. is to provide a safe and healthful work environment for all employees. Shaw Environmental, Inc. considers no phase of operations or administration to be of greater importance than injury and illness prevention. Safety takes precedence over expediency and shortcuts. At Shaw Environmental, Inc., it is believed all accidents and injuries are preventable. Shaw Environmental, Inc. will take every reasonable step to reduce the possibility of injury, illness, or accident.

This Site-Specific Health and Safety Plan (SSHASP) prescribes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager of Contact and the Health and Safety Manager.

The provisions of this plan are mandatory for all personnel and subcontractors assigned to the project. All visitors to the work site must abide by the requirements of the plan. All personnel entering Site 12 will be trained in the provisions of this SSHASP and will be required to sign the Site Safety Plan Acknowledgment in Attachment A.

1.3 REFERENCES

This SSHASP complies with applicable Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (USEPA), and Shaw Environmental, Inc. health and safety policies and procedures. This plan follows the guidelines established in the following:

- Standard Operating Safety Guides, USEPA (Publication 9285.1-03, June 1992)
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute for Occupational Safety and Health (NIOSH), OSHA, U.S. Coast Guard (USCG), USEPA (86-116, November 1985)
- Title 29 of the Code of Federal Regulations (CFR), Part 1910
- Title 29 of the CFR, Part 1926
- U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual EM 385-1-1
- Shaw Environmental, Inc. Health and Safety Policies and Procedures (HS001 through HS999).

1.4 DISCLAIMER

The following SSHASP has been designed for the methods presently contemplated by Shaw Environmental, Inc. for execution of the proposed work. Therefore, the SSHASP may not be appropriate if the work is not performed by or using the methods presently contemplated by Shaw Environmental, Inc. In addition, as the work is performed, conditions different from those anticipated might be encountered and the SSHASP may have to be modified. Therefore, Shaw Environmental, Inc. only makes representations or warranties as to the adequacy of the SSHASP for currently anticipated activities and conditions.

2.0 SITE HISTORY/SCOPE OF WORK

2.1 SITE HISTORY/BACKGROUND

The IHDIV-NSWC is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, DC. Its location is shown in Figure 2-1. The IHDIV-NSWC provides services in energetics, ordnance devices and components, and other related ordnance engineering standards, including chemicals, propellants, and their propulsion systems, explosives, pyrotechnics, warheads, and simulators.

Site 12 is located in the central area of the IHDIV-NSWC. It covers approximately four acres of undeveloped land and includes two areas of waste, two ponds, and is crossed by Atkins Road Extension. The two areas of waste are separated by the northern pond. The northern waste area stretches from the north shore of the northern pond to Atkins Road. The southern waste area stretches from the south shore of the northern pond to the southern pond. It is bisected by Atkins Road Extension, under which a 78-inch culvert connects the northern and southern ponds.

Site 12 is estimated to contain approximately 70,000 cubic yards of mixed solid waste materials, primarily landscaping wastes, tree stumps, and demolition debris. There is an indication that paint, varnish, and chemical wastes may also have been disposed of at the site.

The presence of unexploded ordnance (UXO) is possible at Site 12 because it is located within a restricted area at the NSWC. UXO avoidance procedures and safety precautions are outlined in the site-specific UXO Support Plan.

2.2 SCOPE OF WORK

This SSHASP focuses on the remediation activities at Site 12. This remedial action includes lowering the water levels of the ponds and excavating waste along their shorelines and consolidating it within the limits of waste farther from the ponds, regrading the waste and existing cover soils, and placing a soil cover system over the waste. The work covered under this plan includes construction of erosion and sediment (E&S) controls, waste relocation/regarding, and placement of barrier soil over the landfill.

The principal site tasks include the following:

- Site preparation
- Site survey
- Installation of erosion controls
- Clearing and grubbing
- Dewatering
- Waste removal
- Landfill regrading
- Drainage channel installation
- Soil cover installation
- Atkins Road Extension modification
- Monitoring well abandonment
- Monitoring well installation

SITE HISTORY/SCOPE OF WORK

- Equipment decontamination
- Site restoration.

These activities have been analyzed for potential hazards for which control measures are provided in Attachment B. An Accident Prevention Plan is included as Attachment C, which describes policies and procedures to help prevent accidents, as well as actions to be taken in the event of an accident.

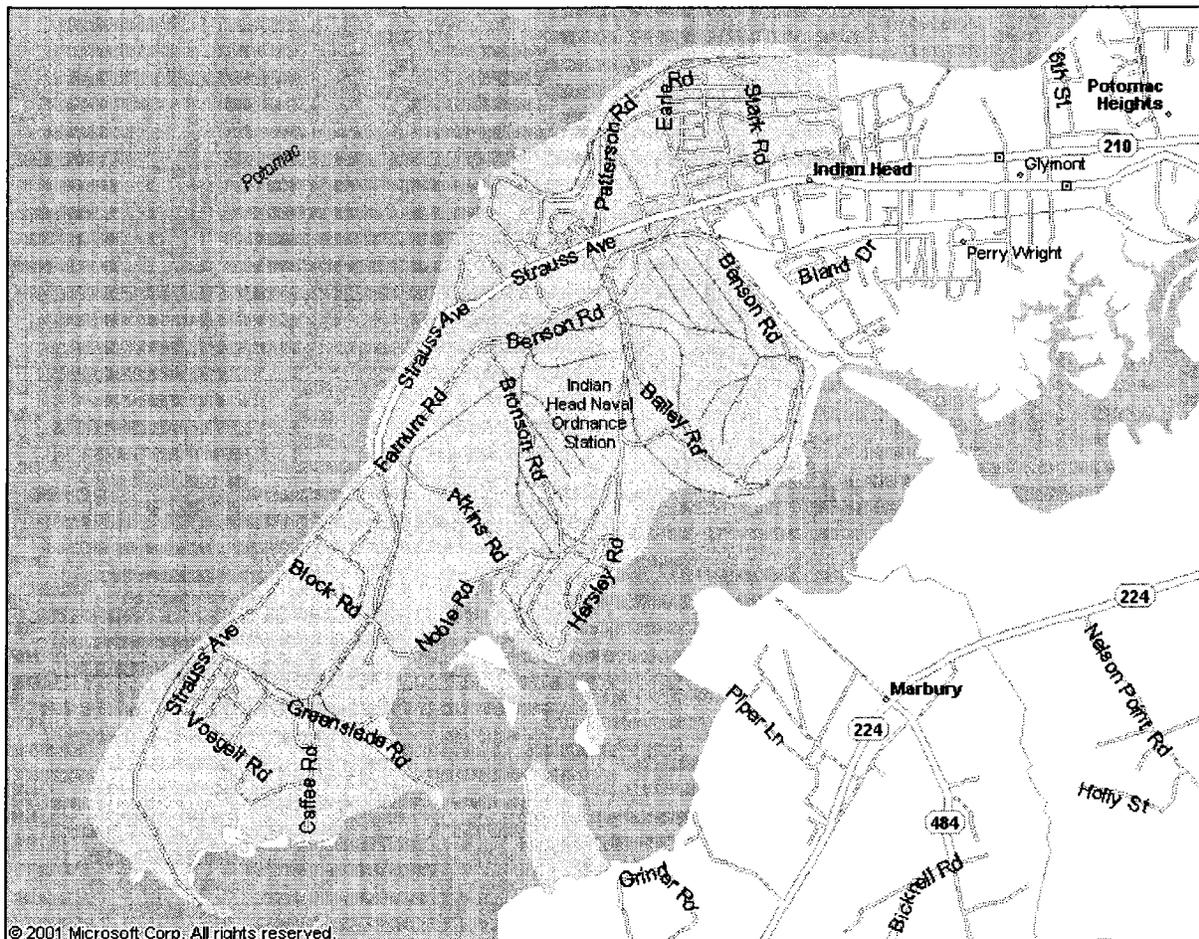


Figure 2-1
Site Location Map

3.0 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM), Site Superintendent (SS), Site Safety Officer (SSO), and Program Health and Safety Manager (HSM) are responsible for formulating and enforcing health and safety requirements, and for implementing this SSHASP. The following summarizes the health and safety responsibilities of the site management.

3.1 PROJECT SAFETY RESPONSIBILITIES

The PM has the overall responsibility for the project and to assure that the requirements of the contract are attained in a manner consistent with the SSHASP requirements. The PM will coordinate with the SS and the SSO to assure that the work is completed in a manner consistent with the SSHASP. The PM is responsible for field implementation of the SSHASP. The SS will be the main contact in any on-site emergency situation and will ensure off-site emergency agencies have been contacted prior to the start of work. The HSM and SSO are authorized to administer this SSHASP. The HSM and SSO are authorized to stop work when an imminent health or safety risk exists. The HSM is responsible for reviewing the SSHASP and ensuring that the SSHASP is complete and accurate. The HSM also provides technical and administrative support for the Health and Safety Program and will be available for consultation when required. Each employee is responsible for personal safety as well as the safety of others in the work area.

3.2 KEY SAFETY PERSONNEL

The following individuals share responsibility for health and safety at the site:

Project Manager	Dan Pringle (412) 380-6248 (office)
Site Superintendent	Steve Carriere (240) 882-1480 (cellular)
Site Safety Officer	To Be Determined ()
Resident Officer in Charge of Construction (ROICC)	Lt. Russ Hime (301) 744-4122
Remedial Program Manager (RPM)	Jeff Morris (202) 685-3279
Activity Point of Contact	Shawn Jorgenen (301) 744-6745
Shaw Environmental, Inc. UXO Specialist	To Be Determined ()
Program Certified Industrial Hygienist (CIH)	Paul Lawless, CIH (609) 588-6391 (office)

KEY PERSONNEL AND MANAGEMENT

Program Health and Safety Manager

Robert Brooks, CSP
(732) 469-5599, Ext. 681 (office)
(908) 217-5124 (cellular)

Vice President, Health and Safety

Warren Houseman, CIH
412-858-3741 (office)

4.0 ACTIVITY HAZARD ANALYSIS

This section outlines the potential chemical hazards which workers may be exposed to during site activities. Material Safety Data Sheets (MSDS) for chemicals that will be brought to the site are included in Attachment D.

4.1 CHEMICAL HAZARDS

Based on an evaluation of the scope of work, the primary site contaminants include arsenic, 1,2-dichloroethylene, iron, manganese, trichloroethene, and vinyl chloride. One explosive, nitrocellulose, was detected in one soil sample (46.2 milligrams per kilogram [mg/kg]) and four sediment samples at concentrations ranging from 26.7 mg/kg to 471 mg/kg. Lead was detected in small amounts (maximum concentration of 34.5 mg/kg) and should not pose a health hazard to workers.

Hazard information regarding the chemicals associated with the site activities at Site 12 are provided below. Prior to the initiation of site activities, a site pre-work health and safety briefing will be conducted with all site personnel and will include an in-depth review of the site contaminants, the associated hazards, personal protective equipment (PPE), and decontamination procedures.

Table 4-1 summarizes the potential chemical hazards which workers may be exposed to and their associated health/physical hazards. All site personnel must review the MSDSs for each chemical listed (Attachment D).

Table 4-1 Potential Chemical Hazards			
Chemical	Exposure Routes	Permissible Exposure Limit (PEL) / Threshold Limit Value (TLV)	Health Hazards / Physical Hazards
Arsenic	Inhalation, ingestion	0.01 milligram per cubic meter (mg/m ³)	<ul style="list-style-type: none"> • A human carcinogen; a powerful allergen, inhalation and contact cause burning, swelling and redness in the eyes, nose, throat and skin; ingestion causes nausea, vomiting, nervous system effects in the extremities (numbness, tingling, weakness); long term exposure can cause liver, kidney and blood damage. • A fire hazard in the form of dust or contact with oxidizers; thermal decomposition produces toxic gases.

ACTIVITY HAZARD ANALYSIS

Table 4-1 Potential Chemical Hazards			
Chemical	Exposure Routes	Permissible Exposure Limit (PEL) / Threshold Limit Value (TLV)	Health Hazards / Physical Hazards
1,2-dichloroethene	Skin, eye, inhalation, ingestion	200 parts per million (ppm)	<ul style="list-style-type: none"> • Irritation from skin contact; headache, nausea, vomiting, dizziness, and central nervous system (CNS) depression; long-term exposure can effect the kidneys and liver. • Flammable liquid, keep away from sources of ignition. Will liberate toxic phosgene gas and hydrogen chloride when heated; avoid contact with strong oxidizers and bases, aluminum, ammonia, and nitric acid.
Iron	Inhalation	5.0 mg/m ³	<ul style="list-style-type: none"> • Scarring of lung tissue. • Reacts with calcium hypochlorite.
Manganese	Skin, eye, inhalation, ingestion	0.2 mg/m ³	<ul style="list-style-type: none"> • A respiratory irritant; dry throat, cough, tight chest, dyspnea; nausea, vomiting, mental confusion, flu-like fever; CNS effects. • Reacts with oxidizers; displaces hydrogen from water and steam creating potential fire, explosion hazard.
Trichloroethylene	Skin, eye, inhalation, ingestion	50 ppm	<ul style="list-style-type: none"> • A skin and eye irritant; dermatitis; headache, vertigo, visual distortion, fatigue, nausea, vomiting, irregular heart rhythm. • A dangerous fire hazard, reacts with strong caustics and chemically reactive metals, will emit toxic phosgene gas when heated.
Vinyl chloride	Skin, eye, inhalation, ingestion	1 ppm	<ul style="list-style-type: none"> • A carcinogen; headache, vertigo, narcosis, collapse; affects CNS; skin and eye irritation. • A severe fire and explosion hazard; reacts with copper, aluminum, and hydroquinone; forms toxic decomposition products when involved with fires or heat; hydrogen chloride, carbon monoxide, and phosgene.
Nitrocellulose (solution)	Skin, eye, inhalation, ingestion	400 ppm (time-weighted average [TWA]) for ethyl ether	<ul style="list-style-type: none"> • Vapors have anesthetic properties and effect the CNS. Early symptoms include irritation of the nose and throat, followed by dizziness and drowsiness. • Extremely flammable liquid and vapor. Heat, light and long standing contribute to instability. Reacts with air to form explosive peroxides. The dry material is shock sensitive.

4.2 SPECIAL SITE-SPECIFIC HAZARDS

The work at the NSWC is within a restricted area and is potentially hazardous due to the danger from explosive materials. In addition to the requirements outlined in the site-specific UXO Support Plan, the following restrictions apply, unless a waiver from the NSWC is obtained:

- Liquid petroleum gas and explosives are prohibited.
- Matches and lighters are prohibited in the restricted area. Give matches and lighters to the security personnel at the gate prior to entering the area.
- Obey all roadblocks, signs, and gates at entrances to the restricted area. Obtain a clearance in Building 307 to enter the restricted area.
- Do not operate mobile or fixed transmitters of radio frequency in the restricted area identified by road signs.

4.3 HAZARD COMMUNICATION

The purpose of hazard communication (Employee Right-to-Know) is to ensure that the hazards of all chemicals located at this field project site are transmitted (communicated) according to 29 CFR 1926.59 to all Shaw Environmental, Inc. personnel and Shaw Environmental, Inc. subcontractors. Hazard communication will include the following.

4.3.1 **Container Labeling**

Shaw Environmental, Inc. personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced on site by operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party.

4.3.2 **Material Safety Data Sheets**

There will be an MSDS located on site for each hazardous chemical known to be used on site (i.e., Clorox). All hazardous chemical MSDSs will be located in Attachment D of the SSHASP. The site safety plan can be found in the project office trailer.

4.3.3 **Employee Information and Training**

Training employees on chemical hazards is accomplished through an ongoing corporate training program. Additionally, chemical hazards are communicated to employees through daily safety meetings held at Shaw Environmental, Inc. field projects and by an initial site orientation program.

At a minimum, Shaw Environmental, Inc. and related subcontractor employees will be instructed on the following:

- An in-depth review of the soil and surface contaminants of concern identified above
- OSHA-regulated chemicals and their hazards in the work area
- How to prevent exposure to these hazardous chemicals
- What the company has done to prevent workers' exposure to these chemicals
- Procedures to follow if they are exposed to these chemicals
- How to read and interpret labels and MSDSs for hazardous substances found on Shaw

ACTIVITY HAZARD ANALYSIS

- Environmental, Inc. sites
- Emergency spill procedures
- Proper storage and labeling.

Before any new hazardous chemical is introduced on site, each Shaw Environmental, Inc. and related subcontractor employee will be given information in the same manner as during the safety class. The SSO will be responsible for seeing that the MSDS on the new chemical is available for review by on site personnel. The information pertinent to the chemical hazards will be communicated to project personnel.

Morning safety meetings will be held and the hazardous materials used on site will be discussed. Attendance is mandatory for all on-site employees.

Refer to Attachment D of the site safety plan to find a list of hazardous chemicals anticipated to be brought to the site and the corresponding MSDSs for these chemicals.

4.4 PHYSICAL HAZARDS

To minimize physical hazards, Shaw Environmental, Inc. has developed standard safety protocols that will be followed at all times. Failure to follow safety protocols will result in removal of an employee from the site and appropriate disciplinary actions.

The SS will observe the general work practices of each crew member and equipment operator, and enforce safe procedures. The crew leaders and SS will inspect work areas. All hazards will be corrected in a timely manner. A variety of physical hazards may be encountered during work activities at this site. Activity Hazard Analyses (AHA) have been developed for each principal activity and identify all major hazards to which employees may be exposed. Hard hats, safety glasses, and steel-toe safety boots are required in all areas where these types of hazards are present. Site-specific hazards and all necessary precautions will be discussed at the daily safety meetings.

4.4.1 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Several forms of cold stress as well as preventative measures are described in this section of the SSHASP.

4.4.1.1 Cold Stress Conditions and Symptoms

Typical cold weather injuries are included in Table 4-4A, including symptoms and first aid precautions. If cold stress conditions develop, professional medical attention will be sought.

ACTIVITY HAZARD ANALYSIS

Table 4-4A Cold Weather Injuries		
Cause	Symptoms	First Aid
FROSTBITE		
Freezing of tissue, normally due to exposure below 32 degrees Fahrenheit (°F).	Numbness in affected area. Tingling, blistered, swollen or tender areas. Pale, yellowish waxy-looking skin.	Warm affected area with direct body heat. Consult with medical personnel ASAP. Do not thaw frozen area if treatment will be delayed. Do not massage or rub affected area. Do not wet area or rub with snow or ice.
CHILBLAIN		
Repeated exposure of bare skin for prolonged periods to temperatures 20°F to 60°F (for those not acclimated to cold weather).	Swollen, red skin. Tender, hot skin, usually accompanied by itching.	Warm affected area with direct body heat. Do not massage or rub. Do not wet area or rub with snow or ice. Do not expose affected area to open fire, stove or any other intense heat source.
IMMERSION FOOT (TRENCH FOOT)		
Prolonged exposure of the feet to wet conditions at temperatures between 32°F to 50°F. Inactivity and damp socks (or tightly laced boots that impair circulation) speed onset and severity.	Cold numb feet may progress to hot with shooting pains. Swelling redness and bleeding.	Re-warm feet by exposing them to warm air. Evacuate victim to a medical facility. Do not massage, rub, moisten or expose affected area to extreme heat source.
DEHYDRATION		
Depletion of body fluids.	Dizziness. Weakness.	Replace lost water. Water should be sipped, not gulped. Get medical treatment.
HYPOTHERMIA		
Prolonged cold exposure and body heat loss. May occur at well above freezing, especially when a person is immersed in water.	Lack of shivering. Drowsiness, mental slowness, lack of coordination. Can progress to unconsciousness, irregular heartbeat and death.	Strip off clothing and wrap victim in blankets or a sleeping bag. Get victim to a heated location and medical treatment as soon as possible.

In cold weather, the potential for frostbite exists, especially in body extremities. Personnel will be instructed to pay particular attention to hands, feet, and any exposed skin when dressing. Personnel will be advised to obtain more clothing if they begin to experience loss of sensation due to cold exposure.

4.4.1.2 Monitoring and Preventative Actions

Typical cold stress monitoring and prevention procedures are included in Tables 4-4B and 4-4C, including temperatures to initiate monitoring, protective clothing uses, and administrative practices to prevent or reduce the potential for cold stress related injury/illness. Table 4-4D shows the equivalent chill temperature based on wind speed, as well as the associated danger. For weather conditions below -43 degrees Celsius (°C) or -45°F with no wind and/or similar conditions (Table 4-4E), all work will cease.

ACTIVITY HAZARD ANALYSIS

Table 4-4B Cold Stress Prevention*		
	Temperature	Preventative Action
1	<61°F	Use thermometer to measure ambient temperature.
2	<40°F	Cold weather protective clothing available; check core body temperature at breaks using oral or ear canal thermometer. Maintain core body temperature above 96.8°F to avoid hypothermia.
3	<30°F	Record ambient temperature and wind speed every 4 hours; compare to wind chill chart when below 19.4°F.
4	<19°F	Provide and use heated warming shelters for work breaks and when cold stress symptoms appear.
5	<10°F	Constant observation of workers, i.e., "buddy system," rest in heated shelters (see work-rest schedule); dry clothing available for change-out; acclimate new workers.
6	<0°F / >5 mile per hour (mph) winds	Obtain medical certification for workers subject to hypothermia risk.
<p>* Based on "1998 ACGIH Threshold Limit Values... for Physical Agents." <i>Note: Refer to wind chill and work/warm-up charts attached.</i></p>		

Table 4-4C Cold Weather Clothing	
	Cold Weather Clothing Requirements
1	If wind chill is a factor at a work location, the cooling effect of the wind shall be reduced by shielding the work area or providing employees an outer windbreak layer garment.
2	Extremities, ears, toes, and nose shall be protected from extreme cold by protective clothing.
3	Employees performing light work whose clothing may become wet shall wear an outer layer of clothing which is impermeable to water.
4	Employees performing moderate to heavy work whose clothing may become wet shall wear an outer layer of clothing which is impermeable to water.
5	Outer garments must provide for ventilation to prevent wetting of inner clothing by sweat, or if not possible, a heated shelter for warming/drying clothing, or a change of clothing, shall be provided prior to returning to work in a cold environment.

Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

Employees will be instructed to use heated shelters on site, at regular intervals, depending upon the severity of ambient temperatures. Symptoms of cold stress, including heavy shivering, excessive fatigue, drowsiness, irritability, or euphoria necessitate immediate return to the shelter.

ACTIVITY HAZARD ANALYSIS

Table 4-4D Wind Chill Chart												
Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)*												
Actual Temperature Reading (°F)												
Estimated Wind Speed (in mph)	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
Equivalent Chill Temperature (°F)												
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER In < hour with dry skin. Maximum danger of false sense of security.			INCREASING DANGER Danger of freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 minutes				
Trenchfoot and immersion foot may occur at any point on this chart												
* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, Massachusetts. (Shaded area) Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36°C (98.6°F) per cold stress TLV.												

Table 4-4E TLVs Work/Warm-up Schedule for Four-Hour Shift*											
Air Temperature Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°C (appx.)	°F (appx.)	Max. Work Period	No. of Breaks								
-26 to -28	-15 to -19	Normal	1	Normal	1	75 min	2	55 min	3	40 min	4
-29 to -31	-20 to -24	Normal	1	75 min	2	55 min	3	40 min	4	30 min	5
-32 to -34	-25 to -29	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-35 to -37	-30 to -34	55 min	3	40 min	4	30 min	5	Non-emergency work should cease			
-38 to -39	-35 to -39	40 min	4	30 min	5	Non-emergency work should cease					
-40 to -42	-40 to -44	30 min	5	Non-emergency work should cease							
≤ -43	≤ -45	Non-emergency work should cease									
* Adapted from Occupational Health and Safety Division, Saskatchewan Department of Labor.											

4.4.2 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. Heat stress disorders include:

ACTIVITY HAZARD ANALYSIS

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke.

Heat stress prevention is outlined in procedure HS400 of the Shaw Environmental, Inc. Health and Safety Procedures.

4.4.3 Noise

Hearing protection is required for workers operating or working near heavy equipment, where the noise level is greater than 85 A-weighted decibels (dBA) (TWA) as well as personnel working around heavy equipment. The SSO will determine the need and appropriate testing procedures, (i.e., sound level meter and/or dosimeter) for noise measurement.

Noise monitoring should be conducted during the beginning of each activity, as well as, any time modifications lead to increased noise levels, e.g., adding additional equipment. A sound level meter will be used to measure noise levels at selected locations in the work area and on the site perimeter when treatment equipment is operating normally. When used, noise monitoring equipment must be calibrated before and after each shift.

If continuous noise levels are found to exceed 85 dBA at any location within the work area, warning signs will be posted. Workers and visitors will be notified that hearing protection is required. Appropriate hearing protection (e.g., ear plugs) will be worn whenever personnel or visitors are working in that location. A supply of ear plugs will be maintained on site.

Action levels in Table 4-4F will trigger the use of appropriate hearing protection (plugs or muffs). Hearing protection must be able to attenuate noise below 90 dBA (8 hour TWA). Each hearing protection or device has a Noise Reduction Rating (NRR) assigned by the USEPA. The calculation for a hearing protection device's effectiveness is: Noise reading dBA – (NRR – 7dB) < 90 dBA.

Instrument	Measurement	Action
Type I or Type II Sound Level Meter or dosimeter	>80 dBA → 85 dBA	Hearing protection recommended. Limit work duration to 8-hour shifts.
	>85 dBA → 90 dBA	Hearing protection recommended. Limit work duration to 8-hour shifts.
	>90 dBA → 115 dBA	Hearing protection required. Investigate use of engineering controls. Limit work duration to 8-hour shifts.
	>115 dBA	Stop work. Consult Project CIH.

4.4.4 Biological Hazards

4.4.4.1 Poison Ivy (RHUS RADICANS)

Poison Ivy may be found at the site. It is highly recommended that all personnel entering into an area with poison ivy wear a minimum of a Tyvek coverall, to avoid skin contact.

ACTIVITY HAZARD ANALYSIS

The majority of skin reactions following contact with offending plants are allergic in nature and characterized by:

- General symptoms of headache and fever
- Itching
- Redness
- A rash.

Some of the most common and most severe allergic reactions result from contact with plants of the poison ivy group, including poison oak and poison sumac. Such plants produce severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim may develop a high fever and feel very ill. Ordinarily, the rash begins within a few hours after exposure, but may be delayed 24 to 48 hours.

A barrier cream, e.g., Stokogard Outdoor Cream (Stockhausen, Inc. 1-800-334-0242), should be applied to the exposed skin before entering and working in areas with possible poisonous plants.

Distinguishing Features of Poison Ivy Group Plants. The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each. Both plants have greenish-white flowers and berries that grow in clusters. Figure 4-1 includes pictures and descriptions of each plant.

First Aid.

- Remove contaminated clothing; wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol. One percent hydrocortisone cream (over-the-counter) will aid in healing and reducing itch.
- Apply calamine or other soothing lotion if rash is mild.
- Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

Contaminated Clothing. The irritating substances emitted by poison ivy group plants will remain on clothing for prolonged periods of time - up to weeks or months, if not washed thoroughly. It may be necessary to wash contaminated clothing separately and more than once before reusing.

4.4.4.2 Ticks

Heavily vegetated areas of a site may have ticks. It is highly recommended that all personnel walking through such areas wear a minimum of a Tyvek and latex boot covers. The ticks will stand out against the light colors. A tick or insect repellent containing DEET is also recommended.

Ticks can transmit several diseases, including Rocky Mountain spotted fever, a disease that occurs in the eastern portion of the United States as well as the western portion, and Lyme disease. Ticks adhere tenaciously to the skin or scalp. There is some evidence that the longer an infected tick remains attached, the greater is the chance that it will transmit disease.

ACTIVITY HAZARD ANALYSIS

First Aid.

- Carefully (slowly and gently) remove the tick with tweezers, taking care that all parts are removed.
- With soap and water, thoroughly, but gently, scrub the area from which the tick has been removed, because disease germs may be present on the skin; also wipe the bite area with an antiseptic.

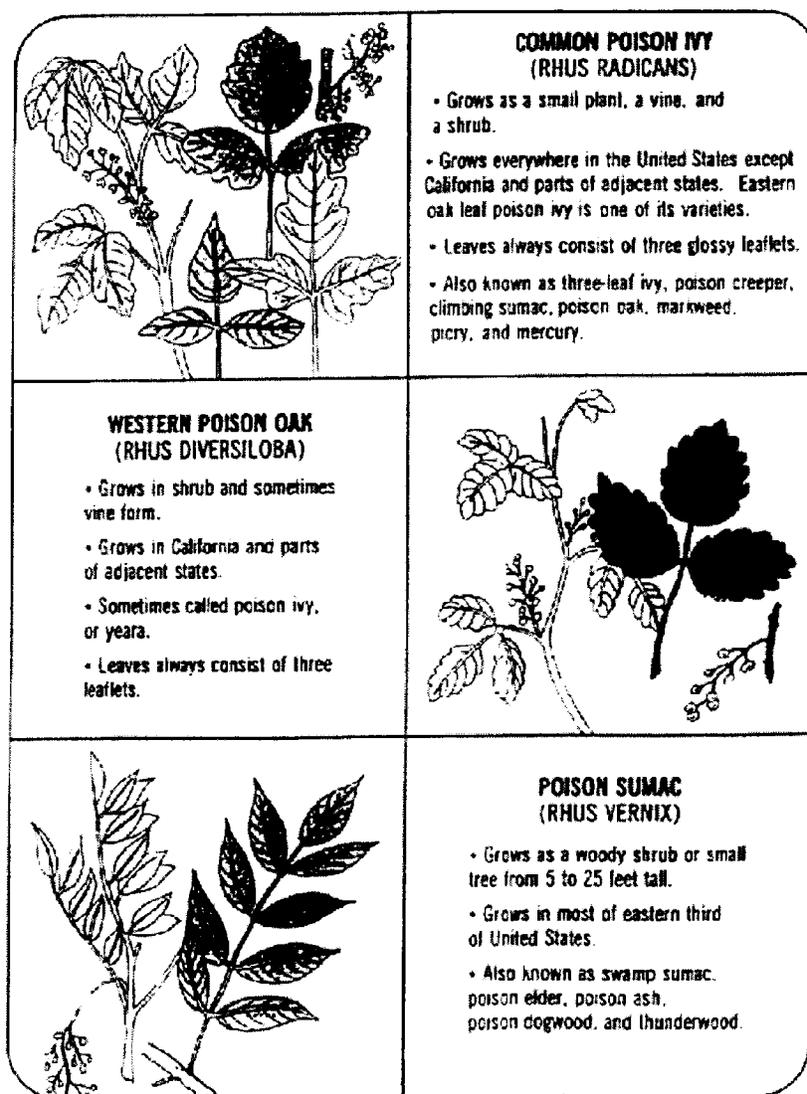


Figure 4-1
Poisonous Plants

If you have been bitten, place the tick in a jar labeled with the date, location of the bite, and the location acquired. If any symptom appears, such as an expanding red rash, contact a physician immediately.

- Report any embedded ticks to your SS and SSO.

4.4.4.3 Lyme Disease

Lyme disease may cause a number of medical conditions, including arthritis, that can be treated if you recognize the symptoms early and see your doctor. Early signs may include a flu-like illness, an expanding skin rash, and joint pain. If left untreated, Lyme disease can cause serious nerve and heart problems as well as a disabling type of arthritis.

You are more likely to spot early signs of Lyme disease rather than see the tick or its bite. This is because the tick is so small (about the size of the head of a common pin or a period on this page and a little larger after they fill with blood), you may miss it or signs of a bite. However, it is also easy to miss the early symptoms of Lyme disease.

In its early stage, Lyme disease may be a mild illness with symptoms like the flu. It can include a stiff neck, chills, fever, sore throat, headache, fatigue, and joint pain. But this flu-like illness is usually out of season, commonly happening between May and November when ticks bite.

Most people develop a large, expanding skin rash around the area of the bite. Some people may get more than one rash. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It's easy to miss the rash and the connection between the rash and the tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be another early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes from other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

In later stages, Lyme disease may be confused with other medical problems. These problems can develop months to years after the first tick bite.

Early treatment of Lyme disease symptoms with antibiotics can prevent the more serious medical problems of later stages. If you suspect that you have symptoms of Lyme disease, report it to your supervisor and seek medical attention.

Lyme disease can cause problems with the nervous system that look like other diseases. These include symptoms of stiff neck, severe headache, and fatigue usually linked to meningitis. They may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease can also mimic symptoms of multiple sclerosis or other types of paralysis.

Lyme disease can also cause serious but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Researchers think these more serious problems may be linked to how the body's defense or immune system responds to the infection.

4.4.5 **Lightning**

The procedures provided below will be used to protect site personnel from lightning related injuries.

Training. A Tailgate Safety Meeting will be conducted to increase awareness to the hazards and prevention of lightning related incidents.

ACTIVITY HAZARD ANALYSIS

Detection of Lightning. The SSO will be proactive in monitoring conditions that may produce thunderstorms and lightning. A daily and weakly weather forecast will be tracked and communicated to site personnel. When signs of impending storms, i.e., increasing wind, darkening skies, or lightening, appear, local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov/) should be consulted frequently. Personnel will be notified when thunderstorms may impact the site.

The "flash/bang" technique of measuring the distance to lightning will be reviewed with all personnel. The flash/bang technique is defined as: for each five seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is one mile away.

Suspension/Resumption of Activities. All outside activities will be suspended when a lightning flash is immediately in the area or a flash/bang of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes has passed since the last observable flash/bang is 20 seconds or greater.

Lightning Protection. When notification is given, all outside work activities will stop and personnel will gather in the support zone for a head count and further instructions. Indoor work will continue, except for the use of electrical equipment, telephones, and computers. When a safe location is not present and personnel are caught by a sudden lightning event, employees should seek the lowest possible area, away from large objects which might attract lightning or fall over, e.g., trees, utility poles. The employee should assume a crouching position with their head lowered and hands over their ears. **AVOID: WATER, HIGH GROUNDS, HEAVY EQUIPMENT, AND TALL, ISOLATED OBJECTS.**

First Aid. An employee that is struck by lightning needs immediate assistance (call 911). The body will not carry an electrical charge, but receives a sever electrical shock and may be burned. Personnel certified in first aid/cardiopulmonary resuscitation (CPR) should inspect for shock and burns around fingers, toes, buckles, and jewelry. Stay with the injured employee until medical help arrives.

4.4.6 Severe Weather

In the event of severe weather, personnel are to follow the procedures outlined in the Hurricane Preparedness Plan (Attachment E). The plan includes the general responsibilities and actions to be taken in preparation for and in response to a hurricane or hurricane warnings.

4.5 VEHICLE AND HEAVY EQUIPMENT SAFETY MANAGEMENT

4.5.1 Vehicle Safety

Motor vehicle incidents are the number one cause of occupational fatalities, accounting for one in three deaths. Fifty percent or more of vehicle safety incidents occur while backing up. Shaw Environmental, Inc. employees involved in the operation and use of Shaw Environmental, Inc. and/or leased or rented vehicles will comply with the *Shaw Environmental, Inc. Motor Vehicle/Commercial Vehicle Operation and Maintenance Procedures* (HS800/810). Shaw Environmental, Inc. requires employees to use seat belts at all times when traveling in Shaw Environmental, Inc. owned or leased/rented vehicles. The SS and/or SSO will develop a parking area plan, including backing vehicles into parking spaces, using spotters for backing vehicles and policy mandated vehicle inspections.

Shaw Environmental, Inc. employees arriving at work areas should park vehicles away from delivery, heavy equipment, and vehicle loading/unloading locations to prevent parked vehicles from damage by various deliveries. Heavy equipment operators should inspect areas and request vehicles to be

ACTIVITY HAZARD ANALYSIS

moved or spotters used if necessary, to maneuver equipment in tight areas. Employees who observe near misses or potential risks to parked or moving vehicles must report these to the SS or SSO immediately.

Shaw Environmental, Inc. employees are expected to use the vehicle inspection form and check/test the safety systems on the vehicle on a daily basis. Check the following: brakes, mirrors, seat belts, tires, leakage from the undercarriage, lights, and turn signals. Vehicles with safety deficiencies must be reported immediately and not driven until properly repaired. Vehicles running errands from different project sites should have telephone numbers of the job site in the vehicle in case calls for assistance are required.

Because of the different ways alcohol can affect behavior, even in very small amounts, the best and safest course is not to drink before driving. At Shaw Environmental, Inc., a driver with blood alcohol concentration over 0.04 percent is considered to be under the influence and subject to disciplinary action. Personnel involved in motor vehicle incidents are subject to drug and alcohol testing.

Weather conditions can have a profound effect on driving. On slippery roads, drive more slowly. Stop and turn with care. Keep several car lengths from other vehicles. At speeds in excess of 35 mph, the chances of hydroplaning increase with speed. In general, keep back 1 car length for every 10 mph to prevent striking the car ahead.

Vehicles will be operated in accordance with the requirements listed below:

- Seatbelt use is mandatory for all passengers.
- Personnel may not ride in the back of cargo vehicles.
- The driver must make a 360-degree walk around the assigned vehicle prior to vehicle movement.
- A ground guide is used to back up any vehicle.
- Vehicle speed is limited to the posted speed limits for developed roadways, 25 mph maximum on dirt roads and 10 mph maximum off-road (based on conditions).
- Vehicle driven in four wheel low and low gear when on dirt roads or off-road driving where steep grades dictate.
- All operators must possess a valid driver's license.
- Fuel or gasoline are not transported inside the passenger compartment.
- No vehicle is left running when unattended.
- Parking brakes are used when vehicles are parked.

In the event of a vehicle incident, notify your PM *immediately* and complete all required reports.

4.5.2 Heavy Equipment Safety

Cranes, aerial lifts, forklifts, excavation, and other material handling equipment present various physical hazards on remediation sites. The following critical safety practices shall be followed to prevent safety incidents during heavy equipment operation:

- All equipment will be inspected prior to each use.
- All operators will have training or equivalent experience to be permitted to operate heavy equipment.
- Spotters will be used to back up equipment and direct traffic in all "blind" areas.
- Standard hand signals will be used to communicate between operators and ground crew.
- All heavy equipment will have operable back-up alarms.

ACTIVITY HAZARD ANALYSIS

- Heavy equipment will be parked in areas where operators will not be exposed to strains or slip/trip/fall hazards during mounting and dismounting of equipment.
- All heavy equipment will be equipped with operable seatbelts; belts will be used by all operators.
- Written lifting plans will be developed and reviewed for all critical lifts.

4.6 ACTIVITY HAZARD ANALYSES

Attachment B contains AHAs for primary site tasks. They contain detailed information on physical and chemical hazards, and provide control measures for these hazards. The AHAs will be field checked by the SS and/or the SSO on an ongoing basis and revised as necessary. All revisions will be communicated to the work crew.

5.0 WORK AND SUPPORT AREAS

To prevent migration of contamination from personnel and equipment, work areas will be clearly specified as designated below prior to beginning operations. Each work area will be clearly identified using signs or physical barriers. The following work zones will be established:

- Exclusion Zone (EZ)
- Contamination Reduction Zone (CRZ)
- Support Zone (SZ)

A log of all personnel visiting, entering, or working on the site shall be maintained by the SSO. Visitors will attend a site orientation given by the SSO and sign the SSHASP.

The following are standard safe work practices that apply to all site personnel and will be discussed in the safety briefing prior to initiating work on the site:

- Hands and face must be washed upon leaving the main work areas and before eating, drinking, chewing gum or tobacco, and smoking.
- A buddy system will be used with the sample team.
- Visual contact will be maintained between buddies on site when performing duties.
- No personnel will be admitted to the site without the proper safety equipment and a review of this SSHASP.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SS, will be immediately dismissed from the site.

6.0 PROTECTIVE EQUIPMENT

The PPE outlined has been selected based on the assumption that the only site concerns are trash and debris. If other site contaminants are identified, the levels of PPE must be re-evaluated.

6.1 ANTICIPATED PROTECTION LEVELS

The following protection levels have been established for the work activities at Site 12. Changes in the initial PPE levels prescribed in Table 6-1 below require approval for either the CIH or HSM and completion of the SSHASP amendment form (Attachment F).

Task	Initial PPE Level	Upgrade PPE Level	Skin Protection	Respiratory Protection	Other PPE
Site preparation, site survey, installation of erosion controls, clearing, dewatering activities, Atkins Road Extension modification, well abandonment, soil cover installation (after the first layer is installed), site restoration	Level D	None	Leatherwork gloves as appropriate	None	Hard hat, steel-toe work boots, safety eyewear (safety glasses with side shields or goggles and face shield), and hearing protection >85 dBA
Grubbing, waste removal, landfill regrading, drainage channel installation, soil cover installation (until the first layer is installed), monitoring well abandonment and installation	Modified Level D	Level C**	Tyvek coveralls, latex or rubber over-boots, inner cotton glove liners (based on weather) or inner sample gloves, and outer nitrile gloves	Initial: None Upgrade: Full-face air-purifying respirators with multi-contaminant cartridges	Hard-hat, steel-toe work boots, safety glasses, and hearing protection >85 dBA
Equipment decontamination	Modified Level D	None	Poly-coated Tyvek or rain suits, latex or rubber over-boots, inner cotton glove liners (based on weather) or inner sample gloves, and outer nitrile gloves	Full-face air-purifying respirators with multi-contaminant cartridges	Hard-hat, steel-toe work boots, full-face shield and hearing protection >85 dBA. Metatarsal and shin guards are required for decontamination activities.
General SZ activities	Level D	None	None	None	Hard-hat, steel-toe work boots, safety glasses, leather work gloves as required for material handling, and reflective vests when working in high traffic areas

** Level C cannot be used if vinyl chloride is detected above the PEL. Contact the HSM.

6.2 PROTECTION LEVEL DESCRIPTIONS

This section lists the minimum requirements for each protection level. Modification to these requirements may have been noted in Table 6-1.

6.2.1 Level D

Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Work clothing as prescribed by weather
- Leather work gloves as required for material handling
- Reflective vests when working in high traffic areas.

6.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields or full-face shield and goggles as required for splash hazards
- Hard hat
- Steel-toed work boots
- Inner work clothing as prescribed by weather
- Leather work gloves as required for material handling
- Inner cotton glove liners (as prescribed by the weather)
- Outer nitrile gloves (lined nitrile gloves should be used during cold weather)
- Rubber or latex over-boots
- Tyvek coveralls or poly-coated Tyvek, as required to protect against splash hazards.

6.2.3 Level C

Level C consists of the following:

- Safety glasses with side shields or full-face shield and goggles as required for splash hazards
- Hard hat
- Steel-toed work boots
- Inner work clothing as prescribed by weather
- Leather work gloves as required for material handling
- Inner cotton glove liners (as prescribed by the weather)
- Outer nitrile gloves (lined nitrile gloves should be used during cold weather)
- Rubber or latex over-boots
- Tyvek coveralls or poly-coated Tyvek, as required to protect against splash hazards
- Full-face air-purifying respirator with combination cartridges.

6.3 AIR PURIFYING RESPIRATORS

A NIOSH-approved full-face powered air purifying respirator with multi-contaminant (P-100) cartridges will be used for operational support activities.

PROTECTIVE EQUIPMENT

6.4 CARTRIDGE CHANGEOUT SCHEDULE

All cartridges will be disposed of at the end of each work shift.

6.5 INSPECTION AND CLEANING

Respirators shall be checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after each use.

6.6 FIT TESTING

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. A qualitative fit test is required.

6.7 FACIAL HAIR

Personnel who have facial hair that interferes with the respirator's sealing surface will not be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

6.8 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided. Contact lenses are permitted to be used with full-face respirators based on a decision by OSHA.

6.9 MEDICAL CERTIFICATION

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees will receive a written physician's opinion that they are fit for general hazardous waste operations as per 29 CFR 1910.120(f)(7).

6.10 SITE-SPECIFIC PERSONAL PROTECTIVE EQUIPMENT PROGRAM

The primary objective of the PPE program is to ensure employee protection and to prevent employee exposure to site contaminants during site operations. Engineering controls are not feasible for many tasks and, therefore, require the use of PPE.

The SS will be responsible for monitoring all aspects of the PPE program. This includes donning and doffing, temperature related stress monitoring, inspection, and decontamination. PPE selection is identified in Table 6-1 for each specified task. The SS, in consultation with the SSO, and the HSM will direct changes in PPE based on changing conditions. The SSHASP will serve as written certification that the workplace was evaluated concerning PPE requirements. Shaw Environmental, Inc.'s comprehensive PPE program is described in Attachment G.

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 PERSONNEL HYGIENE PROCEDURES

Personnel hygiene procedures will ensure that materials which workers may have contacted in the work areas do not result in personal exposure and are not spread to clean areas of the site. This sequence describes the general decontamination procedures for Level D Modified (D+) and Level C.

7.1.1 Level D+ Decontamination

1. Go to end of the work area
2. Rinse outer clothing, including boots and gloves
3. Remove boots (discard latex over-boots)
4. Remove outer gloves and discard
5. Remove outer coverall and discard as appropriate
6. Wash face and hands.

7.1.2 Level C Decontamination

1. Go to end of the work area
2. Wash outer boots and stage to let dry; or remove and discard latex booties
3. Remove outer gloves and discard
4. Remove outer suit and discard
5. Remove outer sample gloves and discard
6. Remove inner suit and discard (if applicable)
7. Remove and wash respirator (4 stages)
 - a. Soap and water solution
 - b. First rinse
 - c. Disinfect respirator (1 cap full of bleach to 1 gallon of water)
 - d. Final rinse
 - e. Hang respirator to dry
8. Remove inner sample gloves and discard
9. Wash face and hands.

7.1.3 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will proceed to the decontamination facility. Here the worker will remove clothing, shower, don clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided as determined by the degree of exposure or injury.

7.1.4 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck, and face.

DECONTAMINATION PROCEDURES

7.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the PM.

7.3 DISPOSAL

All decontamination liquids and disposable clothing will be treated as contaminated waste unless determined otherwise by accepted testing methods. Wastes will be disposed of according to state and federal regulations.

8.0 AIR MONITORING

Air monitoring will be conducted in order to characterize personnel exposures and fugitive emissions from site contaminants. Principal contaminants of concern are listed in Section 3.0 of this plan. The target compounds selected for air monitoring purposes at Site 12 are vinyl chloride, trichloroethene, 1,2-dichloroethene, arsenic, and manganese. Results of air monitoring will be used to ensure the proper selection of protective clothing and equipment, including respiratory protection, to protect on-site personnel and off-site receptors from exposure to unacceptable levels of site contaminants. Descriptions of air monitoring strategies, procedures, and equipment are provided below. Modification of this plan, including additional monitoring, may be considered as judged necessary by the CIH, in conjunction with the HSM and SSO.

8.1 WORK AREA AIR MONITORING

Work area air monitoring at Site 12 will include direct reading methods. Air monitoring will be conducted during any work requiring soil or sediment disturbance or water handling. These activities include grubbing, waste removal, landfill regrading, drainage channel installation, soil cover installation (first layer only), Atkins Road modification, and monitoring well installation.

During work activities, direct reading air monitoring will be performed to determine exposure to workers. A photoionization detector (PID) meter and colorimetric tubes for vinyl chloride will be used to monitor for toxic vapors. A lower explosive limit (LEL)/oxygen (O₂) meter will be available to test for potential combustible vapors and to check oxygen levels. A Particulate Meter (i.e., Mini Ram, Data Ram) will be used to monitor for airborne particulates. A summary of air monitoring information is provided in Table 8-1.

Monitoring Device	Monitoring Location/Personnel	Monitoring Frequency	Action Level	Action
LEL/O ₂	EZ/area sampling	Periodically at the discretion of the SSO	>10% LEL <20.8% O ₂	Evacuate area, ventilate, upgrade to Level B if necessary, continue to monitor
PID	EZ work area and breathing zone of workers	Periodically at the discretion of the SSO	<1 ppm* 1 ppm 1-10 ppm* (no vinyl chloride) 10-100 ppm* >100 ppm*	Modified D Test for vinyl chloride Modified D Level C Stop work and evaluate
Tubes - Vinyl Chloride	EZ work area and breathing zone of workers	Sustained PID readings of 1 ppm	<1 ppm* >1 ppm*	Level D+ Engineering controls and/or Level B
Mini Ram (total dust)	EZ work area and breathing zone of workers	Periodically at the discretion of the SSO	<5 mg/m ³ * 5.0 - 15.0 mg/m ³ * >15 mg/m ³ *	Modified D Level C Stop work and evaluate

* Sustained levels above background for five (5) minutes.

8.2 INSTRUMENTATION

The following is a description of the air monitoring equipment to be used at this site.

8.2.1 Lower Explosive Limit/Oxygen Meter

8.2.1.1 Type and Operational Aspects

Mine Safety Appliance (MSA) Watchman LEL/O₂ Meter or equivalent

Principle of Operation

- Oxygen detector uses an electrochemical sensor; produces a minute electric current proportional to the oxygen content.
- Combustible gas indicators use a combustion chamber containing a filament that ignites flammable vapors; filament is heated or coated with a catalyst (platinum) to facilitate combustion.
- Filament is part of a balanced resistor circuit; combustion in the chamber causes the filament temperature to increase; results in increased filament resistance.
- Change in the filament's resistance causes an imbalance in the circuit proportional to the percent of the LEL.
- Concentrations greater than the LEL and lower than the upper explosive limit (UEL) will read 100% LEL; combustible atmosphere present.
- Concentrations greater than the UEL will read above 100% LEL then return to zero. (NOTE: Some devices have catchment mechanisms which will cause the needle to remain at 100% until the meter is reset.) This type of response indicates the gas mixture is too rich to burn and is not combustible. The danger is that the addition of air to the gas mixture could bring it into the flammable range (less than the UEL).
- Oxygen meter set at the factory to alarm at 19.5% (oxygen deficient atmosphere) combustible gas meter set by the user to alarm at 10% LEL.

8.2.1.2 Calibration Methods/Frequencies

Before the calibration of the combustible gas indicator can be checked, the unit must be in operating condition. The combustible gas indicator (LEL) is normally calibrated on pentane as being representative of the flammability characteristics of most commonly encountered combustible gases. The meter scale is calibrated from zero to 100% LEL, which corresponds in actual volume concentrations of 0 to approximately 14% pentane in air. A booklet of response curves is supplied with the Watchman Meter. These curves may be used to interpret meter readings when sampling combustible gases other than pentane.

It is recommended that calibration be checked before and after using each time. The SSO will record and log such calibration information into an air monitoring notebook. The O₂ meter is calibrated by adjusting the O₂ control knob to 20.8% while the meter is operated in a fresh air atmosphere.

8.2.1.3 Preventative Maintenance

The primary maintenance of unit is the rechargeable 2.4-volt nickel cadmium battery. Recommended charging time is 16 hours. It may be left on charge for longer periods without damaging the battery. The battery sometimes will not supply full power capacity after repeated partial use between charging. Therefore, it is recommended that the battery be exercised at least once a month by running for 8 to 10 hours and recharged. If the instrument has not been used for 30 days, the battery should be charged prior to use.

8.2.2 Photoionization Detector

8.2.2.1 Type and Operational Aspects

PID Model PI 101 or equivalent

Principle of Operation

- Ionization Potential - The energy required to remove the outermost electron from a molecule; measured in electron volts (eV); characteristic property of a specific chemical.
- Photoionization - Using ultraviolet (UV) light to remove the outermost electron from a molecule.
- Energy of UV light (10.2, 9.5, 11.7 eV) must be equal to or greater than the ionization potential to photoionize the molecule.
- Fan or pump is used to draw air into the detector where the contaminants are exposed to a UV light source (lamp).
- Ions are collected on a charged plate and produce a current directly proportional to the number of ionized molecules; current is amplified and displayed on the meter.

8.2.2.2 Calibration Methods/Frequencies

The PID Model PI 101 is designed for trace gas analysis in ambient air and is calibrated at HNU with certified standards of benzene, vinyl chloride, and isobutylene. Other optional calibrations are available (e.g., ammonia, ethylene oxide, H₂S, etc.).

Shaw Environmental, Inc. will use a PID with a 10.2 eV lamp. This lamp has been determined to be most responsive to the contaminants on site. Optional probes containing lamps of 9.5 and 11.7 eV are interchangeable in use within individual read-out assemblies for different applications.

The approximate span settings for the probe that would give different readings of the amounts of trace gas of a particular species in a sample are based upon the relative photoionization sensitivities of various gases twice daily (beginning and end of shift).

It is recommended that calibration be checked twice each day (beginning and end of shift). The SSO will record and log such calibration information into an air monitoring notebook.

8.2.2.3 Preventative Maintenance

Maintenance of the PID Model PI 101 consists of cleaning the lamp and ion chamber, and replacement of the lamp or other component parts or sub-assemblies.

8.2.3 Portable Total Dust Monitor

8.2.3.1 Type and Operational Aspects

Real-Time Aerosol Monitor (Mini-RAM Model PDM-3 and Model PR100 Data Ram)

Principle of Operation

- Detection of light in the near infrared region back-scattered to a sensor (photovoltaic detector) by airborne particulate in a sensing volume.
- The higher the dust concentration the more back-scattering of light to the sensor, resulting in increased readings.
- Device calibrated at the factory against an air sampling filter/gravimetric analysis reference method.

8.2.3.2 Calibration Methods/Frequencies

There is no calibration method or procedure for calibrating the Mini-RAM monitor. However, it is recommended that the Mini-RAM monitor be re-zeroed once a week. During a zero check, the sampled air passes through the purge air filter and dryer to effect a self-cleaning of the optical chamber.

8.2.3.3 Preventative Maintenance

Maintenance of the Mini-RAM consists of replacement of filters and desiccant; battery replacement; and cleaning of the optical detection assembly.

8.2.4 Vinyl Chloride (0.5 to 5 ppm) Colorimetric Detector Tubes

8.2.4.1 Principle of Operation

- Colorimetric indicator tubes (detector tubes) consist of a glass tube impregnated with an indicating chemical.
- Tube is connected to a piston or bellow pump to draw a known volume of air through the tube.
- Contaminant reacts with the indicator chemical in the tube, producing a change in color whose length is proportional to the contaminant concentration; glass tube has degradations in ppm to match the length of stain.
- Preconditioning filter may precede the detector tube to remove interfering contaminants

(i.e., vinyl chloride).

8.2.4.2 Calibration Methods/Frequencies

There is no method or procedure for calibrating any colorimetric detector tube. However, it is important to read the instructions provided with a specific detector tube to determine number of pump strokes, interfering chemicals, proper color change, and shelf life. It is important that the number of strokes is not exceeded on the first measurement, as this may overload the tube and overshoot the standard range of measurement.

The sampling pump can be checked, but not calibrated using the bubble tube. All bellow pumps draw in a specific amount of air during each stroke. This amount should correspond to a specific amount on the bubble tube (i.e., if one stroke equals 100 cc, then the bubble should move 100 cc in the bubble tube). Also, a leak check can be conducted by activating a pump stroke, then inserting an unopened colorimetric tube in the pump inlet. The pump should not move, if it does, this indicates a leak. If the pump fails either the leak test or the volume test, return it back to the manufacturer for repair.

8.2.4.3 Preventative Maintenance

Generally speaking, the reagent of the colorimetric tubes cannot be stored for unlimited periods. The shelf life of the Drager tubes are, therefore, limited to two years (for storage at room temperature).

8.3 AIR MONITORING RECORDKEEPING

The SSO will ensure that all air monitoring data is logged. Data will include instrument used, wind direction, work process, etc. The Shaw Environmental, Inc. Project CIH may periodically review this data.

8.4 CALIBRATION REQUIREMENTS

The PID, LEL/O₂ meter, and particulate meters will be calibrated daily before and after use. A log will be kept detailing date, time, span gas or other standard, and name of person performing the calibration.

8.5 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings.

9.0 EMERGENCY RESPONSE

9.1 PRE-EMERGENCY PLANNING

Prior to engaging in remediation activities at the site, Shaw Environmental, Inc. will plan for possible emergency situations and have available adequate supplies and manpower to respond. In addition, site personnel will receive training during the site orientation concerning proper emergency response procedures.

Table 9-1 lists situations that would warrant implementation of the Emergency Response and Contingency Plan (ERCP):

Table 9-1 ERCP Situations	
Medical Emergency	<ul style="list-style-type: none">• Overexposure to hazardous materials.• Trauma injuries (broken bones, severe lacerations/bleeding, burns).• Eye/skin contact with hazardous materials.• Loss of consciousness.• Heat stress (heat stroke).• Heart attack.• Respiratory failure.• Allergic reaction.
Fire/Explosion	<ul style="list-style-type: none">• The potential for human injury exists.• UXO disturbance.• The use of water and/or chemical fire suppressants could result in contaminated runoff.
Spill or Release of Hazardous Materials	<ul style="list-style-type: none">• The spill could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard.• The spill could cause the release of toxic liquids or fumes in sufficient quantities or in a manner that is hazardous to or could endanger human health.
Natural Disaster	<ul style="list-style-type: none">• A rainstorm exceeds the flash flood level.• The facility is in a projected tornado path or a tornado has damaged facility property.• Severe wind gusts are forecasted or have occurred and have caused damage to the facility.

The following measures will be taken to assure the availability of adequate equipment and manpower resources:

- Sufficient equipment and materials will be kept on site and dedicated for emergencies only. The inventory will be replenished after each use.
- On-site emergency responders will be current in regards to training and medical surveillance programs. Copies of all applicable certificates will be kept on file for on-site personnel required to respond.
- It will be the responsibility of the Emergency Coordinator to brief the on-site response team on anticipated hazards at the site. The Emergency Coordinator shall also be responsible for anticipating and requesting equipment that will be needed for response activities.

EMERGENCY RESPONSE

- Emergency response activities will be coordinated with the Local Emergency Management Agency (EMA). Local Hazardous Materials (HAZMAT) teams, the Fire Protection Division, and the Center for Disease Control.

Communications will be established prior to commencement of any site activities. Communication will be established so that all responders on site have availability to all pertinent information to allow them to conduct their activities in a safe and healthful manner. Prior to mobilization, all transmitting devices will be submitted to the Safety Department for approval. If Safety Department approval is obtained, the primary communication device will be two-way radios; however, if two-way radios are not permitted, hand signals will be used. Air horns may be used to alert personnel of emergency conditions. A telephone will be located at the command post to summon assistance in an emergency.

If permitted by the Safety Department, primary communication with local responders in the event of an emergency will be accomplished using a cellular telephone when commercial telephone lines are not available.

9.2 EMERGENCY RECOGNITION AND PREVENTION

Because unrecognized hazards may result in emergency incidents, it will be the responsibility of the PM and SSO, through daily site inspections and employee feedback (Safety Observation Program, daily safety meetings, and job safety analyses), to recognize and identify all hazards that are found at the site. These may include the items shown in Table 9-2A.

Chemical Hazards	<ul style="list-style-type: none">• Materials at the site• Materials brought to the site
Physical Hazards	<ul style="list-style-type: none">• Fire/explosion• Slip/trip/fall• Electrocution• Confined space• Immediately dangerous to life and health atmospheres• Excessive noise
Mechanical Hazards	<ul style="list-style-type: none">• Heavy equipment• Stored energy system• Pinch points• Electrical equipment• Vehicle traffic
Environmental Hazards	<ul style="list-style-type: none">• Electrical storms• High winds• Heavy rain/snow• Temperature extremes (heat/cold stress)

Once a hazard has been recognized, the SS and the SSO will take immediate action to prevent the hazard from becoming an emergency. This may be accomplished by the following:

- Daily safety meetings
- Task-specific training prior to commencement of activity

EMERGENCY RESPONSE

- PPE selection/use
- Written and approved permits for hot work and confined space
- Following all Shaw Environmental, Inc. Standard Operating Procedures (SOP)
- Practice drills for fire, medical emergency, and hazardous-substances spills.

Table 9-2B Emergency Telephone Numbers	
Local Agencies -	
Base Fire Protection Division	(301) 744-4333
Ambulance	(301) 744-4333
Fire	(301) 744-4333
Security	(301) 744-4333
Hospital - Southern Maryland Hospital	
7503 Surrats Road Clinton, MD 20735	(301) 868-8000
See Attachment H for directions to the hospital.	
Regional Poison Control Center	(800) 282-5846
Federal Agencies	
Center for Disease Control	(404) 639-3311
Department of the Navy, Atlantic Division (LANTDIV)	
ROICC - Lt. Russ Hime/ Cathy Gardner	(301) 744-4122
RPM - Jeff Morris	(202) 685-3270
Activity Point of Contact - Shawn Jorgensen	(301) 744-6745
Shaw Environmental, Inc. Personnel	
Project manager - Daniel Pringle	(412) 380-6248
Site Superintendent - Steve Carriere	(240) 882-1480 (cellular)
Site Safety Officer - TBD	()
UXO Specialist - TBD	()
Program CIH - Paul Lawless	(609) 588-6391 (office)
Program Health and Safety Manager - Robert Brooks	(732) 469-5599 (office)
Vice President, Health and Safety Program - Warren Houseman, CIH	(412) 858-3917 (office)
Shaw Environmental, Inc. (24 hour)	(800) 537-9540

9.3 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS

This section of the ERCP describes the various roles, responsibilities, and communication procedures that will be followed by personnel involved in emergency responses.

9.3.1 Emergency Coordinator

The primary Emergency Coordinator for this site is the PM. In the event an emergency occurs and the Emergency Coordinator is not on site, the SS or the highest-ranking employee on site will serve as the Emergency Coordinator until he arrives. The Emergency Coordinator will determine the nature of the emergency and take appropriate action as defined by this ERCP.

The Emergency Coordinator will implement the ERCP immediately as required. The decision to implement the plan will depend upon whether the actual incident threatens human health or the environment. Immediately after being notified of an emergency incident, the Emergency Coordinator or his designee will evaluate the situation to determine the appropriate action.

EMERGENCY RESPONSE

It is recognized that the structure of the "Incident Command System" will change as additional response organizations are added. Shaw Environmental, Inc. will follow procedures as directed by the Fire Protection Division, Local Emergency Planning Commission, State and Federal Agencies as required. Shaw Environmental, Inc. will defer to the established Incident Commander (Coast Guard, Fire Protection Division, etc.) upon arriving on site. Additional on-site personnel may be added to the Site Emergency Response Team as required to respond effectively.

9.3.2 On-Site Emergency Coordinator Duties

The on-site Emergency Coordinator is responsible for implementing and directing the emergency procedures. All emergency personnel and their communications will be coordinated through the Emergency Coordinator. Specific duties are as follows:

- Identify the source and character of the incident, type and quantity of any release. Assess possible hazards to human health or the environment that may result directly from the problem or its control.
- Discontinue operations in the vicinity of the incident if necessary to ensure that fires, explosions, or spills do not recur or spread to other parts of the site.
- Notify Fire Protection Division at (301)744-4333 if their help is necessary to control the incident. Table 9-2B provides telephone numbers for emergency assistance.
- Direct on-site personnel to control the incident until, if necessary, outside help arrives.
- Ensure that the building or area where the incident occurred and the surrounding area are evacuated and shut off possible ignition sources, if appropriate.
- If fire or explosion is involved, notify facility Fire Protection Division.
- Notify Shaw Environmental, Inc. PM.
- Notify ROICC.
- Have protected personnel, in appropriate PPE, on standby for rescue, if appropriate.

The Fire Protection Division will determine if the incident may threaten human health or the environment outside of the site and whether evacuation of area outside of the site may be necessary. The Fire Protection Division will make all notifications, as appropriate to initiate an evacuation of the surrounding area.

If hazardous waste has been released or produced through control of the incident, ensure that:

- Waste is collected and contained.
- Containers of waste are removed or isolated from the immediate site of the emergency.
- Treatment or storage of the recovered waste or any other material that results from the incident or its control is provided.
- Ensure that no waste that is incompatible with released material is treated or stored in the facility until cleanup procedures are completed.
- Ensure that all emergency equipment used is decontaminated, recharged, and fit for its intended use before operations are resumed.

9.4 SAFE DISTANCES AND PLACES OF REFUGE

No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies that could occur. Safe distances can only be determined at the time of an emergency based on a combination of site- and incident-specific criteria.

EMERGENCY RESPONSE

Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incidents:

- Chemical release
- Fire/explosion
- Power loss
- Medical emergency
- Hazardous weather.

In general, evacuation will be made to the Shaw Environmental, Inc. office trailer, unless the Emergency Coordinator determines otherwise. It is the responsibility of the Emergency Coordinator to determine when it is necessary to evacuate personnel to off-site locations.

In the event of an emergency evacuation, all the employees will gather at the Shaw Environmental, Inc. office trailer until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the Emergency Coordinator.

9.5 EVACUATION ROUTES AND PROCEDURES

All emergencies require prompt and deliberate action. In the event of an emergency, it will be necessary to follow an established set of procedures. Upon entry into the facility, the response team will ask the ROICC about the facility's emergency alarms and evacuation procedures. Such established procedures will be followed as closely as possible. However, in specific emergency situations, the Emergency Coordinator may deviate from the procedures to provide a more effective plan for bringing the situation under control. The Emergency Coordinator is responsible for determining which situations require site evacuation.

Evacuation Procedures. In the event evacuation is necessary, the following actions will be taken:

- The emergency signal will be activated.
- The crew will decontaminate, if possible, and leave the area as a team.
- The team will coordinate with the ROICC prior to re-entry into the facility.
- Re-entry into the site will be made only after the ROICC gives clearance. At his direction, a signal or other notification will be given for re-entry into the facility.

9.6 EMERGENCY SPILL RESPONSE PROCEDURES AND EQUIPMENT

In the event of an emergency involving a hazardous material spill or release, the following general procedures will be used for rapid and safe response and control of the situation. Emergency contacts found in Table 9-2B provide a quick reference guide to follow in the event of a major spill.

9.6.1 Notification Procedures

If a team member discovers a chemical spill, he or she will immediately cordon off the area until a plan of action can be determined. Contact the PM, HSM, and ROICC.

EMERGENCY RESPONSE

The team will obtain information pertaining to the following and report the spill to the Fire Protection Division at (301)744-4333:

- The material spilled or released.
- Location of the release or spillage of hazardous material.
- An estimate of quantity released and the rate at which it is being released.
- The direction in which the spill/release is heading.
- Any injuries involved.

This information will help the response team and other personnel to assess the magnitude and potential seriousness of the spill or release.

9.6.2 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and possibly evacuated from the area. The on-site Emergency Coordinator will inform the Fire Protection Division. The Fire Protection Division will make further notifications, as required.

Response personnel will take the following measures:

- Immediately shut down operations and equipment if safe to do so.
- Make sure all unnecessary persons are removed from the hazard area and follow the appropriate decontamination procedures.
- If a flammable material is involved, remove all ignition sources, and use spark and explosion proof equipment for recovery of material.
- Determine the major components in the waste at the time of the spill.
- If wastes reach a storm sewer, try to dam the outfall.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Apply appropriate spill control media (e.g., clay, sand, lime, etc.) to absorb discharged liquids.
- For large spills, establish diking around leading edge of spill using booms, sand, clay, or other appropriate material.

9.6.3 Emergency Response Equipment

The following equipment will be staged in the SZ and throughout the site, as needed, to provide for safety and first aid during emergency responses. (Emergency eyewash equipment meets American National Standards Institute [ANSI] Standard.)

EMERGENCY RESPONSE

- ABC-type fire extinguisher
- First-aid kit, industrial size
- Eyewash/safety shower
- Emergency signal horn.

9.6.4 Emergency Spill Response Cleanup Materials and Equipment

A sufficient supply of appropriate emergency response cleanup and PPE will be inventoried and inspected, visually, on a weekly basis.

In addition to the equipment listed above, Shaw Environmental, Inc. maintains direct reading instrumentation that may be used in emergency situations to assess the degree of environmental hazard. This equipment will only be used by the SSO or other specially trained personnel. This equipment, listed in Table 9-6, will be stored, charged, and ready for immediate use in evaluating hazardous chemical concentrations. The equipment will be located at the Shaw Environmental, Inc. office trailer.

Equipment Name	Application
PID	Measures volatile organic compounds
LEL/O ₂	Measures for potential flammable and oxygen (enriched/deficient) atmospheres

The following equipment will be kept on site and dedicated for spill cleanup:

- Overpack drums.
- 55-gallon open-top drums for containerization of waste materials.
- Sand or clay to solidify/absorb liquid spills.

9.7 EMERGENCY CONTINGENCY PLAN

This section of the ERCP details the contingency measures Shaw Environmental, Inc. will take to prepare for and respond to fires, explosions, spills, and releases of hazardous materials, hazardous weather, and medical emergencies.

9.8 MEDICAL EMERGENCY CONTINGENCY MEASURES

The procedures listed below will be used to respond to medical emergencies. The SSO will contact the local hospital and inform them of the site hazards and potential emergency situations. A minimum of two first-aid/CPR trained personnel will be maintained on site.

9.8.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make radio contact with the on-site Emergency Coordinator to alert him of a medical emergency situation. The supervisor will advise the following information:

EMERGENCY RESPONSE

- Location of the victim at the work site
- Nature of the emergency
- Whether the victim is conscious
- Specific conditions contributing to the emergency, if known.

The Emergency Coordinator will notify the SSO. The following actions will then be taken depending on the severity of the incident:

- ***Life-Threatening Incident*** - If an apparent life-threatening condition exists, the crew supervisor will inform the Emergency Coordinator by radio, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him/her quickly taken to the victim. Any injury within the work area will be evacuated by Shaw Environmental, Inc. personnel to a clean area for treatment by EMS personnel. No one will be able to enter the work area without showing proof of training, medical surveillance, and site orientation.
- ***Non-Life-Threatening Incident*** - If it is determined that no threat to life is present, the SS will direct the injured person through decontamination procedures (see below) appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the scene has been cleared by the SS.

Any personnel requiring emergency medical attention will be evacuated from work areas if doing so would not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.

If decontamination cannot be performed, observe the following procedures:

- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination, instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident and chemical safety information, e.g., MSDS, with the affected person.

All injuries, no matter how small, will be reported to the PM and SSO. An accident/injury/illness report will be completely and properly filled out and submitted to the responsible HSM or CIH, in accordance with Shaw Environmental, Inc. Procedure HS020.

A list of emergency telephone numbers is given in Table 9-2B.

9.8.2 Notification

The following personnel/agencies will be notified in the event of a medical emergency:

- Fire Protection Division or EMS
- On-site Emergency Coordinator
- Workers in the affected areas
- PM
- ROICC.

9.9 FIRE CONTINGENCY MEASURES

Shaw Environmental, Inc. personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt that a fire can be quickly contained and extinguished, personnel will notify the Emergency Coordinator by radio and vacate the structure or area. The Emergency Coordinator will immediately notify the Fire Protection Division.

The following procedures will be used to prevent the possibility of fires and resulting injuries:

- Sources of ignition will be kept away from where flammable materials are handled or stored.
- “No smoking” signs will be conspicuously posted in areas where flammable materials are present.
- Fire extinguishers will be placed in all areas where a fire hazard may exist.
- Before workers begin operations in an area, the foreman will give instruction on egress procedures and assembly points. Egress routes will be posted in work areas and exit points clearly marked.

The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify his or her supervisor who will then contact the Emergency Coordinator by radio. The Emergency Coordinator will activate the emergency air horns and contact the Fire Protection Division.
- When the emergency siren sounds, workers will disconnect electrical equipment in use (if possible) and proceed to the nearest fire exit.
- Work crews will be comprised of pairs of workers (buddy system) who join each other immediately after hearing the fire alarm and remain together throughout the emergency. Workers will assemble at a predetermined rally point for a head count.
- When a worker has extinguished a small fire, the emergency coordinator will be notified.

9.10 HAZARDOUS WEATHER CONTINGENCY MEASURES

Operations will not be started or continued when the following hazardous weather conditions are present:

- Lightning
- Heavy rains
- High winds.

9.10.1 Response

EMERGENCY RESPONSE

- All equipment will be shut down and secured to prevent damage.
- Personnel will be moved to safe refuge, initially crew trailers. The Emergency Coordinator will determine when it is necessary to evacuate personnel to off-site locations and will coordinate efforts with fire, police, and other agencies.

9.10.2 Notification

The Emergency Coordinator will be responsible for assessing hazardous weather conditions and notifying personnel of specific contingency measures. Notifications will include:

- Shaw Environmental, Inc. employees and subcontractors
- PM
- ROICC
- Local EMS

9.11 SPILL/RELEASE CONTINGENCY MEASURES

In the event of release or spill of a hazardous material the following measures will be taken.

Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First-aid and/or decontamination procedures will be implemented as appropriate.

First aid will be administered to injured/contaminated personnel. Unsuspecting persons/vehicles will be warned of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons. If possible without taking unnecessary risks, personnel will attempt to stop the spill at the source.

Utilizing radio communications if permitted, the Emergency Coordinator will be notified of the spill/release, including information on material spilled, quantity, personnel injuries, and immediate life threatening hazards. Notification procedures will be followed to inform on-site personnel and off-site agencies. The Emergency Coordinator will make a rapid assessment of the spill/release and direct confinement, containment, and control measures. Depending upon the nature of the spill, measures may include:

- Construction of a temporary containment berm utilizing on-site clay absorbent earth.
- Digging a sump, installing a polyethylene liner, and diverting the spill material into the sump, placing drums under the leak to collect the spilling material before it flows over the ground.
- Transferring the material from its original container to another container.

The Emergency Coordinator will notify the ROICC of the spill and steps taken to institute cleanup. Emergency response personnel will clean up all spills following the spill cleanup plan developed by the Emergency Coordinator. Supplies necessary to clean up a spill will be immediately available on-site.

The major supply of material and equipment will be located in the SZ. Smaller supplies will be kept at active work locations. The Emergency Coordinator will inspect the spill site to determine that the spill has been cleaned up to the satisfaction of the ROICC. The Emergency Coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The Emergency

EMERGENCY RESPONSE

Coordinator will review the cause with the ROICC and obtain his concurrence with the remedial action plan.

10.0 TRAINING REQUIREMENTS

As a requirement for work at this site, in any hazardous waste work area, all field personnel will be required to take a 40-hour training class. This training must cover the requirements in 29 CFR 1910.120: PPE, toxicological effects of various chemicals, hazard communication, UXO awareness, blood borne pathogens, handling of unknown tanks and drums, confined-space entry procedures, electrical safety, etc. In addition, all personnel must receive annual 8-hour refresher training and 3-day on-site training under a trained, experienced supervisor. Supervisory personnel shall have received an additional 8-hour training in handling hazardous waste operations.

All personnel entering Site 12 will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment in Attachment A.

Site-specific training for activities at the site will include potential site contaminants, Hazard Communication as per 29 CFR 1910.1200, site physical and environmental hazards, emergency response and evacuation procedures, and emergency telephone numbers will be held by the SS before any site work activities begin.

An outline of the orientation for Shaw Environmental, Inc./subcontractor personnel and visitors are presented in Table 10-1.

Table 10-1 Site Orientation	
Shaw Environmental, Inc./Subcontractors	Visitor Orientation
<ul style="list-style-type: none"> • SSHASP sign off • Sign in/out procedures • Site background • Rules and regulations • Equipment • Emergency information • Emergency signal • Gathering point • Responsibilities/roles • Emergency phone numbers • Work zones • Contaminants and MSDSs [Hazard Communication Program] • AHAs • Forms, site-specific • Incident reporting 	<ul style="list-style-type: none"> • Sign in/out procedures • Work zones in progress • Hazard communication • Emergency plan/signals • Training/medical requirements • Zones/areas open to visitors

11.0 MEDICAL SURVEILLANCE PROGRAM

All Shaw Environmental, Inc. personnel participate in a medical and health-monitoring program. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. A listing of Shaw Environmental, Inc.'s worker medical profile is shown below. This program was developed in conjunction with a consultant toxicologist and Shaw Environmental, Inc.'s occupational health physician. Other medical consultants are retained when additional expertise is required.

The medical surveillance program meets the requirements of OSHA 29 CFR 1910.120/1926.65(f).

No specific tests are expected for this project.

The following information is provided in the event that medical attention is necessary.

The Shaw Environmental, Inc. Medical Director is:

Dr. Jerry H. Berke, MD, MPH
Health Resources
600 West Cumming Park, Suite 3400
Woburn, MA 01801-6350
800-350-4511 (office)
(781) 935-8581 (direct dial)

In the event of a general first-aid injury (non-life threatening):

Concentra Medical Center
1833 Portal Street
Baltimore, MD 21224
(410) 633-3600
Open M-F, 7:30 am - 5:00 pm

The Shaw Environmental, Inc. Medical Director and the HSM will be immediately notified of any suspected exposures to hazardous materials/wastes.

ATTACHMENT A
SAFETY PLAN ACKNOWLEDGEMENT

ATTACHMENT B
ACTIVITY HAZARD ANALYSES

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment/ Facility Setup	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways work areas of equipment, tools, vegetation, and debris • Exit equipment slowly and maintain three point contact • Mark, identify, or barricade other obstructions 		
	Spills	<ul style="list-style-type: none"> • Clean up spills before initiating maintenance • Review maintenance procedures for safety practices 		
	Struck By/Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into bucket • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds 	Warning vests, hard hat, safety glasses, steel toe work boots	
	Pinch Points	<ul style="list-style-type: none"> • Review equipment adjustment procedures, identify pinch points • Isolate/block pinch points to limit motion when inserting pins, fasteners, closing tackles 	Leather gloves	
	Equipment failure	<ul style="list-style-type: none"> • Perform daily maintenance inspections on operating equipment 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment/ Facility Setup (Cont.)	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition 	Leather gloves	
	Ladders	<ul style="list-style-type: none"> Inspect ladders before use for mud buildup on treads Clean mud from boots before climbing on ladders Follow the three point of contact rule 		
	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) 	Ear plugs	
	Burns Associated with Loading/ Unloading Equipment on Trucks	<ul style="list-style-type: none"> Identify heavy objects for loading that may have hot surfaces Allow objects to cool or cover hot surfaces with non-combustible material to protect workers from burns 		
	Walking on Machine Tracks	<ul style="list-style-type: none"> Avoid walking on machine tracks whenever possible; clean tracks for safe walking/working surfaces Observe track surfaces when walking, move cautiously on uneven, slippery surfaces Avoid sudden awkward motions (pulling/jerking fuel hoses) 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Provide fluids to prevent worker dehydration Monitor for Heat/Cold Stress in accordance with Health and Safety Procedures HS400 & HS401 	Insulated clothing (subject to ambient temperature)	Meteorological Equipment
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> Forklifts/hand carts Ladders Hand Tools 		<ul style="list-style-type: none"> Daily equipment inspections as per manufacturers' requirements Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review SSHASP Review operations/safety manuals for all equipment utilized 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR SITE SURVEY ACTIVITIES				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Survey of Site (Cont.)	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use • Close doors, windows on heavy equipment to prevent injuries from tree branches and other vegetation 	Leather gloves	
	Insect/Animal Bites	<ul style="list-style-type: none"> • Review injury potential with workers • Avoid insect nests areas, habitats outside work areas • Emphasize The Buddy System where such injury potential exists • Use insect repellent to protect against sting injuries • Wear PPE and tape joints to keep insects away from the skin • Use protective insect repellents containing DEET to prevent insect bites • Check limbs/body for insects/insect bites during decontamination and/or shower 	Tyvek coveralls, duct tape bottom of coveralls to boots or latex boot covers when there is a potential for insect/animal bite	
	Contact Dermatitis/Poison Ivy	<ul style="list-style-type: none"> • Wear long sleeve shirts/trousers to avoid skin contact with plants, or other skin irritants • Identify and review poisonous plants with workers • Avoid unnecessary clearing of plant/vegetation areas • Cover vegetation with plastic (visqueen) where survey position raises exposure potential • Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions • Identify workers who are known to contract poison ivy 	Tyvek coveralls, duct tape bottom of coveralls to boots or latex boot covers when there is a potential for contact dermatitis/poison ivy	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR INSTALLATION OF EROSION CONTROLS				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Silt Fence Installation	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Use shears, opposed to knives, to cut the silt fence 	Leather gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, and debris Mark, identify, or barricade other obstructions 		
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Obey sensible lifting limits (60 lb. Maximum per person manual lifting) Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Eye Injuries	<ul style="list-style-type: none"> Wear face shield, goggles when operating powered clearing/grubbing equipment 	Goggles and face shield	
	Overexertion	<ul style="list-style-type: none"> Use the right tool for the task at hand Avoid actions/activities that produce overexertion 		
	Horseplay	<ul style="list-style-type: none"> Prohibit horseplay at all project sites Review rules about horseplay with subcontractors supervisors and workers Remind workers not to respond/participate in horseplay started by others 		
	Allergic Reaction	<ul style="list-style-type: none"> Review allergy hazards with work crew Identify workers with allergies Review work assignments PPE upgrades 	Tyvek coveralls, duct tape bottom of coveralls to boots; latex gloves, if required	
	Insect Stings	<ul style="list-style-type: none"> Avoid hand mowing/clearing in dense brush areas, suspected areas of stinging insects 	Leather gloves	
	UXO	<ul style="list-style-type: none"> UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities If UXO is encountered, cease all activities, mark the location, and notify the SS 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing, Grubbing	Struck By/Against Heavy Equipment	<ul style="list-style-type: none"> Isolate equipment swing areas Make eye contact with operators before approaching equipment Understand and review hand signals 	Hard hat, safety glasses, steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, vegetation, and debris Clean mud and grease from boots before mounting equipment; watch for slippery/unstable ground when dismounting equipment Exit equipment slowly and maintain three point contact 		
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Use dozer or trackhoe to move logs and brush 		
	UXO	<ul style="list-style-type: none"> UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities If UXO is encountered, cease all activities, mark the location, and notify the SS 		
	Eye Injuries	<ul style="list-style-type: none"> Wear face shield, goggles when operating powered clearing/grubbing equipment 	Face shield, goggles	
	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use Close doors, windows on heavy equipment to prevent injuries from tree branches and other vegetation 	Leather gloves	
	Insect/Snake Bites	<ul style="list-style-type: none"> Review injury potential and types of snakes with workers Avoid insect nests areas, likely habitats of snakes outside work areas Emphasize The Buddy System where such injury potential exists Use insect repellent, wear PPE to protect against sting/bite injuries 	Tyvek coveralls, duct tape bottom of coveralls to boots	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing, Grubbing (Cont.)	Adverse Weather Conditions: - Lightning - High winds - Driving rain	<ul style="list-style-type: none"> • Monitor weather forecast • Shut down operations should severe weather conditions exist 		
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> • Excavator/trackhoe and/or dozer • Power clearing tools (brush saws, week wackers) 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers' requirements • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review any potential site contaminants • Review operations/safety manuals for all equipment utilized • Review potential hazardous plants and insects/animals 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR DEWATERING ACTIVITIES				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Dewatering Activities (Beaver Dam Removal and Weir Operations) (Cont.)	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) 	Ear plugs	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat/Cold Stress in accordance with Health and Safety Procedures HS400 & HS401 Provide fluids to prevent worker dehydration 	Insulated clothing (subject to ambient temperature)	Meteorological Equipment
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> Loader or other heavy equipment to remove beaver dam 		<ul style="list-style-type: none"> Daily equipment inspections as per manufacturers' requirements Inspect all safety equipment (fire extinguishers, first aid kits and eye washes) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review SSHASP Review potential hazardous plants and insects/animals 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil (Cont.)	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, vegetation, tools, and debris • Mark, identify, or barricade other obstructions • Exit equipment slowly and maintain three point contact • Clean boot soles before climbing on equipment • Watch footing on the side of the embankment • Exit equipment slowly and maintain three point contact 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Avoid carrying heavy objects above shoulder level • Warm up muscles before engaging in manual lifting 	Warning vests, hard hat, safety glasses, steel toe work boots	
	UXO	<ul style="list-style-type: none"> • UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities • If UXO is encountered, cease all activities, mark the location, and notify the SS 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Provide fluids to prevent worker dehydration • Monitor for Heat/Cold Stress in accordance with Health and Safety Procedures HS400 & HS401 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment
	Struck/Struck By	<ul style="list-style-type: none"> • Use the right tool for the task at hand • Maintain personal balance when performing manual excavation • Concentrate on the work task being performed 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR LANDFILL REGRADING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Landfill Regrading	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear hard hats, safety glasses with side shields, or goggles with splash shields and steel-toe safety boots • Apply water spray to road surfaces to minimize/eliminate fugitive dust 	Tyvek coveralls, latex or rubber overboots, inner cotton glove liners (based on weather) or inner sample gloves and outer nitrile gloves	PID, LEL/O ₂ , and vinyl chloride detector tubes, as necessary
	Struck By/Against Heavy Equipment,	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds • Park equipment in areas where operator can see clearly to dismount equipment 		
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) 	Ear plugs	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways of equipment, vegetation, tools, and debris • Mark, identify, or barricade other obstructions • Exit equipment slowly and maintain three point contact • Clean boot soles before climbing on equipment • Watch footing on the side of the embankment • Exit equipment slowly and maintain three point contact 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR DRAINAGE CHANNEL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Installation of Drainage Channel	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of vegetation, equipment, tools, debris, excavated material • Mark, identify, or barricade other obstructions • Wear rubber boots in areas of standing water, mud, marsh • Use three point contact when ascending/ descending heavy equipment • Park heavy equipment on level ground to avoid potential sprains/strains when ascending/ descending 		
	Struck By/Against Heavy Equipment, Flying Debris, Protruding Objects	<ul style="list-style-type: none"> • Use reflective warning vests, caution flags when exposed to vehicular traffic • Place barricades to isolate equipment swing areas • Isolate areas under suspended loads • Make eye contact with operators before approaching equipment • Barricade or enclose the work area • Restrict entry to the work area to authorized personnel during work activities • Wear hard hats, safety glasses with side shields, face shields and goggles and steel-toe safety boots at all times • Understand and review hand signals 	Hard hat, goggles and face shield or safety glasses, steel toe work boots	
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR SOIL COVER SYSTEM INSTALLATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Cover Installation	Inhalation and Contact with Hazardous Substances (first layer only)	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear hard hats, safety glasses with side shields, or goggles with splash shields and steel-toe safety boots • Apply water spray to road surfaces to minimize/eliminate fugitive dust 	Tyvek coveralls, latex or rubber overboots, inner cotton glove liners (based on weather) or inner sample gloves and outer nitrile gloves	PID, LEL/O ₂ , and vinyl chloride detector tubes, as necessary
	Struck By/Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds • Park equipment in areas where operator can see clearly to dismount equipment 		
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) 	Ear plugs	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways of equipment, vegetation, tools, and debris • Mark, identify, or barricade other obstructions • Exit equipment slowly and maintain three point contact • Clean boot soles before climbing on equipment • Watch footing on the side of the embankment • Exit equipment slowly and maintain three point contact 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR ATKINS ROAD EXTENSION MODIFICATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Atkins Road Extension Modification	Struck By/Against Heavy Equipment, Protruding Objects	<ul style="list-style-type: none"> Wear reflective warning vests when exposed to vehicular traffic Isolate equipment swing areas Make eye contact with operators before approaching equipment Understand and review hand signals Step away from equipment when bucket adjustments are made Do not attempt verbal communication in high noise backgrounds Park equipment in areas where operator can see clearly to dismount equipment 	Hard hat, goggles and face shield or safety glasses, steel toe work boots	
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Obey sensible lifting limits (60 lb. Maximum per person manual lifting) Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, debris, and other materials Mark, identify, or barricade other obstructions Use three point contact when ascending/descending heavy equipment Park heavy equipment on level ground to avoid potential sprains/strains when ascending/descending 		
	Inhalation and Contact with Dusts	<ul style="list-style-type: none"> Apply water spray to road surfaces to minimize/eliminate fugitive dust 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat/Cold Stress in accordance with Health and Safety Procedures HS400 & HS401 Provide fluids to prevent worker dehydration 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> Dozer PID, LEL/O₂ and vinyl chloride detector tubes, as necessary 		<ul style="list-style-type: none"> Daily equipment inspections as per manufacturers' requirements Excavation inspection/permit Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review SSHASP Review operations/safety manuals for all equipment utilized 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR WELL ABANDONMENT				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Well Abandonment (Cont.)	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, drilling overburden, debris and other materials • Mark, identify, or barricade other obstructions 		
	Inhalation and Contact with Grout	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin 	Nitrile gloves, goggles, face shield	
	Insect Stings	<ul style="list-style-type: none"> • Avoid hand mowing/clearing in dense brush areas, suspected areas of stinging insects 	Leather gloves	
	Contact with Poison Ivy	<ul style="list-style-type: none"> • Identify workers who are known to contract poison ivy • Wear PPE and tape joints to keep poison ivy irritants/plant matter away from skin • Use protective creams and wash with poison ivy preventing soaps when working in suspected exposure area 	Long sleeve shirts, Tyvek coveralls, leather gloves	
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> • Grout mixer • Grout • Hand tools 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers' requirements • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review SSHASP • Review MSDS for grout 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR WELL INSTALLATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Well Installation (Cont.)	Overhead Utilities	<ul style="list-style-type: none"> • Maintain at least 10 feet from overhead power lines, up to 50 kV • For voltages over 50 kV, add 0.4 inches per kV to obtain the safety distance between equipment and power lines • If voltage is unknown, remain at least 20 feet from overhead power lines • Do not drive the drill rig from hole to hole with the mast in the raised position; before raising the mast, check for overhead obstructions 		
	Underground Utilities	<ul style="list-style-type: none"> • Identify all underground and overhead utilities around the excavation site before work commences • Cease work immediately if unknown utility markers are uncovered 		
	Caught In/Between	<ul style="list-style-type: none"> • Driller and helper must be present during all active operations • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries • Driller helper and other site personnel must know location of emergency shut-off switch and test before each startup • Ensure jewelry is removed, loose clothing is buttoned and loose PPE is secured close to the body to avoid getting caught in moving parts • Area of drilling operation must be cordoned off/ barricaded • Assure guards are in place to protect from these parts of equipment during operation • Provide and use proper work gloves when the possibility of pinching or other injury may be caused by moving/handling large or heavy objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lockout machinery before maintenance or service 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR WELL INSTALLATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
	Unstable Placement; Failure of Stabilizing Plates, Jacks, or Outriggers; Rollover of Drill Rig	<ul style="list-style-type: none"> Choose level ground; use adequate blocking materials; engage emergency brake; when on wet or loose soil, consider guy wires to be attached to derrick for additional stability for rig 		
Well Installation (Cont.)	Adverse Weather Conditions: <ul style="list-style-type: none"> - Lightning - High winds - Driving rain 	<ul style="list-style-type: none"> Monitor weather forecast Shut down operations should severe weather conditions exist 		
	Drum Handling	<ul style="list-style-type: none"> Drums will be safely transported on site using conventional drum handling techniques including a bobcat, dump truck, or front-end loader Extreme care will be taken during drum handling operations to prevent release and to ensure safe working conditions. Once at the staging cell, drums will be placed on wooden pallets to facilitate drum movement and to protect the liner of the staging cell. All drums will be staged and labeled in accordance with the RCRA drum storage regulations Ensure that body, material, tools and equipment are safe from such unexpected movement as falling, slipping, rolling, tripping, blowing, or any other uncontrolled motion Trucks (i.e., flat beds) hauling equipment or materials must not be moved once rigging has been released Chock all material and equipment (such as pipe, drums, tanks, reels, trailers, and wagons) as necessary to prevent rolling 	Leather gloves and chemical protection as required by SSHASP	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment Decontamination	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, vegetation, tools and debris • Mark, identify, or barricade other obstructions • Clean heavy objects of oil/grease or other slippery contamination before attempting to lift/remove • Wear gloves with grip improving surfaces for handling large, slippery objects • Clean up spills or water accumulation in walkways 		
	Struck By/Against Heavy Equipment, Protruding Objects	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds 	Warning vests, hard hat, safety glasses, goggles and face shield, steel toe work boots	
	Inhalation and Contact with Hazardous Substances and Splashes	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Wear hard hats, safety glasses with side shields, or goggles with splash shields and steel-toe safety boots 	PVC rain suit or poly-coated Tyvek coveralls, inner sample gloves, outer nitrile gloves, latex boot covers, full face shield and goggles	
	Burns	<ul style="list-style-type: none"> • Wear proper gloves, face shield/safety goggles, shin and toe guards, and splash suits to protect workers from skin burns and injury when operating laser (high pressure washers) • Tape gloves to PPE sleeves to lessen the possibility of hot water entering gloves • Use hand tools to loosen connections and position body to avoid pressure discharge • Wear shin and toe guards to protect from burns, lacerations and similar injuries 	Goggles and face shield, shin and toe guards	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment Decontamination (Cont.)	Strains and Sprains	<ul style="list-style-type: none"> • Maintain a safe stance and body position operating pressurized equipment • Avoid rushing 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat Stress in accordance with Health and Safety Procedure HS400 • Provide fluids to prevent worker dehydration 		Meteorological Equipment
Equipment Required		Inspection Requirements	Training Requirements	
<ul style="list-style-type: none"> • Pressure washer 		<ul style="list-style-type: none"> • Equipment inspections • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review SSHASP • Review site-specific AHA with all task personnel • Review operation manuals for the pumps and related equipment 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR STABILIZED CONSTRUCTION ENTRANCES				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Stabilized Construction Entrances	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Obey posted speed limits • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Exit equipment slowly and maintain three point contact • Report minor incidents to site supervision • Park equipment in areas where operator can see clearly to dismount equipment • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into loader bucket. 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
Stabilized Construction Entrances (continued)	Walking on machine tracks	<ul style="list-style-type: none"> • Avoid walking on machine tracks whenever possible; clean tracks for safe walking/working surfaces • Observe track surfaces when walking, move cautiously on uneven, slippery surfaces • Avoid sudden awkward motions (pulling/jerking fuel hoses) 		
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR STABILIZED CONSTRUCTION ENTRANCES				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Stabilized Construction Entrances (continued)	Adverse weather conditions	<ul style="list-style-type: none"> • Monitor weather forecast • Shut down operations should severe weather conditions exist 		
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Loader • Geotextile • Aggregate 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Site Specific Health and Safety Plan 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR INSTALLATION OF EROSION CONTROL MATTING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
	Contact with Poison Ivy	<ul style="list-style-type: none"> Identify workers who are known to contract poison ivy Wear PPE and tape joints to keep poison ivy irritants/ plant matter away from skin Use protective creams and wash with poison ivy preventing soaps when working in suspected exposure area 	Long sleeve shirts, Tyvek coveralls, Leather gloves	
Installation of Erosion Control Matting (continued)	High Ambient Temperature	<ul style="list-style-type: none"> Monitor for heat stress in accordance with Health and Safety Procedure # HS400 Provide fluids to prevent worker dehydration 		Meteorological Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> Matting 		<ul style="list-style-type: none"> Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review Site Specific Health and Safety Plan 	

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR MATERIAL HANDLING PAD CONSTRUCTION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Material Handling Pad Construction	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Obey posted speed limits • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals • Exit equipment slowly and maintain three point contact • Report minor incidents to site supervision • Park equipment in areas where operator can see clearly to dismount equipment • Step away from equipment when bucket adjustments are made • Do not attempt verbal communication in high noise backgrounds • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into loader bucket. 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
Material Handling Pad Construction (continued)	Walking on machine tracks	<ul style="list-style-type: none"> • Avoid walking on machine tracks whenever possible; clean tracks for safe walking/working surfaces • Observe track surfaces when walking, move cautiously on uneven, slippery surfaces • Avoid sudden awkward motions (pulling/jerking fuel hoses) 		
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR CONFINED SPACE ENTRY				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Confined Space Entry	Flammable, Toxic, Oxygen deficient Atmospheres	<ul style="list-style-type: none"> • Test vessel atmosphere for flammable/toxic vapors, and oxygen deficiency • Obtain Confined Space Entry Permit signed by Supervisor/Safety Officer • De-energize, lock-out and tag all energized equipment • Provide written rescue plan • Review hazardous properties of site contaminants with entrants and safety observer • Review emergency procedures and perform a rescue drill for each new type of confined space. • Provide safety observer outside vessel • Wear proper level of PPE for the type of atmospheric contaminants • Use body harness, safety belt with tripod winch for possible rescue 	Full Body Harness and lanyard.	PID or FID, depending on potential hazards, LEL/O ₂ .
Confined Space Entry (continued)	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Avoid handling debris that is awkward, over long, over weight limit • Get assistance and dry glove surfaces to improve grip 		

**Attachment B
Activity Hazard Analyses**

ACTIVITY HAZARD ANALYSIS FOR CONFINED SPACE ENTRY				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Confined Space Entry (continued)	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Caught In/ Between Moving Parts	<ul style="list-style-type: none"> • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar motions • Assure guards are in place to protect from these parts of equipment during operation • Provide and use proper work gloves when the possibility of pinching, or other injury may be caused by moving/ handling large or heavy objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance or service 	Leather gloves	
Confined Space Entry (continued)	Repetitive Strain	<ul style="list-style-type: none"> • Rotate job tasks on high vibration equipment • Report equipment that produces high vibration for inspection and maintenance 		
	Strains and Sprains	<ul style="list-style-type: none"> • Maintain a safe stance and body position operating power saws • Avoid rushing, placing torque on objects being sawed • Avoid lifting long awkward objects, large distances between worker and power saws • Prohibit breaking of pipe pieces or objects that require extreme exertion 		

ATTACHMENT C
ACCIDENT PREVENTION PLAN

**ACCIDENT PREVENTION PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

Prepared by:

Shaw Environmental, Inc.
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:

Daniel W. Pringle
Daniel W. Pringle
Project Manager

Warren Homenon, CIH
for Robert Brooks, CSP
Program Health and Safety Manager

Project No. 809401

June 19, 2002

TABLE OF CONTENTS

LIST OF ACRONYMS.....	iii
1.0 SIGNATURE SHEET.....	1-1
2.0 BACKGROUND INFORMATION.....	2-1
2.1 SHAW ENVIRONMENTAL, INC.....	2-1
2.2 SHAW ENVIRONMENTAL, INC ACCIDENT EXPERIENCE.....	2-1
2.3 HAZARDOUS ACTIVITIES REQUIRING ACTIVITY HAZARD ANALYSIS.....	2-1
3.0 STATEMENT OF SAFETY AND HEALTH POLICY.....	3-1
3.1 CORPORATE POLICY STATEMENT.....	3-1
4.0 RESPONSIBILITIES AND LINES OF AUTHORITIES.....	4-1
5.0 SUBCONTRACTORS AND SUPPLIERS.....	5-1
5.1 SUBCONTRACTOR/SUPPLIER COORDINATION AND CONTROL.....	5-1
5.2 SUBCONTRACTOR/SUPPLIER SAFETY RESPONSIBILITIES.....	5-1
6.0 TRAINING.....	6-1
6.1 SAFETY INDOCTRINATION SUBJECTS.....	6-1
6.2 MANDATORY TRAINING AND CERTIFICATIONS.....	6-1
6.3 EMERGENCY RESPONSE TRAINING.....	6-1
6.4 SUPERVISORY AND EMPLOYEE SAFETY MEETINGS.....	6-1
7.0 SAFETY AND HEALTH INSPECTIONS.....	7-1
7.1 SAFETY INSPECTIONS.....	7-1
7.2 EXTERNAL INSPECTIONS/CERTIFICATIONS.....	7-1
8.0 SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE.....	8-1
8.1 COMPANY SAFETY PROGRAM GOALS.....	8-1
8.2 SHAW ENVIRONMENTAL, INC SAFETY INCENTIVE PROGRAMS.....	8-1
8.3 SHAW ENVIRONMENTAL, INC EMPLOYEE SAFETY RESPONSIBILITY REQUIREMENTS.....	8-1
8.4 MANAGERS AND SUPERVISORS SAFETY ACCOUNTABILITY.....	8-1
9.0 ACCIDENT REPORTING.....	9-1
9.1 EXPOSURE DATA (MAN-HOURS WORKED).....	9-1
9.2 ACCIDENT INVESTIGATIONS, REPORTS, AND LOGS.....	9-1
9.3 IMMEDIATE NOTIFICATION OF MAJOR INCIDENTS.....	9-1
9.3.1 Response.....	9-1
10.0 MEDICAL SUPPORT.....	10-1

TABLE OF CONTENTS

11.0	PERSONAL PROTECTIVE EQUIPMENT	11-1
11.1	HAZARD ASSESSMENT PROCEDURES/WRITTEN CERTIFICATIONS FOR PERSONAL PROTECTIVE EQUIPMENT	11-1
12.0	PLANS REQUIRED BY THE SAFETY MANUAL	12-1
12.1	HAZARD COMMUNICATION PROGRAM	12-1
12.2	EMERGENCY RESPONSE PLANS.....	12-1
12.3	LAYOUT PLANS.....	12-1
12.4	RESPIRATORY PROTECTION PLAN.....	12-1
12.5	LEAD ABATEMENT PLAN	12-1
12.6	ASBESTOS ABATEMENT PLAN.....	12-1
12.7	ABRASIVE BLASTING	12-1
12.8	CONFINED SPACE	12-1
12.9	HAZARDOUS ENERGY CONTROL PLAN	12-2
12.10	CRITICAL LIFT PROCEDURES	12-2
12.11	CONTINGENCY PLAN FOR SEVERE WEATHER	12-2
12.12	ACCESS AND HAUL ROAD PLAN.....	12-2
12.13	DEMOLITION PLAN.....	12-2
12.14	EMERGENCY RESCUE (TUNNELING)	12-2
12.15	UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN.....	12-2
12.16	COMPRESSED AIR PLAN.....	12-2
12.17	FORM WORK AND SHORING ERECTION AND REMOVAL PLANS.....	12-2
12.18	LIFT SLAB PLANS.....	12-2
12.19	SITE-SPECIFIC HEALTH AND SAFETY PLAN	12-2
12.20	BLASTING PLAN.....	12-2
12.21	DIVING PLAN	12-3
12.22	ALCOHOL AND DRUG ABUSE PREVENTION PLAN.....	12-3
13.0	CONTRACTOR INFORMATION TO MEET THE REQUIREMENTS OF THE MAJOR SECTIONS OF EM 385-1-1	13-1

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
ANSI	American National Standards Institute
APP	Accident Prevention Plan
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
EMS	Emergency Response Services
EZ	Exclusion Zone
HAZWOPER	Hazardous Waste Operations
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PM	Project Manager
PPE	personal protective equipment
SS	Site Supervisor
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
USCG	U.S. Coast Guard
USACE	U.S. Army Corps of Engineers

1.0 SIGNATURE SHEET

Plan Preparer:
Safety and Health Coordinator

Alison Harwood, CSP
770-663-1428 (office)

Approved by:
Program Health and Safety Manager

Robert A. Brooks, CSP
(732) 469-5599 (office)

Approved by:
Project Manager

Dan Pringle
412-380-6248 (office)

BACKGROUND INFORMATION

- Monitoring well installation
- Equipment decontamination
- Site restoration.

Shaw Environmental Inc.'s Activity Hazard Analyses, also referred to as Job Safety Analyses, are located in Appendix D of this Work Plan.

2.0 BACKGROUND INFORMATION

2.1 SHAW ENVIRONMENTAL, INC.

Contract No. N62470-97-D-5000, Task Order 0062

The principal tasks to be conducted are listed below:

- Site preparation
- Site survey
- Installation of erosion controls
- Clearing and grubbing
- Dewatering
- Waste removal
- Landfill regrading
- Drainage channel installation
- Soil cover installation
- Atkins Road Extension modification
- Monitoring well abandonment
- Monitoring well installation
- Equipment decontamination
- Site restoration.

2.2 SHAW ENVIRONMENTAL, INC. ACCIDENT EXPERIENCE

Year	EMR (Interstate)*	OSHA Recordable Incident Rate*
2000	0.53	32.8
1999	0.53	33.3
1998	0.58	23.7

* Shaw Environmental, Inc.

2.3 HAZARDOUS ACTIVITIES REQUIRING ACTIVITY HAZARD ANALYSIS

- Site preparation
- Site survey
- Installation of erosion controls
- Clearing and grubbing
- Dewatering
- Waste removal
- Landfill regrading
- Drainage channel installation
- Soil cover installation
- Atkins Road Extension modification
- Monitoring well abandonment

3.0 STATEMENT OF SAFETY AND HEALTH POLICY

3.1 CORPORATE POLICY STATEMENT

“PROCEDURE HS001

Subject: SAFETY

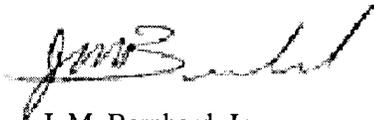
1.0 PURPOSE AND SUMMARY

The Shaw Group is firmly committed to operating all of its facilities and projects in a safe, efficient manner and in compliance with all applicable safety, health and environmental regulations. Our goal is to provide an injury free work environment where facilities and projects are free of recognized hazards; and people, equipment and the environment are not placed at unreasonable risk of injury or damage.

The most valuable resource we have is our people. While quality and productivity are critical to our operations, they will never take the precedence over the safety of personnel or protection of the environment.

To accomplish our goals requires a unified team effort from all levels of the organization. Safety must be planned into all of our activities and receive the same level of attention as quality and productivity.

The Environmental, Health & Safety Program Manual has been developed to guide us in our daily activities. Teamwork and compliance with our safety standards, procedures and rules will help us achieve our goal of an injury free work environment. Your cooperation and active participation in The Shaw Group’s safety process is expected and appreciated, anything less is unacceptable.



J. M. Bernhard, Jr.
Chairman, President and Chief Executive Officer
The Shaw Group, Inc.

4.0 RESONSIBILITIES AND LINES OF AUTHORITIES

Safety responsibilities, accountability, and lines of authority are discussed in Section 2.0 of the Site-Specific Health and Safety Plan (SSHASP). The Project Manager (PM), Site Superintendent (SS), Certified Industrial Hygienist (CIH), Health and Safety Manager, Safety and Health Coordinator, and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the SSHASP.

5.0 SUBCONTRACTORS AND SUPPLIERS

5.1 SUBCONTRACTOR/SUPPLIER COORDINATION AND CONTROL

Shaw Environmental, Inc. subcontractors will be screened for safety performance and compliance with Federal Alcohol and Drug testing requirements prior to being issued any contract for site work. Shaw Environmental, Inc. subcontractors will comply with the requirements for site safety as outlined in Health and Safety Procedure HS011. The SS will be responsible for the conduct and control of Shaw Environmental, Inc. subcontractors.

5.2 SUBCONTRACTOR/SUPPLIER SAFETY RESPONSIBILITIES

All subcontractor employees are subject to the same training and medical surveillance requirements as Shaw Environmental, Inc. personnel depending on job activity. All activities involving the potential for exposure to hazardous waste materials will require medical and training certification as mandated by 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1926.65. All subcontractor personnel will be required to sign in daily and be required to attend a daily meeting discussing operations and safety issues. All subcontractors involved in construction/remedial activities will complete a Subcontractor Pre-Job Safety Checklist prior to the start of work at the site. Subcontractors will submit Job Safety Analyses for their work activities to the SS. The subcontractor reports directly to the PM. All incidents involving subcontractor employees shall be reported to the SS and a copy of the subcontractor's injury/illness report shall be submitted to the SS within 24 hours.

Shaw Environmental, Inc. subcontractors are required to sign off and comply with all requirements of the Shaw Environmental, Inc. SSHASP and Accident Prevention Plan (APP). Contractors not in compliance will be immediately dismissed from the site.

Suppliers delivering various materials to the project site or providing equipment/equipment maintenance will comply with all Naval Facility rules and regulations. Supplier personnel will not be permitted into contaminated areas unless training and medical surveillance is in accordance with 29 CFR 1910.120/ 1926.65. Contractors will not ride on tractors, forklifts, or similar vehicles unless specific seats are provided. They will follow facility hot work rules if hot work is required for vehicle or equipment maintenance. Trucks will be loaded and unloaded in a safe and effective manner and materials will be stored safely in designated locations only. Associated packaging will be properly disposed of and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile equipment on site must observe all traffic rules such as speed limits and right-of-ways of pedestrians.

6.0 TRAINING

6.1 SAFETY INDOCTRINATION SUBJECTS

Outlines of the site safety orientation for Shaw Environmental, Inc./subcontract personnel and visitors are provided in Section 10.0 of the SSHASP.

6.2 MANDATORY TRAINING AND CERTIFICATIONS

Mandatory training and certifications are discussed in Section 10.0 of the SSHASP.

All personnel entering the Exclusion Zone (EZ) will be trained in the provisions of this APP and be required to sign the APP.

Site-specific training for Site 12 will include a review of potential site contaminants, Hazard Communication as per 29 CFR 1910.1200/1926.59, site physical and environmental hazards, emergency response and evacuation procedures, and emergency telephone numbers and will be held at the site location by the SS and SSO before any site work activities begin. Although all Shaw Environmental, Inc. workers receive confined space training during initial 40-hour health and safety training, site-specific training, including rescue procedures, will be conducted before any confined space entry is performed.

6.3 EMERGENCY RESPONSE TRAINING

All Shaw Environmental, Inc. personnel who have completed 40-hour Hazardous Waste Operations (HAZWOPER) Training are qualified as emergency responders per 29 CFR 1910.120(e)(3)(iv)/1926.65. Site-specific emergency response procedures will be reviewed with all site personnel as a part of site indoctrination.

6.4 SUPERVISORY AND EMPLOYEE SAFETY MEETINGS

The Shaw Environmental, Inc. SS and SSO will conduct daily safety meetings at the start of each work shift for on-site personnel and will require subcontractors to follow similar meeting procedures or participate in the Shaw Environmental, Inc. daily safety meetings. Daily safety meetings will comply with Procedure HS051.

7.0 SAFETY AND HEALTH INSPECTIONS

7.1 SAFETY INSPECTIONS

The Shaw Environmental, Inc. PM and SS are required to conduct bi-monthly inspections of their sites using the Project Safety Inspection Report according to Procedure HS021. SSOs are responsible for conducting and preparing reports of daily safety inspections of work processes, site conditions, equipment conditions, and submitting them to SS. The SSO will discuss any necessary corrective actions with the SS and review new procedures. Copies of these reports are maintained on file at the project locations.

The Shaw Environmental, Inc. Health and Safety Manager or his designated representative will periodically conduct site visits and perform Site Safety Assessments. These reports are kept on file at the Somerset, New Jersey office and are tracked in a database for each Shaw Environmental, Inc. PM and SS, including the number of action items noted during the visit and written confirmation of the corrective actions for each item. These responses are compiled and provided to program management for review.

7.2 EXTERNAL INSPECTIONS/CERTIFICATIONS

Shaw Environmental, Inc. does not anticipate, but may consider the use of outside sources, to provide safety inspections on an as-necessary basis.

As required, Shaw Environmental, Inc. safety equipment will comply with appropriate Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH), American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and U.S. Coast Guard (USCG) or other recognized certification organizations.

8.0 SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

8.1 COMPANY SAFETY PROGRAM GOALS

Shaw Environmental, Inc. considers safety the highest priority during work at a site containing potentially hazardous materials and has established a goal of **zero incidents** for all projects. All projects will be conducted in a manner, which minimizes the probability of near misses, equipment/property damage, or injury. Shaw Environmental, Inc. will establish programs to recognize people and projects that demonstrate excellence in safety performance. Shaw Environmental, Inc. will use safety observation programs to identify and correct unsafe acts and conditions. Safety awareness programs will be used to provide continuous training and development of good safety practices. Shaw Environmental, Inc. site supervision will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. Shaw Environmental, Inc. will provide and enforce safety rules to protect employees, subcontractors, clients, and the public.

8.2 SHAW ENVIRONMENTAL, INC. SAFETY INCENTIVE PROGRAMS

A copy of the Shaw Environmental, Inc. Safety Incentive Award Program is provided at the project. The Shaw Environmental, Inc. PM will develop a site-specific program for approval by the Health and Safety Manager and Business Line Lead within 10 days of project mobilization.

8.3 SHAW ENVIRONMENTAL, INC. EMPLOYEE SAFETY RESPONSIBILITY REQUIREMENTS

Each employee is responsible for personal safety as well as the safety of others in the area and is expected to participate fully in the *Safety Improvement Process*, particularly the Safety Observation Program. The employee will use all equipment provided in a safe and responsible manner as directed by the SS. All personnel will follow the policies set forth in the Health and Safety Procedures Manual. Site personnel concerned with any aspect of health and safety shall bring it to the attention of the SS/SSO. If not satisfied, they should contact the Health and Safety Manager. All project personnel have the authority to stop work if in their judgement serious injury could result from continued activity. The SS and the SSO shall be notified immediately if this becomes necessary. To protect the health and safety of all personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions up to and including termination. Employee safety responsibility is fully detailed in Health and Safety Procedure HS010.

8.4 MANAGERS AND SUPERVISORS SAFETY ACCOUNTABILITY

It is the duty of the first line supervisor to motivate employees to adhere to safety policy in each work situation. A first line supervisor for these purposes is defined as that person designated to give immediate on-site supervision to personnel involved in a task.

All supervisors shall have complete knowledge of the safe procedure for all jobs and tasks under their supervision or when in doubt, shall seek assistance prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished safely, it will not be attempted.

SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

Supervisors will:

- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to ensure that everyone knows the correct procedure for safely accomplishing required tasks.
- Prevent new employees from performing any tasks until required training is completed.
- Immediately correct unsafe conditions, which involved Shaw Environmental, Inc. employees or contractors.
- Ensure that the employees are outfitted with and wear personal protective equipment (PPE) as specified by this APP, SSHASP, other procedures, or as directed by the SSO, CIH, or Health and Safety Manager.
- Set a good safety example.
- Obtain the cooperation of employees and contractors.
- Provide a safe work environment for employees and contractors.
- Confirm contractor safety performance records have been verified prior to contract award and monitor contractor performance during operations.
- Report all incidents, near misses, and property damage in accordance with the Incident Management and Reporting Procedure.
- Establish a safety culture, using the elements of the Safety Improvement Process, which promotes awareness, encourages participation, and recognizes excellence.

9.0 ACCIDENT REPORTING

9.1 EXPOSURE DATA (MAN-HOURS WORKED)

The Vice President of Health and Safety tracks and maintains incident records as to Federal reporting requirements (OSHA 200 Log). Incident rates are reported monthly to the Vice President of Health and Safety. Incident Rates and Workers Compensation losses are tracked for each business line. LANTDIV incident rates are reported monthly by the Program Health and Safety Manager.

9.2 ACCIDENT INVESTIGATIONS, REPORTS, AND LOGS

Accident/incident investigations are conducted by the SS. A report is completed by the SS and is required to be reviewed and signed by the SSO and the PM. The report must be submitted to the Health and Safety Manager within 24 hours. All incident reporting forms are provided in Health and Safety Procedure HS020.

9.3 IMMEDIATE NOTIFICATION OF MAJOR INCIDENTS

Shaw Environmental, Inc. will immediately notify the Navy of any major incident, including injury, fire, equipment/ property damage and environmental incident. A full report will be provided within 24 hours. The following procedure will be followed in response to any major personal injury.

9.3.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make contact with the SS to alert him of a medical emergency situation. The work crew supervisor will advise the following information:

- Location of the victim at the work site
- Nature of the emergency
- Whether the victim is conscious
- Specific conditions contributing to the injury, if known.

The following actions will then be taken depending on the severity of the incident:

- **Life-Threatening Incident** - If an apparent life-threatening condition exists, the crew supervisor will inform the emergency coordinator, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him/her quickly taken to the victim. Shaw Environmental, Inc. personnel will evacuate any injury within the EZ to a clean area for treatment by EMS personnel. No one will be able to enter the EZ without showing proof of training, medical surveillance, and site orientation.

ACCIDENT REPORTING

- **Non-Life-Threatening Incident** - If it is determined that no threat to life is present, the SSO will direct the injured person through decontamination procedures (see below) appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the SSO has cleared the scene.

Any personnel requiring emergency medical attention will be evacuated from EZs and Contamination Reduction Zones (CRZ) if doing so would not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.

If decontamination cannot be performed, observe the following procedures:

- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident and chemical safety information, e.g., Material Safety Data Sheets (MSDS), with the affected person.

10.0 MEDICAL SUPPORT

On-site medical support/off-site medical arrangements are provided in Section 9.0 of the SSHASP.

11.0 PERSONAL PROTECTIVE EQUIPMENT

11.1 HAZARD ASSESSMENT PROCEDURES/WRITTEN CERTIFICATIONS FOR PERSONAL PROTECTIVE EQUIPMENT

Protection levels provided in the SSHASP will be established for the site work activities based on the levels of site contaminants and the scope of work. Once on site, results of air monitoring and visual inspection of the work activities may indicate the need for changes in these PPE level(s). Any significant change in the PPE level will be approved by the SSO in consultation with the CIH and/or Health and Safety Manager. PPE selection criteria are outlined in Health and Safety Procedures HS600 and HS601.

All personnel using respiratory protection will be cleared by a physician for use of a respirator and will be fit-tested to assure they can achieve an acceptable fit. Physician clearance and results of fit testing will be documented as required by Health and Safety Procedure HS100.

12.0 PLANS REQUIRED BY THE SAFETY MANUAL

12.1 HAZARD COMMUNICATION PROGRAM

The Site-Specific Hazard Communication Program is included in Section 4.3 of the SSHASP. Shaw Environmental, Inc. Hazard Communication Program complies with 29 CFR 1926.59/1910.1200 and is outlined in Health and Safety Procedure HS060.

12.2 EMERGENCY RESPONSE PLANS

The Site-Specific Emergency Response and Contingency Plan is included in Section 9.0 of the SSHASP.

12.3 LAYOUT PLANS

Work zones are defined in Section 5.0 of the SSHASP.

12.4 RESPIRATORY PROTECTION PLAN

The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination are not feasible, or while they are being implemented, personal respiratory protective devices will be used.

The criteria for determining respirator needs have been evaluated based on the site contaminants. Air monitoring will be conducted to confirm that respiratory protection levels are adequate (Section 8.0 of the SSHASP). All respirator users will be OSHA trained in proper respirator use and maintenance. The SS and SSO will observe workers during respirator use for signs of stress. The SS, CIH, Health and Safety Manager, and SSO will also evaluate the implementation of the SSHASP, periodically, to determine its continued effectiveness with regard to respiratory protection. All persons assigned to use respirators will have medical clearance to do so.

12.5 LEAD ABATEMENT PLAN

Not applicable.

12.6 ASBESTOS ABATEMENT PLAN

Not applicable.

12.7 ABRASIVE BLASTING

Not applicable.

12.8 CONFINED SPACE

Confined space entry procedures are outlined in Health and Safety Procedure HS300.

PLANS REQUIRED BY THE SAFETY MANUAL

12.9 HAZARDOUS ENERGY CONTROL PLAN

Lockout/tagout procedures are outlined in Health and Safety Procedure HS315.

12.10 CRITICAL LIFT PROCEDURES

Not applicable.

12.11 CONTINGENCY PLAN FOR SEVERE WEATHER

Contingency plans for severe weather are included in Section 9.0 of the SSHASP. A site-specific Hurricane Preparedness Plan is located in Attachment H of the SSHASP.

12.12 ACCESS AND HAUL ROAD PLAN

Not applicable.

12.13 DEMOLITION PLAN

Not applicable.

12.14 EMERGENCY RESCUE (TUNNELING)

Not applicable.

12.15 UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN

Not applicable.

12.16 COMPRESSED AIR PLAN

Not applicable.

12.17 FORM WORK AND SHORING ERECTION AND REMOVAL PLANS

Not applicable.

12.18 LIFT SLAB PLANS

Not applicable.

12.19 SITE-SPECIFIC HEALTH AND SAFETY PLAN

The SSHASP is included with this submission.

12.20 BLASTING PLAN

Not applicable.

PLANS REQUIRED BY THE SAFETY MANUAL

12.21 DIVING PLAN

Not applicable.

12.22 ALCOHOL AND DRUG ABUSE PREVENTION PLAN

The substance abuse procedures are outlined in Health and Safety Procedure HS101.

13.0 CONTRACTOR INFORMATION TO MEET THE REQUIREMENTS OF THE MAJOR SECTIONS OF EM385-1-1

In addition to this APP, Shaw Environmental, Inc. has prepared a SSHASP to meet the major requirements of U.S. Army Corps of Engineers (USACE) Manual 385-1-1. Additional procedures for major requirements are provided in the IT Group Health and Safety Procedures Manual.

ATTACHMENT D
MATERIAL SAFETY DATA SHEETS

ATTACHMENT D MATERIAL SAFETY DATA SHEETS (MSDS)

MSDSs for site contaminants are listed below and included in this section.

Arsenic
1,2-dichloroethene
Iron
Lead
Manganese
Nitrocellulose
Trichloroethene
Diesel Fuel
Gasoline

International Chemical Safety Cards

ARSENIC

ICSC: 0013

ARSENIC
Grey arsenic
Metallic arsenic
As
Atomic mass: 74.9

CAS # 7440-38-2
RTECS # CG0525000
ICSC # 0013
UN # 1558
EC # 033-001-00-X

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight if in the form of fine powder or dust when exposed to hot surfaces or flames.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
• INHALATION	Cough. Diarrhoea. Shortness of breath. Sore throat. Vomiting. Weakness. Grey skin.	Closed system and ventilation.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
• SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
• EYES	Redness.	or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Diarrhoea. Nausea. Sore throat. Unconsciousness. Vomiting (further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Provision to contain effluent from fire extinguishing. Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed. Keep in a well-ventilated room.	Do not transport with food and feedstuffs. T symbol R: 23/25 S: (1/2-)20/21-28-45 UN Hazard Class: 6.1 UN Packing Group: II Marine pollutant.

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0013

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities © IPCS CEC 1993

NIOSH Pocket Guide to Chemical Hazards

1,2-Dichloroethylene		CAS 540-59-0	
ClCH=CHCl		RTECS KV9360000	
Synonyms & Trade Names Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene		DOT ID & Guide 1150 132P	
Exposure Limits	NIOSH REL: TWA 200 ppm (790 mg/m ³)		
	OSHA PEL: TWA 200 ppm (790 mg/m ³)		
IDLH 1000 ppm See: 540590		Conversion 1 ppm = 3.97 mg/m ³	
Physical Description Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.			
MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%
VP: 180-265 mmHg	IP: 9.65 eV		Sp.Gr(77°F): 1.27
FLP: 36-39°F	UEL: 12.8%	LEL: 5.6%	
Class IB Flammable Liquid: FLP. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]			
Measurement Methods NIOSH 1003; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 2000 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode [£] /(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) [£] /(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, respiratory system; central nervous system depression			
Target Organs Eyes, respiratory system, central nervous system			
See also: INTRODUCTION See ICSC CARD: 0436			

D
A
T
A

**PHYSICAL
PROPERTIES**

Melting point: 1360°C
Relative density (water = 1): 5.7

Solubility in water: none

**ENVIRONMENTAL
DATA**

NOTES

CI 77489 is a trade name.

ADDITIONAL INFORMATION

ICSC: 0793

© IPCS, CEC, 1993

FERROUS OXIDE

**IMPORTANT
LEGAL NOTICE:**

Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.

T
D
A
T
A

TLV (as TWA): ppm; 5 (dust) or 1 (fume) mg/m³; as STEL: 3 mg/m³ (fume) (ACGIH 1994-1995). MAK: ppm; 0.5 mg/m³ (1994).
nervous system , resulting in bronchitis, pneumonitis, neurologic and neuropsychiatric disorders (manganism). Animal tests show that this substance possibly causes toxic effects upon human reproduction.

PHYSICAL PROPERTIES	Boiling point: 1962°C Melting point: 1244°C	Relative density (water = 1): 7.2-7.4 Solubility in water: none
----------------------------	------------------------------------------------	--------------------------------------------------------------------

ENVIRONMENTAL DATA	
---------------------------	--

NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to ferro manganese.

ADDITIONAL INFORMATION

ICSC: 0174	MANGANESE
© IPCS, CEC, 1993	

IMPORTANT LEGAL NOTICE:	Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.
--------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Vapors have anesthetic properties. Early symptoms of exposure may include irritation of the nose and throat, followed by dizziness and drowsiness. Continued exposure may lead to unconsciousness, respiratory failure, and death.

Ingestion:

Irritating to the mucous membranes. Ingestion of 1 or 2 ounces may be fatal. Because of volatility the stomach becomes distended, which may cause belching. Other symptoms can include vomiting, unconsciousness, and coma. Harmful if swallowed. May cause headache, stomach pains, and dizziness. Acts as a depressant of the central nervous system and can produce symptoms similar to those of inhalation exposure.

Skin Contact:

Irritating to the skin and mucous membranes by drying effect. Can cause dermatitis on prolonged exposure. May be absorbed through skin.

Eye Contact:

Vapors may cause irritation. Splashes or high vapor concentrations may produce severe irritation or eye damage.

Chronic Exposure:

Repeated exposures may be habit forming. Prolonged exposures may result in headache, drowsiness, excitation, and psychic disturbances. The ethyl alcohol component, in repeated high exposures, may cause damage to the liver, blood and reproductive system. Teratogenic effects are possible for ether and ethyl alcohol.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance. Alcoholic beverage consumption can enhance the toxic effects of this substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Do NOT induce vomiting. Give large amounts of water. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: < -32C (< -26F)

Autoignition temperature: 180 - 190C (356 - 374F)

Flammable limits in air % by volume:

l_{el}: 1.9; u_{el}: 36.0

Extremely Flammable Liquid and Vapor! Vapor may cause flash fire. Very dangerous when

the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face organic vapor respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. An organic vapor respirator is predicted to have a short service life (less than 30 minutes at concentrations of ten times the TLV/PEL) when used with this material.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

Shoes should be conductive and nonsparking.

9. Physical and Chemical Properties

Appearance:

Colorless to slightly yellow, syrupy liquid.

Odor:

Ether odor.

Solubility:

Slightly soluble in water.

Specific Gravity:

0.77

pH:

No information found.

% Volatiles by volume @ 21C (70F):

ca. 95

Boiling Point:

34.6C (95F) (ether)

Melting Point:

-123C (-189F) (ether)

Vapor Density (Air=1):

2.6 (ether)

Vapor Pressure (mm Hg):

440 @ 20C (68F) (ether)

Evaporation Rate (BuAc=1):

37.5

10. Stability and Reactivity

Stability:

Heat, light, and long standing contribute to instability. Reacts with air to form explosive peroxides. Do not allow the solvents to evaporate from the product. The dry material is shock sensitive.

Hazardous Decomposition Products:

Burning may produce toxic fumes of cyanide, carbon dioxide, carbon monoxide and oxides of nitrogen.

Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (PYROXYLIN, DIETHYL ETHER)
Hazard Class: 3
UN/NA: UN1993
Packing Group: I
Information reported for product/size: 200L

International (Water, I.M.O.)

Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (PYROXYLIN, DIETHYL ETHER)
Hazard Class: 3.1
UN/NA: UN1993
Packing Group: I
Information reported for product/size: 200L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Nitrocellulose (9004-70-0)	Yes	No	Yes	Yes
Diethyl Ether (60-29-7)	Yes	Yes	Yes	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Nitrocellulose (9004-70-0)	Yes	Yes	No	Yes
Diethyl Ether (60-29-7)	Yes	Yes	No	Yes
Ethyl Alcohol (64-17-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Nitrocellulose (9004-70-0)	No	No	No	No
Diethyl Ether (60-29-7)	No	No	No	No
Ethyl Alcohol (64-17-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Nitrocellulose (9004-70-0)	No	No	No
Diethyl Ether (60-29-7)	100	U117	Yes
Ethyl Alcohol (64-17-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: Yes (Mixture / Liquid)

Australian Hazchem Code: 2[Y]E
Poison Schedule: No information found.
WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID, WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (phosgene, hydrogen chloride, chlorine). The substance decomposes on contact with strong alkali producing dichloroacetylene, which increases fire hazard. Reacts violently with metals such as lithium, magnesium aluminium, titanium, barium and sodium. Slowly decomposed by light in presence of moisture, with formulation of corrosive hydrochloric acid.</p> <p>OCCUPATIONAL EXPOSURE LIMITS (OELs): TLV: 50 ppm; 269 mg/m³ (STEL): 200 ppm; 1070 mg/m³ (ACGIH 1992-1993).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance irritates the eyes and the skin. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system. Exposure could cause lowering of consciousness.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidney (see notes).</p>
	<p>PHYSICAL PROPERTIES</p> <p>Boiling point: 87°C Melting point: -73°C Relative density (water = 1): 1.5 Solubility in water, g/100 ml at 20°C: 0.1 Vapour pressure, kPa at 20°C: 7.8</p>	<p>Relative vapour density (air = 1): 4.5 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.3 Auto-ignition temperature: 410°C Explosive limits, vol% in air: 8-10.5 Octanol/water partition coefficient as log Pow: 2.42</p>
	<p>ENVIRONMENTAL DATA</p> <p>This substance may be hazardous to the environment; special attention should be given to water organisms.</p>	
NOTES		
<p>Combustible vapour/air mixtures difficult to ignite, may be developed under certain conditions. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Technical grades may contain small amounts of carcinogenic stabilizers.</p> <p style="text-align: right;">Transport Emergency Card: TEC (R)-723 NFPA Code: H2; F1; R0;</p>		
ADDITIONAL INFORMATION		
<p>ICSC: 0081 TRICHLOROETHYLENE</p> <p style="text-align: center;">© IPCS, CEC, 1993</p>		
<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.</p>	

International Chemical Safety Cards

VINYL CHLORIDE

ICSC: 0082

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS COMPRESSED LIQUEFIED GAS, WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The gas is heavier than air, and may travel along the ground; distant ignition possible.</p> <p>CHEMICAL DANGERS: The substance can under specific circumstances form peroxides, initiating explosive polymerization. The substance will polymerize readily due to heating and under the influence of air, light, and on contact with a catalyst, strong oxidizing agents and metals such as copper and aluminium, with fire or explosion hazard. The substance decomposes on burning producing toxic and corrosive fumes (hydrogen chloride and phosgene).</p> <p>OCCUPATIONAL EXPOSURE LIMITS (OELs): TLV: 5 ppm; 13 mg/m³ (ACGIH 1993-1994).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>INHALATION RISK: A harmful concentration of this gas in the air will be reached very quickly on loss of containment.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance irritates the eyes. The liquid may cause frostbite. The substance may cause effects on the central nervous system. Exposure could cause lowering of consciousness. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the liver, blood vessels and connective tissue. This substance is carcinogenic to humans. May cause heritable genetic damage in humans.</p>
	<p>PHYSICAL PROPERTIES</p> <p>Boiling point: -13°C Melting point: -154°C Relative density (water = 1): 0.9 Solubility in water: none Relative vapour density (air = 1): 2.2</p>	<p>Flash point: -78°C c.c.°C Auto-ignition temperature: 472°C Explosive limits, vol% in air: 3.6-33 Octanol/water partition coefficient as log Pow: 0.6</p>

ENVIRONMENTAL DATA	
---------------------------	--

NOTES

According to ACGIH this substance belongs to Group A1 indicating confirmed human carcinogen. Contains inhibitors (e.g. phenol). Depending on the degree of exposure, periodic medical examination is indicated. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding.

Transport Emergency Card: TEC (R)-150
NFPA Code: H 2; F 4; R 2;

ADDITIONAL INFORMATION

ICSC: 0082	VINYL CHLORIDE
© IPCS, CEC, 1993	

IMPORTANT LEGAL NOTICE:	<p>Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.</p>
--------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

ATTACHMENT E
HURRICAN PREPAREDNESS PLAN

**HURRICANE PREPAREDNESS PLAN
REMEDIAL ACTION SITE 12 - TOWN GUT LANDFILL
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**CONTRACT NO. N62470-97-D-5000
TASK ORDER 0062**

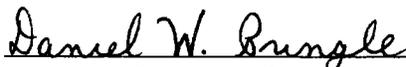
Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

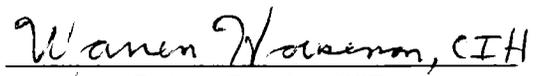
Prepared by:

Shaw Environmental, Inc.
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:



Daniel W. Pringle
Project Manager



for Robert Brooks, CSP
Program Health and Safety Manager

OHM Project No. 809401

June 19, 2002

TABLE OF CONTENTS

LIST OF ACRONYMS	ii
1.0 INTRODUCTION.....	1-1
1.1 PURPOSE	1-1
1.2 SCOPE	1-1
1.3 DISCUSSION.....	1-1
2.0 DEFINITIONS	2-1
3.0 RESPONSIBILITIES	3-1
3.1 PROJECT MANAGER - DAN PRINGLE	3-1
3.2 SITE SUPERINENDENT - TO BE DETERMINED	3-1
3.3 SITE SAFETY OFFICER - TO BE DETERMINED.....	3-1
4.0 NORMAL OPERATING PROCEDURES	4-1
5.0 EMERGENCY OPERATING PROCEDURES.....	5-1
5.1 CONDITION V - EARLY PREPAREDNESS	5-1
5.2 CONDITION IV - DESTRUCTIVE WINDS ARE POSSIBLE <u>WITHIN</u> <u>72 HOURS</u>	5-1
5.3 CONDITION III - TROPICAL STORM WARNING (DESTRUCTIVE WINDS ARE POSSIBLE <u>WITHIN 48 HOURS</u>)	5-2
5.4 CONDITION II - DESTRUCTIVE WINDS ARE ANTICIPATED <u>WITHIN</u> <u>24 HOURS</u>	5-2
5.5 CONDITION I - DESTRUCTIVE WINDS ARE ANTICIPATED <u>WITHIN</u> <u>12 HOURS</u>	5-3
5.6 RESUME SITE OPERATIONS.....	5-3
6.0 DEBRIEFING	6-1
7.0 REFERENCES.....	7-1

ATTACHMENT A - HURRICANE PREPAREDNESS RESPONSIBILITY CHECKLISTS

ATTACHMENT B - EMERGENCY PHONE NUMBERS

ATTACHMENT C -HURRICANE TRACKING MAP

LIST OF ACRONYMS

<u>Acronym</u>	<u>Title</u>
CFR	Code of Federal Regulations
COR	Condition of Readiness
CRZ	Contamination Reduction Zone
EZ	Exclusion Zone
FEMA	Federal Emergency Management Administration
mph	mile(s) per hour
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
OSHA	Occupational Safety and Health Administration
PM	Project Manager
PPE	personal protective equipment
ROICC	Resident Officer In Charge of Construction
SS	Site Superintendent
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
SZ	Support Zone
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

1.1 PURPOSE

This procedure outlines the general responsibilities and actions to be taken in preparation for and in response to a hurricane or hurricane warnings at the Naval Surface Warfare Center, Indian Head, Maryland. All personnel should understand that predicting the occurrence and path of a hurricane is difficult, however the risk can be minimized and controlled by following the procedures in this plan.

1.2 SCOPE

This procedure is applicable to all contractor personnel, including Shaw Environmental, Inc. subcontractors, temporary construction facilities, and remediation equipment present at the Naval Surface Warfare Center project sites.

1.3 DISCUSSION

This procedure provides information on how to protect personnel and property in the event of a hurricane. In the Indian Head, Maryland area, attention must be paid to all hurricanes, since there is no way to determine with 100 percent accuracy whether a hurricane will actually hit the area until a few hours before landfall.

The following table demonstrates that the accuracy of forecasting where a hurricane landfall will occur is very low more than 24 hours in advance of a storm.

Hours Before Landfall	Maximum Probability Values
72 Hours	10 Percent
48 Hours	13-18 Percent
36 Hours	20-25 Percent
24 Hours	35-45 Percent
12 Hours	60-70 Percent

2.0 DEFINITIONS

The following definitions apply to various terms used in this document.

Conditions of Readiness (COR):

- **Condition V** - Destructive winds are possible at Naval Surface Warfare Center within 96 hours. Normal daily job site cleanup and good housekeeping practices.
- **Condition IV** - Destructive winds are possible at Naval Surface Warfare Center within 72 hours. Normal daily job site cleanup and good housekeeping practices. Collect and store in piles or containers, scrap lumber, waste material, and rubbish for removal and disposal at the end of each workday. Maintain the construction site, including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove all trash debris and other objects which could become missile hazards. Contact Resident Officer In Charge of Construction (ROICC) for Condition requirements, updates, and completion of required actions.
- **Condition III** - Destructive winds are possible at Naval Surface Warfare Center within 48 hours. Maintain **Condition IV** requirements. Begin securing the job site for and taking those actions necessary for **Condition I**, which cannot be completed within 18 hours. Cease all routine activities, which might interfere with securing operations. Begin collecting and stowing all gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to **Condition II** and continue action as necessary to attain **Condition III** readiness. Contact the weather station on Base for weather and COR updates and completion of required actions.
- **Condition II** - Destructive winds are possible at Naval Surface Warfare Center within 24 hours. Curtail or cease routine activities until securing operations are complete. Reinforce or remove form work and scaffolding. Secure machinery, tools, equipment, and materials, or remove from job site. Expend every effort to clear all missile hazards and loose equipment from the job site. Contact ROICC for weather and COR updates and completion of required actions.
- **Condition I** - Destructive winds are possible in at Naval Surface Warfare Center within 12 hours. Perform and complete all remaining actions required for lower conditions of readiness. Secure the job site and leave the government premises.

Destructive Winds - Generally winds reaching or exceeding the force of a tropical storm (≥ 39 miles per hour [mph] or 34 knots). Winds from any storm system (tropical or otherwise) that are determined to have the potential to cause property damage or personal injury which would warrant Naval Surface Warfare Center to initiate a Condition IV alert.

Hurricane - A tropical cyclone in which the maximum sustained surface wind is 75 mph (64 knots) or greater.

Hurricane Warning - A warning that sustained winds of 75 mph (64 knots) or higher, associated with a hurricane, are expected in a specified coastal area in 24 hours or less.

DEFINITIONS

Hurricane Watch - An announcement for specific areas where a hurricane or an incipient hurricane poses a possible threat to a coastal area, generally within 36 hours.

Missile Hazard - Any object that may become airborne during high winds.

Severe Weather - Any storm of tropical or non-tropical origin that has the capacity to produce destructive winds.

Storm Surge - An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the storm.

Storm Tide - The actual sea level resulting from the astronomical tide combined with the storm surge. This term is used interchangeably with "Hurricane Tide."

Tropical Depression - A tropical low-pressure system in which the maximum sustained surface wind is 38 mph (33 knots) or less.

Tropical Storm - A tropical low pressure system in which the maximum surface wind ranges from 39 to 73 mph (34 to 63 knots) inclusive. This is the strength at which the National Hurricane Center applies a name to the storm.

Tropical Storm Watch - Tropical storm conditions pose a threat to a coastal area generally within 36 hours.

Tropical Storm Warning - A warning for tropical storm conditions with sustained winds within the range of 39 to 73 mph (34 to 63 knots), which are expected in a specified coastal area within 24 hours or less.

3.0 RESPONSIBILITIES

3.1 PROJECT MANAGER - DAN PRINGLE

The Project Manager (PM) is responsible for ensuring that all adequate measures have been taken to prepare for hurricanes and to protect Shaw Environmental, Inc. site personnel and property in the event of a hurricane. The PM will ensure that ample resources are available to implement this plan and that all personnel are aware of this plan and their responsibilities.

3.2 SITE SUPERINTENDENT - STEVE CARRIERE

The Site Superintendent (SS) will communicate all hurricane information to site personnel, and keep the site personnel continually informed of the measures to be taken. The SS is responsible for the coordination and direction of site equipment shutdown and will oversee the preparation of site facilities for any imminent storm. The SS will oversee the coordination of both pre- and post-storm operations and will ensure that the proper material, equipment, and supplies are utilized to implement this procedure.

3.3 SITE SAFETY OFFICER - TO BE DETERMINED

The Site Safety Officer (SSO) will monitor weather information, including the National Weather Service probability values for landfall. The SSO will maintain the necessary emergency supplies, and will periodically tour the site to ensure that proper steps are being taken to protect site personnel and property. The SSO will develop the emergency contact list and the list will be maintained in a site-dedicated vehicle

NOTE: When personnel identified in Section 3.0 leave the site, they are responsible for notifying the PM of a designated backup person. The backup person will be instructed in their responsibilities in the event of a hurricane.

4.0 NORMAL OPERATING PROCEDURES

To prevent migration of contamination from personnel and equipment, work areas will be clearly specified as designated below prior to beginning operations. Each work area will be classified in accordance with National Institute for Occupational Safety and Health (NIOSH)/Occupational Safety and Health Administration (OSHA)/U.S. Coast Guard (USCG)/U.S. Environmental Protection Agency (USEPA) document "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities." Each work area will be clearly identified using signs or physical barriers.

- Exclusion Zone (EZ)
- Contamination Reduction Zone (CRZ)
- Support Zone (SZ).

A log of all personnel visiting, entering, or working on the site shall be maintained in a site-dedicated vehicle. No visitor will be allowed in the EZ without showing proof of training and medical certification, per 29 Code of Federal Regulations (CFR) 1910.120(e), (f). Visitors will attend a site orientation given by the SSO and sign the Site-Specific Health and Safety Plan (SSHASP).

The following are standard safe work practices that apply to all site personnel and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking is prohibited in the EZ/CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco, or smoking.
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

5.0 EMERGENCY OPERATING PROCEDURES

5.1 CONDITION V - EARLY PREPAREDNESS

The SSO will notify the PM and SS when a tropical storm has been named and/or any severe weather has the potential to produce destructive winds at Naval Service Warfare Center within 96 hours. This will initiate COR Condition V. This phase will continue until:

- The storm or condition is downgraded.
- The storm track poses no threat to the site.
- Condition IV begins.

During Condition V, the progress of the storm will be monitored and tracked by Hurricane Tracking Maps (Attachment C). The ROICC will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition V.

See Attachment A for the Hurricane Preparedness Responsibility Punch List - Condition V.

5.2 CONDITION IV - DESTRUCTIVE WINDS ARE POSSIBLE WITHIN 72 HOURS

This COR starts when Shaw Environmental, Inc. is notified by the ROICC that severe weather is within 72 hours of posing a threat to the project location. The SSO will ensure that the following steps are taken:

- Monitor the storm and inform the PM and SS of its progress.
- Check personal protective equipment (PPE) supplies and equipment to determine if any shipments are required or if pending shipments should be advanced or postponed.

During Condition IV, the progress of the storm will be continuously monitored and tracked. The SS will instruct site personnel to begin general cleanup of all loose materials that may pose a hazard during high winds or rain. This will include removal of all debris, trash, and other debris that may become missile hazards. All form lumber will be stacked in neat piles less than 4 feet high. The ROICC will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition IV. Attachment B includes a list of emergency telephone numbers.

The SS will keep all site personnel advised of the status of the storm and site preparation activities. Due to the urgency and amount of work involved in preparing for a threatening storm, all construction operations which might interfere with securing operations, such as starting a major excavation, will cease.

The SS will ensure that the following steps are taken:

- Fill fuel tanks in all equipment on site.
- Secure stockpiled material on site.
- Review requirements for Condition II with all site personnel.
- Maintain Condition IV requirements.

EMERGENCY OPERATING PROCEDURES

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition IV.

5.3 CONDITION III - TROPICAL STORM WARNING (DESTRUCTIVE WINDS ARE POSSIBLE WITHIN 48 HOURS)

This COR starts when severe weather places the project site under a tropical storm warning. Condition III activities will also start if a threatening tropical storm is upgraded to a hurricane, or a severe storm approaching Naval Surface Warfare Center has generated destructive winds in other locations. The PM, SS, and SSO will determine when to cease all operations based upon current weather conditions and/or as directed by the ROICC. If the storm or Condition is downgraded, the PM, SS, and SSO will meet with the ROICC to decide if a downgrade of the COR is appropriate. Actions for Condition III will be maintained and the following shall also be completed:

- Machinery, tools, equipment, and materials will be secured or removed from the site.
- Take actions to secure job site necessary for Condition I that cannot be completed within 18 hours.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition III.

5.4 CONDITION II - DESTRUCTIVE WINDS ARE ANTICIPATED WITHIN 24 HOURS

Condition II begins when destructive winds are anticipated within 24 hours and/or as directed by the ROICC. The PM, SS, and SSO will determine when to demobilize from the site based upon weather conditions. During this phase:

- The SS will:
 - Secure machinery, tools, equipment, and materials or remove them from the job site.
 - Conduct a roll call of personnel on site and inform the SSO.
 - Notify personnel, on leave, of schedule changes.
 - Personnel needing to leave the project to attend to personal matters will notify their SS immediately.
 - Heavy equipment will be secured according to the manufacturer's recommendations.
 - All small field equipment will be secured.
- The SSO will ensure that the following steps are taken:
 - All visitors from the site are evacuated.
 - Make a final site walk-through to determine that the site is secure and clear all missile hazards from the job site.
 - Inform the PM that all personnel are being released from the site.

If the storm or Condition is downgraded, the PM, SS, and SSO will meet to decide if a downgrade of the phase is necessary.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition II.

EMERGENCY OPERATING PROCEDURES

5.5 CONDITION I - DESTRUCTIVE WINDS ARE ANTICIPATED WITHIN 12 HOURS

Condition I begins when destructive winds are anticipated within 12 hours and/or as directed by the ROICC. The SS will ensure that the following steps are taken:

- Complete all remaining actions required for lower conditions of readiness.
- Secure job site access and evacuate to safe refuge.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition I.

5.6 RESUME SITE OPERATIONS

The PM will contact the ROICC to determine when site operations will resume. Although the hurricane/severe weather has passed, hazards may still exist because of water damage, other hazardous conditions, dangers from electric shock, poisonous snakes, etc.

The SSO will conduct a damage survey with the PM and SS. Photographs of the storm damage at the site will be taken by the SS. They will develop a prioritized recovery plan from the survey findings. Subsequently, all site personnel will be notified when it is safe to return to work. Required personnel and subcontractor expertise will be mobilized to the site to repair any damaged equipment.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Resume Site Operations.

6.0 DEBRIEFING

Following the return to work of site personnel, the SS will conduct a debriefing with site personnel. The debriefing will accomplish the following objectives:

- Finalize a recovery plan
- Review the Hurricane Preparedness Plan for effectiveness
- Suggest and agree on improvements to the plan
- Incorporate plan changes.

When completed, the PM and SS will meet with site personnel to discuss any corrective actions or changes in this plan.

7.0 REFERENCES

The following references and sources of information may be consulted for additional guidance on hurricane preparedness and response:

- Disaster Planning Guide for Business and Industry, Federal Emergency Management Administration (FEMA).
- U.S. Department of Commerce; National Oceanic and Atmospheric Administration (NOAA).

ATTACHMENT A
HURRICANE PREPAREDNESS RESPONSIBILITY
CHECKLISTS

HURRICANE PREPAREDNESS CHECKLIST

Condition V (Landfall Within 96 Hours)

Date/Time Entered Condition V: _____

SEVERE WEATHER/TROPICAL STORM: _____

Action Items

- Project Manager Notified
- Track of Storm Poses No Threat
- Storm or Condition is Downgraded
- Upgrade to Condition IV

STORM LOCATION

Date/Time: _____

Date/Time: _____

Location/Coordinates: _____

Location/Coordinates: _____

Date/Time: _____

Date/Time: _____

Location/Coordinates: _____

Location/Coordinates: _____

Condition V Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition IV (Landfall Within 72 hours)

Date/Time Entered Condition IV: _____

Action Items

- Notify Project Manager
- Notify Site Superintendent
- Notify Site Personnel
- Assemble shift personnel to begin preparation
- Track storm on hurricane tracking map (if applicable) (Attachment C)

The Project Foremen will ensure the following steps are taken:

- Secure all heavy equipment located at the site in accordance with manufacturer's specifications. All equipment will be moved to a secured site location.
- All equipment fuel tanks will be filled.
- All subcontractors with equipment or supplies on site will be notified to begin removal procedures.

Condition IV Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition III (Landfall Within 48 hours)

Date/Time Entered Condition III: _____

Action Items

- Provide the status of the storm to site personnel on an hourly basis
- Take actions to secure job site necessary for Condition I that cannot be accomplished in 18 hours
- Recheck all items on checklist for Condition IV to ensure they are complete (i.e., gas tanks are still filled)

See itemized equipment checklist (itemized list of equipment to be secured/removed and COR for action)

Condition III Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition II (Landfall Within 24 Hours)

Date/Time Entered Condition II: _____

Action Items

- Evacuate all visitors from the site
- Conduct a role call of site personnel and inform the SSO
- Check the status of all incoming shipments of supplies and equipment
- Remove all unnecessary vehicles from the site
- Secure heavy equipment in accordance with manufacturer's specification
- Secure all valuable records and equipment
- Release personnel from the site
- Recheck all items on checklist for Conditions IV and III to ensure they are complete (i.e., gas tanks are still filled)

Condition II Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Condition I (Landfall Within 12 Hours)

Date/Time Entered Condition I: _____

Action Items

- Complete all action items for lower conditions of readiness
- Secure job site access and evacuate to safe refuge

Condition I Action Items Complete: _____

Date: _____

HURRICANE PREPAREDNESS CHECKLIST

Resume Site Operations

Date/Time Resume Site Operations: _____

Action Items

- Conduct a damage survey
- Notify all site personnel when to return to work
- Develop a prioritized recovery plan
- Inspect electrical equipment before re-energizing to detect and repair damage
- Provide bottled water for drinking until normal drinking water is deemed safe to drink
- Remove storm debris from site
- Notify ROICC of the resumption of site activities

Resume Site Operations Action Items Complete: _____

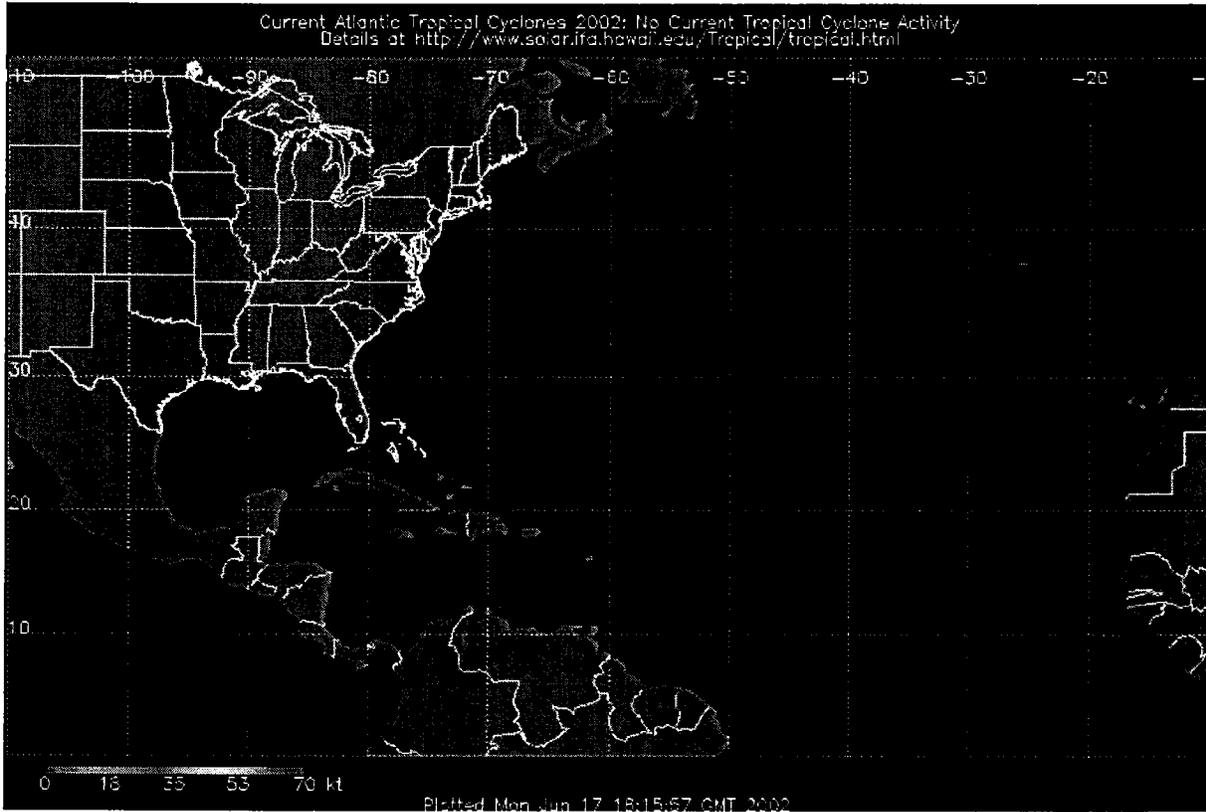
Date: _____

ATTACHMENT B
EMERGENCY PHONE NUMBERS

EMERGENCY TELEPHONE NUMBERS	
<u>Local Agencies</u>	
Base Fire Protection Division	(301) 744-4333
Ambulance	(301) 744-4333
Fire	(301) 744-4333
Security	(301) 744-4333
<u>Hospital - Southern Maryland Hospital</u>	(301) 868-8000
7503 Surrats Road Clinton, MD 20735	
See Attachment E of the SSHASP for directions to hospital	
Regional Poison Control Center	(800) 282-5846
<u>Federal Agencies</u>	
Center for Disease Control	(404) 639-3311
<u>LANTDIV</u>	
ROICC - Lt. Russ Hime/Cathy Gardner	(301) 744-4122
RPM - Jeff Morris	(202) 685-3270
Activity Point of Contact - Shawn Jorgensen	(301) 744-6745
<u>Shaw Environmental, Inc. Personnel</u>	
Program Manager -Daniel Pringle	(412) 380-6248
Site Superintendent – Steve Carriere	(240) 882-1480 (cellular)
Site Safety Officer - TBD	()
UXO Specialist - TBD	()
Program CIH - Paul Lawless	(609) 588-6391
Program Health and Safety Manager - Robert Brooks	(732) 469-5599
Vice President, Health and Safety Program - Warren Houseman	(412) 858-3917
Shaw Environmental, Inc. (24 hour)	(800) 537-9540

ATTACHMENT C
HURRICANE TRACKING MAP
(To Be Updated by Site Personnel)

HURRICANE TRACKING MAP



ATTACHMENT F
HEALTH AND SAFETY PLAN AMENDMENT FORM

**ATTACHMENT F
SITE-SPECIFIC HEALTH AND SAFETY PLAN
AMENDMENT FORM**

Project Name: Site 12

Project No.: 809401

Amendment No.:

Date:

Amendment Addresses:

Sections:

Task(s) Amendment Affects:

Reason For Amendment:

Amendment:

Completed by:

Approved by:

ATTACHMENT G
SITE-SPECIFIC HEALTH AND SAFETY PROCEDURES

ATTACHMENT G

SITE-SPECIFIC HEALTH AND SAFETY PROCEDURES

NOTE: *Shaw Environmental, Inc. health and safety procedures that will be utilized during the project are listed below. A copy of all the Shaw Environmental, Inc. Health and Safety Procedures (HS001 through HS999) is available on the Intranet (Loop).*

HS020	Accident Prevention Program: Reporting Investigation and Review
HS021	Accident Prevention Program: Management Safety Reviews
HS051	Tailgate Safety Meeting
HS060	Hazard Communication Program
HS303	Pressurized Water Cleaning and Cutting Equipment
HS307	Excavation and Trenching
HS400	Working in Hot Environments
HS401	Cold Stress
HS402	Hearing Conservation Program
HS600	Personal Protection Program
HS601	Respiratory Protection Program
HS800	Motor Vehicle Operation: General Requirements
HS820	Forklift Operations



PROCEDURE

Subject: ACCIDENT PREVENTION PROGRAM: REPORTING, INVESTIGATION, AND REVIEW

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish the requirements for incident reporting, investigation, and review. This procedure is an integral part of the company's overall accident prevention program and aids in the determination of causal factors and corrective actions necessary to prevent incident re-occurrence. Key elements of this procedure include:

- **All occupational injuries/illnesses, vehicle accidents, and near miss incidents must be promptly reported and investigated.**

- All Occupational Safety and Health Administration (OSHA) recordable injuries/illnesses and chargeable vehicle accidents must be reviewed by an Accident Review Board. The Accident Review Board report is submitted/approved up through management to the appropriate business line President.

- All incidents involving a fatality, major injury/illness, or resulting in significant property damage will be immediately reported to: the business line Health and Safety Manager; the Vice President, Health and Safety; the business line President; the Vice President, Legal Department; and the CEO.

- All business lines are required to submit a Monthly Loss Report summarizing all incidents that took place during the previous reporting period.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Incident Reporting Process
5.2	Supervisor's Employee Injury Report
5.3	Vehicle Accident Report
5.4	General Liability, Property Damage, and Loss Report
5.5	Incident Investigation Report
5.6	Accident Review Board
5.7	Insurance Notification
5.5	Monthly Loss Report
6.0	Exception Provisions
7.0	Cross References



Vehicle - Any passenger vehicle, including trucks, used upon the highway or in private facilities for transporting passengers and/or property. For the purpose of this procedure, off-road vehicles such as earthmoving equipment, forklifts, non-highway use trucks, etc., are not considered vehicles.

5.0 TEXT

5.1 Incident Reporting Process

Employees are required to immediately report to their direct supervisor all occupational injuries, illnesses, accidents, and near miss incidents having the potential for injury. Any supervisor (but preferably the supervisor directly responsible for the involved employees) with first-hand knowledge of an incident is required to:

- Immediately arrange for appropriate medical attention and notify the responsible health and safety representative.
- Inform Health Resources of all incidents requiring medical attention by calling 1-800-350-4511, and providing the following information:
 - Company Name (Shaw E & I)
 - Employee Name
 - Name of treating medical facility and phone number
 - Brief description of incident.

Health Resource's role is to interface with the treating physician to ensure that appropriate care is provided to the injured employee.

- Complete the *Authorization for Treatment, Release of Medical Information, and Return to Work* (Attachment 8) and the *Supervisor's Employee Injury Report* (Attachment 2) for all cases requiring medical attention. The employee or his/her supervisor is to ensure that these completed forms are faxed to Health Resources at (800) 853-2641 prior to leaving the medical facility or as soon as reasonably possible.
- Prior to an injured employee returning to his/her job duties, a follow-up call by Health Resources will be made to the project site. The purpose of this call is to ensure work restrictions are clarified and planned work activities are consistent with medical recommendations.
- The supervisor is to initiate/complete the appropriate company documentation in accordance with the following incident classifications:
 - OSHA Recordable Cases
 - a. Supervisor's Employee Injury Report (Attachment 2)
 - b. Incident Investigation Report (Attachment 5)
 - c. Accident Review Board (Attachment 6)
 - First Aid Cases



Procedure No.	HS020
Revision No.	0
Date of Revision	03/24/02
Last Review Date	03/24/02
Page	5 of 19

complete the form, then forward it to the project/location manager. The Corporate Risk Management Department must receive a copy of the report within one business day of the incident.

5.5 Incident Investigation Report

All injuries, illnesses, accidents, and near miss incidents will be investigated. Once arrangements for immediate medical care have been made, the employee's direct supervisor, with assistance from the health and safety representative and/or business line Health and Safety Manager, will:

- Reconstruct the conditions which led to the incident (collect the facts);
- Describe and document (include sketch, photos, etc.) how the incident occurred;
- List witnesses and collect written statements when possible;
- Identify and discuss the causative factors;
- Identify the unsafe act or unsafe condition that contributed to the incident;
- Identify possible systematic/management deficiencies; and
- List the corrective actions which are to be taken to prevent re-occurrence of the incident, the person responsible for the corrective action, and the date by which action is to be completed.

The investigation will be started as soon as possible after the incident and a written report (Attachment 5) submitted to the appropriate health and safety representative within 72 hours. In addition to the previous information, reports from external sources (police, insurance carriers, testing laboratories, etc.) are to be obtained as soon as they become available and forwarded to the recipients of the investigation report.

5.6 Accident Review Board

Each manager whose project/location experiences an OSHA recordable or a chargeable vehicle accident is required to convene an Accident Review Board within **10 days** of the accident. The purpose of the Accident Review Board is to review the information gathered for each incident and take appropriate action to prevent its recurrence. The Accident Review Board shall be composed of the project/location manager, the employee's direct supervisor, a health and safety representative, and the employee(s) involved in the incident. When appropriate, a representative of other internal sources of expertise should be involved.

It is generally not acceptable to discipline an employee for having an accident. However, if the Accident Review Board determines that the accident resulted from an unsafe act or violation of company procedure on the employee's part, the employee should be subject to disciplinary action in accordance with the company's progressive disciplinary action system (see Human Resources Procedure HR207).



Procedure No.	HS020
Revision No.	0
Date of Revision	03/24/02
Last Review Date	03/24/02
Page	7 of 19

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Supervisor's Employee Injury Report
3. Vehicle Accident Report
4. General Liability, Property Damage, and Loss Report
5. Incident Investigation Report
6. Accident Review Board Report
7. Injury/Illness Classification Guidelines
8. Medical Forms



Procedure No. HS020
 Revision No. 0
 Date of Revision 03/24/02
 Last Review Date 03/24/02
 Page 9 of 19

**ATTACHMENT 2
 SUPERVISOR'S EMPLOYEE INJURY REPORT**

This report is to be initiated by the employee's supervisor. Answer all questions as completely as possible using available information. This report must be forwarded to the appropriate Health and Safety Representative within 24 HOURS of the incident.

Injured's Name _____ Sex _____ Soc. Sec. No. _____

Home Address _____

City _____ State _____ Zip _____ Phone _____

Date of Incident _____ Job Title _____ Hire Date _____ Birth Date _____ Hourly Wage _____

Name of physician or other health care professional _____

If treatment was given away from the worksite, where was it given?

Facility Address _____

City _____ State _____ Zip _____ Phone _____

Was the employee treated in an emergency room? Yes No

Was the employee hospitalized overnight as an in-patient? Yes No Project Name _____ Project No. _____

Time employee began work _____ AM/PM Time of Incident _____ AM/PM

Incident Reported To: _____

What was the employee doing just before the incident occurred? Describe the activity as well as the tools, equipment or materials the employee was using. Be specific. _____

What happened? Tell how the injury occurred. _____

What was the injury or illness? Tell the part of the body that was affected and how it was affected; be as specific as possible. _____

What object or substance directly harmed the employee? _____

OSHA Classification: Incident First Aid Recordable, No Days Away from Work/No Restricted Activity
 Recordable, Restricted Activity Recordable, Days Away from Work Fatality

Days away from Work _____ Days Restricted Work _____ If the employee died, when did the death occur? _____

All injuries/illnesses requiring outside medical treatment must be reported to CSSC by calling 1-800-243-2490 within 24 hours of the incident with the following exceptions. Contact Gates McDonald at 1-800 642-7587 for cases occurring in Ohio, 360-412-1155 for cases occurring in Washington, or 304-343-3913 for cases occurring in West Virginia.

Workers' Compensation Claim Number (if applicable) _____ Case number from the OSHA 300 Log _____

Supervisor	_____	_____	_____
	(Print Name)	(Signature)	(Date)
Manager	_____	_____	_____
	(Print Name)	(Signature)	(Date)
Health & Safety	_____	_____	_____
	(Print Name)	(Signature)	(Date)



Procedure No. HS020
 Revision No. 0
 Date of Revision 03/24/02
 Last Review Date 03/24/02
 Page 13 of 19

ATTACHMENT 4

GENERAL LIABILITY, PROPERTY DAMAGE, AND LOSS REPORT

This report is to be completed for all losses or damage to company property in excess of \$1,000.00 and all third party damage, regardless of value, resulting from company activities.

PROJECT/LOCATION _____ PROJECT NO. _____ DATE _____

ADDRESS _____

HOW DID DAMAGE OR LOSS OCCUR: _____

DESCRIPTION AND VALUE (\$) OF DAMAGED/LOST/STOLEN PROPERTY: _____

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss): _____

DATE AND TIME OF DAMAGE, LOSS, OR THEFT: Date: _____ Time: _____ a.m./p.m.

OWNER OF DAMAGED/LOST/STOLEN PROPERTY:

Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

INJURED PARTIES (Also complete a Supervisor's Employee Injury Report if a Company Employee):

Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

Description of Injury _____

WITNESSES:

1. Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

2. Name _____ Phone No. (____) _____

Address _____ City _____

Employer and Address _____

WERE PICTURES TAKEN? YES NO

WERE POLICE NOTIFIED? YES NO DEPT. _____ REPORT NO. _____

COMPLETED BY: _____ (Print) _____ (Signature) _____ (Date)

PROJECT/LOCATION MANAGER: : _____ (Print) _____ (Signature) _____ (Date)

REPORT MUST BE CALLED IN OR FAXED TO:
 CORPORATE RISK MANAGEMENT (PHONE: 412-380-4097, FAX: 412-380-6218)
 WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY



Procedure No. HS020
Revision No. 0
Date of Revision 03/24/02
Last Review Date 03/24/02
Page 15 of 19

ATTACHMENT 6

ACCIDENT REVIEW BOARD

DATE:		LOCATION:	
BOARD MEMBERS:			
ACCIDENT DATE:		EMPLOYEE(S) INVOLVED IN INCIDENT:	
INVESTIGATION COMPLETE: YES <input type="checkbox"/> NO <input type="checkbox"/>		ACCIDENT CLASSIFICATION:	
THE FOLLOWING INFORMATION <u>MUST</u> BE PROVIDED BY THE REVIEW BOARD FOR THIS INCIDENT (PRINT):			
SUPERVISOR: _____		PROJECT/LOCATION MGR.: _____	
CAUSE OF ACCIDENT:			
ACTION BY BOARD*:			
* ALL ACTIONS BY THE ACCIDENT REVIEW BOARD ARE SUBJECT TO FINAL REVIEW BY THE HUMAN RESOURCES AND LEGAL DEPARTMENTS.			
ACCEPTED:			
_____ (Employee Signature)		_____ (Supervisor Signature)	
APPROVED:		REJECTED FOR:	
_____ (Project/Location Manager)		_____ _____	
APPROVED:		REJECTED FOR:	
_____ (Business Line Health and Safety Manager or Designee)		_____ _____	
APPROVED:		REJECTED FOR:	
_____ (Business Line Vice President)		_____ _____	



Procedure No.	HS020
Revision No.	0
Date of Revision	03/24/02
Last Review Date	03/24/02
Page	17 of 19

- Application of hot or cold **COMPRESS(ES)** during **first visit** to medical facility;
- Application of **OINTMENTS** to abrasions to prevent drying or cracking;
- Use of **WHIRLPOOL BATH THERAPY** during **first visit** to medical facility;
- **NEGATIVE X-RAY DIAGNOSIS**; and
- **OBSERVATION** of injury during visit to medical facility.

The following procedure, by itself, is not considered medical treatment:

- Administration of **TETANUS SHOT(S)** or **BOOSTER(S)**. However, these shots are often given in conjunction with more serious injuries; consequently, injury requiring these shots may be recordable for other reasons.

Loss of Consciousness - If an employee loses consciousness as the result of a work-related injury/illness, the case must be recorded no matter what type of treatment was provided. The rationale behind this recording requirement is that loss of consciousness is generally associated with the more serious injuries.

Restriction of Work or Motion - Restricted work activity occurs when the employee, because of the impact of a job-related injury, is physically or mentally unable to perform all or any part of his or her normal assignment during all or any part of the workday or shift. The emphasis is on the employee's ability to perform normal job duties. Restriction of work or motion may result in either a lost worktime injury or a non-lost worktime injury, depending upon whether the restriction extended beyond the day of injury.

Transfer to Another Job - Injuries requiring transfer of the employee to another job are also considered serious enough to be recordable regardless of the type of treatment provided. Transfers are seldom the sole criterion for recordability because injury cases are almost always recordable on other grounds, primarily medical treatment or restriction of work or motion.



Procedure No. HS020
Revision No. 0
Date of Revision 03/24/02
Last Review Date 03/24/02
Page 19 of 19

**ATTACHMENT 8B
MEDICAL FORMS**

AUTHORIZATION FOR RELEASE OF MEDICAL INFORMATION

I, _____, grant authorization to _____
(Print Full Name) *(Treating Physician's Name)*
for the release of any information concerning my occupational injury/illness to:

HEALTH RESOURCES

600 West Cummings Park, Suite 3400
Woburn, Massachusetts 01801
Phone: (800) 350-4511
Fax: (800) 853-2641

for the purpose of disability follow-up and return to work authorization.

Please provide the following information:

EMPLOYEE INFORMATION:

Full Name: _____
Date of Birth: _____
Social Security #: _____
Home Address: _____

Home Phone: _____
Work Phone: _____

MEDICAL INFORMATION:

Treating Physician's Name: _____
Physician's Address: _____

Phone Number: _____
Fax Number: _____

Employee Signature: _____ Date: _____



PROCEDURE

Subject: **ACCIDENT PREVENTION PROGRAM:
MANAGEMENT SAFETY INSPECTIONS**

1.0 PURPOSE AND SUMMARY

This procedure establishes the requirement for management safety inspections of project and office locations. These inspections are an integral part of the overall accident prevention program and help to demonstrate management's commitment to safety. Key requirements of this procedure include:

- Project managers are required to conduct one inspection per month and ensure that at least one other inspection is conducted during the month;
- Office managers are required to conduct an office safety inspection once every six months; and
- Completed inspection reports are given to the project/office health and safety representative for review. A copy of the completed report will then be forwarded to the respective business line health and safety manager.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Text
4.1	Safety Inspections and Documentation
4.1.1	Management Site Visits
4.1.2	Project Managers
4.1.3	Office Managers
4.1.4	Project Supervisors
4.1.5	Health and Safety Representative
4.2	Workshops
5.0	Exception Provisions
6.0	Cross References
7.0	Attachments



Procedure No.	HS021
Revision No.	0
Date of Revision	4/24/02
Last Review Date	4/24/02
Page	3 of 17

4.1.2 Project Managers

All project managers are required to complete at least one safety inspection per month and ensure that at least one other safety inspection per month is conducted. In the event that the project manager is not present at the project site during the month, this responsibility may be delegated to the project supervisor.

4.1.3 Office Managers

Office managers are required to conduct an office safety inspection once every six months. Managers are encouraged to conduct more frequent inspections if the office location is being remodeled or if new space is being occupied that was not previously inspected.

4.1.4 Project Supervisors

Project supervisors are expected to inspect their projects monthly and ensure that corrective actions are implemented. Dependent upon project manager participation, project supervisors may also be required to conduct an additional monthly inspection. The requirement to conduct these inspections cannot be delegated.

4.1.5 Health and Safety Representative

Health and safety representatives must continually observe activities and correct unsafe acts/conditions as soon as reasonably possible. They are also required to review each Safety Inspection Report completed at their location to ensure that corrective actions are implemented. Once this review is complete, they will forward the reports to the appropriate business line health and safety manager.

4.2 Workshops

Health and safety representatives will present workshops and/or conduct joint inspections to help managers and supervisors develop their inspection skills.

5.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

6.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances

7.0 ATTACHMENTS

1. Responsibility Matrix
2. Project Safety Inspection Report
3. Office Safety Inspection Report



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS021
0
4/24/02
4/24/02
5 of 17

ATTACHMENT 2

PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

BUSINESS LINE: _____ PROJECT NAME/NUMBER:
PROGRAM MANAGER: _____ PROJECT MANAGER:
GENERAL PROJECT DESCRIPTION:
SITE ACTIVITIES AT TIME OF INSPECTION:

INTERVIEWED EMPLOYEE:
SAFETY ISSUE:
CORRECTIVE ACTION:

ASSIGNED TO: _____ FOLLOW-UP DATE:
CORRECTION VERIFIED BY: _____ DATE:

INTERVIEWED EMPLOYEE:
SAFETY ISSUE:
CORRECTIVE ACTION:

ASSIGNED TO: _____ FOLLOW-UP DATE:
CORRECTION VERIFIED BY: _____ DATE:

INSPECTION COMPLETED BY: _____ DATE:

HEALTH AND SAFETY REVIEW BY: _____ DATE:



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

- 4. Are power tools inspected before each use?
5. Are nonsparking tools available when necessary?
6. Is the correct tool being used for the job?

MOTOR VEHICLES

- 1. Are vehicles regularly inspected?
2. Are personnel licensed for the vehicles they operate?
3. Are unsafe vehicles tagged and reported to supervision?
4. Is vehicle's safety equipment operating properly?
5. Are loads secure?
6. Are vehicle occupants using safety belts?
7. Are current insurance cards and blank accident report forms located in vehicles?

EMERGENCY PLANS

- 1. Are emergency telephone numbers posted?
2. Have emergency escape routes been designated?
3. Are employees familiar with the emergency signal?
4. Has the emergency route to the hospital been established and posted?
5. Is a vehicle on site that can transport injured employees to the hospital?

MATERIALS HANDLING

- 1. Are materials stacked and stored to prevent sliding or collapsing?
2. Are tripping hazards identified?
3. Are semi-trailers chocked?
4. Are fixed jacks used under semi-trailers?
5. Are riders prohibited on materials handling equipment?
6. Are approved manlifts provided for the lifting of personnel?
7. Are personnel in manlifts wearing approved fall protection devices?

FIRE PROTECTION

- 1. Has a fire alarm system been established?
2. Do employees know the location and use of all fire extinguishers?
3. Are fire extinguisher locations posted?
4. Are combustible materials segregated from open flames?
5. Have fire extinguishers been professionally inspected during the last year?
6. Are fire extinguishers visually inspected monthly?

ELECTRICAL

- 1. Is electrical equipment and wiring properly guarded and maintained in good condition?
2. Are extension cords kept out of wet areas?
3. Is damaged electrical equipment tagged and taken out of service?
4. Have underground electrical lines been identified by proper authorities?
5. Has a lockout/tagout system been established?
6. Are GFCIs being used on all temporary electrical systems and as needed?

ELECTRICAL (continued)

- 7. Are extension cords being inspected daily (i.e., group pin in place, no unapproved splices)?
8. Are warning signs exhibited on high voltage equipment (250V or greater)?



PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

Table with 3 columns: YES, NO, N/A. Rows 5-11: Are broken or damaged ladders tagged and taken out of service? Are metal ladders prohibited in electrical service? Are stairways and floor openings guarded? Are safety feet installed on straight and extension ladders? Is general housekeeping being maintained? Are ladders tied off? Are handrails and siderails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?

SITE SAFETY PLAN

Table with 3 columns: YES, NO, N/A. Rows 1-5: Is a site safety plan available on site or accessible to all employees? Does the safety plan accurately reflect site conditions and tasks? Have potential hazards been described to employees on site? Is there a designated safety official on site? Have all employees signed the safety plan acknowledgment form?

SITE POSTERS

Table with 3 columns: YES, NO, N/A. Rows 1-2: Are the following posters displayed in a prominent and accessible area? (A. Minimum Wage, B. OSHA Job Protection, C. Equal Employment Opportunity) Are all required state-specific posters displayed?

SITE CONTROL

Table with 3 columns: YES, NO, N/A. Rows 1-6: Are work zones clearly marked? Are support trailers located to minimize exposure from a potential release? Are support trailers accessible for approach by emergency vehicles? Is the site properly secured during and after work hours? Is an exclusion zone sign-in/sign-out log maintained? Are only employees with current training and physicals permitted in exclusion zone?

HEAVY EQUIPMENT

Table with 3 columns: YES, NO, N/A. Rows 1-9: Is heavy equipment inspected as prescribed by the manufacturer? Is defective heavy equipment tagged and taken out of service? Are project roads and structures inspected for load capacities and proper clearances? Is heavy equipment shut down for fueling and maintenance? Are backup alarms installed and working on mobile equipment? Have qualified equipment operators been designated? Are riders prohibited on heavy equipment? Are guards and safety appliances in place and used? Are operators using the "three point" system when mounting/dismounting equipment?

EXCAVATION

Table with 3 columns: YES, NO, N/A. Rows 1-5: Has a "competent person" been designated to oversee excavation activities? Prior to opening excavations, are utilities located and marked? Has a professional engineer evaluated all excavations greater than 20 feet deep? Is there rescue equipment on site and accessible to the excavation area? Is excavated material placed a minimum of 24 inches from the excavation?



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS021
0
4/24/02
4/24/02
11 of 17

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

ALL NEGATIVE RESPONSES	CORRECTIVE ACTION	ASSIGNED TO	DATE ASSIGNED	DATE COMPLETED	VERIFIED BY

DESCRIBE POSITIVE SAFETY OBSERVATIONS



OFFICE SAFETY INSPECTION REPORT

OFFICE _____ DATE ____

FIRST AID YES NO N/A

- 1. Are first aid kits accessible and identified?
2. Are emergency eye wash/safety showers available where needed and inspected?
3. Are first aid kits inspected weekly?

- FIRE PREVENTION
1. Are employees smoking only in designated outdoor areas?
2. Are fire lanes/evacuation routes established and maintained?
3. Are approved safety cans/cabinets available for storage of flammable liquids?
4. Are fire exits clearly identified and unobstructed?

- FURNITURE AND EQUIPMENT
1. Are desks, file cabinets, etc. arranged so that drawers do not open into aisles or walkways?
2. Are desk and file drawers closed after use?
3. Is weight distributed in file cabinets so that upper drawer contents does not create a top-heavy condition?
4. Are cabinets, bookcases, and shelves secured to prevent their falling over?
5. Are faulty desks, chairs, or other office equipment repaired or taken out of service?
6. Is adequate and sufficient lighting provided in all work areas?
7. Are paper cutter blades in fully down and locked position when not in use?
8. Are work stations arranged to be comfortable without unnecessary strains on backs, arms, necks, etc.?
9. Do machines with exposed moving parts have appropriate guards?

- AISLES AND FLOORS
1. Is aisle clearance adequate for two-way traffic and for unobstructed access to all parts of the office and building?
2. Does office arrangement allow easy egress under emergency conditions?
3. Are wastebaskets, briefcases, or other objects placed where they are not a tripping hazard?
4. Are floors clear of pencils, bottles, and other loose objects?
5. Are tripping hazards from electrical cords, phone outlets, or other protrusions on the floor prevented by arrangement of furniture or other means?
6. Are floors free of loose tiles and projections that can create a tripping hazard?
7. Is carpeting in good condition and not badly worn or torn?

- HAND AND POWER TOOLS
1. Are defective hand and power tools tagged and taken out of service?
2. Is eye protection available and used when operating power tools?
3. Are guards and safety devices in place on power tools?
4. Are power tools inspected before each use?
5. Is the correct tool being used for the job?
6. Do knife blades have guards when not in use?

- MOTOR VEHICLES
1. Are vehicles regularly inspected?
2. Are personnel licensed for the vehicles they operate?
3. Are unsafe vehicles reported to supervision?
4. Is safety equipment on vehicles?
5. Are loads secure on vehicles?



OFFICE SAFETY INSPECTION REPORT

OFFICE _____

DATE _____

	<u>YES</u>	<u>NO</u>	<u>N/A</u>
8. Are stairways and floor openings guarded?	_____	_____	_____
9. Are safety feet installed on straight and extension ladders?	_____	_____	_____
10. Are employees walking instead of running?	_____	_____	_____
11. Are handrails and siderails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?	_____	_____	_____
12. Are there torn, loose, or curled carpets?	_____	_____	_____

HOUSEKEEPING

1. Is good housekeeping maintained?	_____	_____	_____
2. Are paper and materials stored properly?	_____	_____	_____
3. Are cleaning fluids used only in small quantities and stored in closed containers that are kept in well-ventilated areas?	_____	_____	_____
4. If cleaning fluids are flammable, are they not used near a flame or an open heating element?	_____	_____	_____
5. Are wastebaskets emptied on a daily basis?	_____	_____	_____

SITE POSTERS

1. Are the following posters displayed in a prominent and accessible area?			
A. Minimum Wage	_____	_____	_____
B. OSHA Job Protection	_____	_____	_____
C. Equal Employment Opportunity	_____	_____	_____
2. Are all required state-specific posters displayed?	_____	_____	_____

HAZARD COMMUNICATION

1. Is the written HAZCOM program available?	_____	_____	_____
2. Is there a MSDS <u>FOR EACH HAZARDOUS CHEMICAL</u> present in the office?	_____	_____	_____
3. Are all containers properly labeled, as to content, hazard?	_____	_____	_____
4. Have employees been trained on chemical hazards?	_____	_____	_____
5. Have all employees signed the HAZCOM acknowledgment form?	_____	_____	_____
6. Is there a list of chemicals maintained on site?	_____	_____	_____

DOCUMENTATION

1. Is an OSHA 200 Log maintained and posted during the month of February?	_____	_____	_____
2. Are accident report forms available?	_____	_____	_____
3. Is a copy of health and safety policy and procedures available?	_____	_____	_____



PROCEDURE

Subject: TAILGATE SAFETY MEETINGS

1.0 PURPOSE AND SUMMARY

This procedure establishes the requirement for the conductance of tailgate safety meetings. These meetings are to be conducted at each company project site, on a daily basis, prior to the start of any work activities.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Company - All wholly-owned subsidiaries of Shaw Environmental & Infrastructure, Inc. (Shaw E & I).

Tailgate Safety Meeting - A short training or informative session that provides safety guidelines for the planned work activities for the day or shift.



Procedure No.	HS051
Revision No.	0
Date of Revision	04/24/02
Last Review Date	04/24/02
Page	3 of 5

5. **Other Safety Topic(s)** - List any remaining safety topics pertinent to the potential hazards of the job for that day. This is an area where different, unique subjects can be introduced to make the tailgate safety meeting more interesting.

J. **Attendees** - Printed name and signature of all persons in attendance. (Also, list affiliation if not employed by the company.)

K. **Meeting Conducted By** - Printed name and signature of individual conducting the tailgate safety meeting.

6.0 **EXCEPTION PROVISIONS**

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances

7.0 **CROSS REFERENCES**

HS013 Health and Safety Procedure Variances
HS060 Hazard Communication Program

8.0 **ATTACHMENTS**

1. Responsibility Matrix
2. Tailgate Safety Meeting Form



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS051
0
04/24/02
04/24/02
5 of 5

ATTACHMENT 2

TAILGATE SAFETY MEETING FORM

Project Name/Number: _____ Date: _____ Time: _____
Client: _____
Work Activities: _____
Hospital Name/Address: _____
Hospital Phone No.: _____ Ambulance Phone No.: _____

Safety Topics Presented

Chemical Hazards: _____

Physical Hazards: _____

Personal Protective Equipment:

Activity: _____ PPE Level: _____

New Equipment: _____

Other Safety Topic(s): _____

Attendees

NAME PRINTED

SIGNATURE

Meeting conducted by:



PROCEDURE

Subject: **HAZARD COMMUNICATION PROGRAM**

1.0 PURPOSE AND SUMMARY

This procedure has been developed to ensure that all affected company employees are provided with current information on the hazardous chemicals that they may encounter during their work. The basic principle of Hazard Communication (HAZCOM) is that anyone that works with hazardous chemicals has both a need and a right to know the identities and the hazards of any chemical to which they may be occupationally exposed. This principle has been propagated by the Occupational Safety and Health Administration (OSHA) in 29 Code of Federal Regulations (CFR) 1910.1200 *Hazard Communication*.

Some company activities are likely to occur in states or localities that either have or will have requirements that differ from those contained within the federal standard. In such circumstances, the local health and safety representative will be responsible for ensuring that these requirements are included in either a site health and safety plan or a similar document and conveyed to all affected employees. If federal, state, or local regulations vary or conflict, the more protective requirements and practices will be followed.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Hazardous Chemical Inventories
5.2	Procurement of Hazardous Chemicals
5.3	Container Labeling
5.4	Material Safety Data Sheets (MSDS)
5.5	Training
5.6	Trade Secrets
5.7	Contractors
6.0	Exception Provisions
7.0	Cross References
8.0	Attachments



Procedure No.	HS060
Revision No.	0
Date of Revision	04/24/02
Last Review Date	04/24/02
Page	3 of 11

located at a workplace in which they are responsible for ensuring that the requirements of this procedure are fulfilled. The local health and safety representative may designate another qualified individual to assume some or all of the responsibilities delineated in this procedure.

Physical Hazard - A chemical for which there is scientifically valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable, or reactive.

Responsible Party - The entity responsible for preparation or distribution of Material Safety Data Sheets (MSDS) that can provide additional information on the hazardous chemical and appropriate emergency procedures.

Trade Secret - Any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not currently know or use it.

Workplace - An establishment, job site, laboratory, office, or project at one geographic location containing one or more work areas.

5.0 TEXT

In accordance with the requirements established in 29 CFR 1910.1200, employers are required to develop, implement, and maintain at each workplace a HAZCOM program. The program contained herein is intended to ensure that the hazards of all chemicals used by employees are evaluated and that information concerning the hazards of each chemical are conveyed to affected employees. The company program generally consists of five provisions, including hazardous chemical inventories, procurement of hazardous chemicals, container labeling, MSDSs, and the development and implementation of employee training programs. Since the company does not typically produce, distribute, or import hazardous chemicals, the focus of this procedure is on establishing an effective consumer/handler type HAZCOM program and the communication of information to our affected employees.

There are some types of chemicals that are specifically exempt from this procedure. These materials include:

- Any hazardous waste as defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1967, as amended (42 U.S.C. 6901 *et seq.*), when subject to regulations issued under that Act by the U.S. Environmental Protection Agency.
- Any hazardous chemical as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) when the hazardous chemical is the focus of remedial or removal actions being conducted under CERCLA in accordance with U.S. Environmental Protection Agency regulations.



Procedure No.	HS060
Revision No.	0
Date of Revision	04/24/02
Last Review Date	04/24/02
Page	5 of 11

5.2 Procurement of Hazardous Chemicals

Since the company does not typically manufacture, distribute, or import hazardous chemicals, procurement is the primary method of obtaining hazardous chemicals. The person initiating the procurement of a hazardous chemical will be responsible for requesting a MSDS from the manufacturer or distributor. This MSDS is to be provided either prior to or at the time of receipt of the chemical. Hazardous chemicals are strictly forbidden to be accepted without an accompanying MSDS. Upon receipt of a hazardous chemical, the person receiving the shipment will notify the local health and safety representative so that a review of the MSDS can be conducted. Also, note that the supplier is only required to submit a MSDS with the initial shipment of a hazardous chemical to a specific location.

In the unlikely event that a hazardous chemical is either manufactured, imported, or distributed by the company, the Vice President, Health and Safety will be notified so that required actions, as dictated by OSHA, can be implemented.

5.3 Container Labeling

Labeling on hazardous chemical containers is meant to provide immediate information to affected employees about the hazards of chemicals they will be expected to handle during the course of their job duties. It is the responsibility of the manufacturer, importer, or distributor of the chemical to ensure that each hazardous chemical leaving their place of business is labeled, tagged, or marked with the following information:

- Identity of the hazardous chemical (must be common to the label, the MSDS, and the chemical inventory list);
- Appropriate warnings of the hazardous effects of a chemical (words, pictures, symbols, or any combination that appears on the label and convey the specific physical or health hazards including target organ effects); and
- Name and address of the chemical manufacturer, importer, or other responsible party.

The person receiving the shipment is responsible to ensure that each container of hazardous chemical(s) has been provided with this labeling information. Hazardous chemicals that do not contain adequate labeling will not be accepted by the receiving person. In the event that hazardous chemicals that do not contain adequate labeling are inadvertently received, they are not to be handled until the identity of the material and appropriate hazard warnings are provided. If the hazardous chemical is regulated by a chemical-specific health standard, then it must be labeled in accordance with the requirements of that standard.

As long as the hazardous chemicals are maintained in their original, properly labeled container and their composition is not altered, there is no need for additional labeling. In the event that the chemical is transferred from a labeled container to an unlabeled



Procedure No.	HS060
Revision No.	0
Date of Revision	04/24/02
Last Review Date	04/24/02
Page	7 of 11

5.5 Training

All affected employees will be provided with information and training on the hazardous chemicals in their work area at the time of their initial assignment, when new information about the hazards of a chemical is discovered, and whenever a new physical or health hazard that the employees have not previously been informed of is introduced into the workplace. The HAZCOM training record has been provided as Attachment 3.

Training on this HAZCOM program may be satisfied by the use of two different types of training sessions. These sessions include:

- **Tailgate Safety Meetings** - These meetings will be used to convey the methods and observations that may be used to detect the presence or release of a hazardous chemical in the workplace, the physical and health hazards of the chemicals in the workplace, and the measures that can be taken to protect affected employees from these hazards. The guidelines for this meeting are described in Procedure HS051, Tailgate Safety Meetings.
- **Workplace-Specific or Annual Refresher Training** - Either of these training sessions can be used to convey the details of this HAZCOM program. These details include an explanation of labeling systems, the use of MSDSs, and how employees can obtain and use the appropriate hazard information. These training sessions are discussed further in Procedure HS050, Training Requirements.

Workplace-specific and tailgate safety meetings will be facilitated by the local health and safety representative or another individual who is knowledgeable on the requirements of the HAZCOM program and the specific chemicals that are being discussed. Annual refresher training can only be conducted by personnel previously approved by the company Training Department.



ATTACHMENT 1
HAZARD COMMUNICATION PROGRAM

Responsibility Matrix

Action	Procedure Section	Responsible Party				
		Purchaser	Receiver	Affected Employee	Local Health and Safety Representative	Vice President, Health and Safety
Understand and Comply With State and/or Local Regulations	1.0				X	
Issuance, Revision, and Maintenance of Procedure	3.1					X
Review and Understand This Procedure	5.0	X	X	X	X	
Establish, Update, and Revise MSDS Binder	5.1				X	
Request MSDSs for Procured Chemicals	5.2	X				
Initial Review of MSDSs	5.2				X	
Implement Requirements For Company Manufactured, Imported, or Distributed Chemicals	5.2					X
Review Incoming Shipments for Hazard Labeling/MSDS	5.3		X			
Request Missing MSDSs From Manufacturer or Distributor	5.4		X			
Provide HAZCOM Training	5.5				X	
Receive HAZCOM Training	5.5			X		
Obtain Information on Proprietary Chemicals	5.6					X
Transmit MSDSs to Contractors	5.7				X	
Obtain MSDSs From Other Entities	5.7				X	



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS060
0
04/24/02
04/24/02
11 of 11

ATTACHMENT 3

HAZARD COMMUNICATION AND RIGHT-TO-KNOW STANDARDS
EMPLOYEE TRAINING RECORD

INITIAL:

1. I have been informed about the Hazard Communication Program, Material Safety Data Sheets (MSDS), their use and location, and the procedures to obtain copies.
2. I have been informed that some of my work may involve exposure to toxic substances, the hazards of which will be reviewed with me in tailgate safety meetings or site-specific training.
3. I have been informed about the right of employees to have access to relevant exposure and medical records, and the procedures for requesting access.
4. I understand that the company must act upon a request in a reasonable amount of time so as to avoid interruption of normal work operations.
5. I have been provided access to the applicable regulations governing hazard communication, and access to employee exposure and medical records.

PRINT NAME: _____

SIGNATURE: _____

EMPLOYEE NUMBER: _____

DATE: _____



PROCEDURE

Subject: PRESSURIZED WATER CLEANING AND CUTTING EQUIPMENT

1.0 PURPOSE AND SUMMARY

This procedure covers the personnel requirements, operator training, operating procedures, and recommended equipment performance/design for the proper operation of all types of pressure water jet cleaning and cutting equipment as normally used by industries concerned with construction, maintenance, repair, cleaning, cutting, and demolition work.

The term “high-pressure water jetting” covers all water jetting operations, including the use of additives or abrasives at pressures above 1000 psig.

Any person required to operate or maintain pressure water jetting equipment shall have been trained and have demonstrated the ability and knowledge to do so in accordance with the original equipment manufacturer’s instructions, specifications, and training programs.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Qualified Operators
5.2	Training
5.3	Personal Protective Equipment
5.4	Pre-operating Procedures
5.5	Operational Procedures
5.6	Single Person Operation
5.7	Shotgunning
5.8	Moleing or Flex Lancing
5.9	Ridge Lancing
5.10	Additives
5.11	Proper Operation
5.12	Use of Lances and Nozzles
5.13	Health and Safety Plan
6.0	Exception Provisions
7.0	Cross References
8.0	Attachments

3.0 RESPONSIBILITY MATRIX



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 15

A device with one or more openings where the fluid discharges from the system. The nozzle restricts the area of flow of the fluid, accelerating the water to the required velocity and shaping it to the required flow pattern and distribution for a particular application. Combinations of forward and backward nozzles are often used to balance the thrust. Such nozzles are commonly referred to as tips, jets, orifices, etc.

Operator

A person who has been trained in accordance with the original manufacturer's instructional training program and has been qualified through demonstrating the knowledge, experience, and ability to perform the assigned task.

Operator Trainee

A person not fully qualified due to the lack of sufficient knowledge or experience, or both, to perform the assigned task without supervision.

Pressure Water Jet System

Water delivery systems that have nozzles or other openings whose function is to increase the speed of liquids that may cause injury. Solid particles or additional chemicals may also be introduced, but the exit in all cases will be in a free stream. The system shall include the pumps (pressure-producing devices), hoses, lances, nozzles, valves, safety devices, and personal protective equipment, as well as any heating elements or injection systems, attached thereto.

Shotgunning

An application whereby a lance or nozzle combination can be manipulated in virtually all planes of operation.

5.0 TEXT

This procedure is intended to provide guidance on the proper operation of pressure water jet cleaning and cutting equipment.

This procedure is also applicable at lower pressures at which there is foreseeable risk of injury.

All equipment shall be operated in a manner consistent with the manufacturer instructions for the specific model of equipment to be used. Such instructions and manuals shall be kept in a waterproof compartment with the equipment. (NOTE: Rental equipment shall not be accepted without the manufacturer's manual.)

5.1 Qualified Operators

Only personnel who have undergone a proper training program and who have demonstrated the knowledge and skill, and gained the experience to perform all likely assigned tasks shall operate water jetting equipment. They may also supervise the training of new operators.

5.2 Training

Before being assigned to their first water jetting jobs, associates shall receive proper training. A core module for pressurized water systems is available from the Training Department. This shall be supplemented with site-specific, hands-on training per the



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 15

The minimum personal protective equipment (PPE) shall be explained. Instructions shall be given as to when and how specific clothing and other types of protective devices shall be worn according to the type of work performed, locations, etc.

- 5.3.1 Compliance.** All applicable recommended practices and regulations, instructions, and warnings covering PPE shall be followed as prescribed by the original equipment manufacturer's programmed instructional material.
- 5.3.2 Head Protection.** All operators shall wear hard hats with attached face shields.
- 5.3.3 Eye Protection.** Suitable eye protection (adequate for the purpose and of adequate fit on the person) shall be provided to all operators of pressure water jetting equipment and must be worn within the working area. Where liquids liable to cause eye damage (see Material Safety Data Sheets) are encountered, it is necessary to use either a combination of visor and impact-resistant goggles, or a full hood with shield.
- 5.3.4 Body Protection.** All operators shall be supplied with suitable waterproof clothing and jet-resistant PPE (i.e., foot and leg guards) having application for the type of work being undertaken. Garments shall provide full protective cover to the operator, including arms. Liquid- or chemical-resistant suits shall be worn where there is a reasonable probability of injury (see Material Safety Data Sheets) that can be prevented by such equipment.
- 5.3.5 Hand Protection.** Adequate hand protection shall be supplied to all operators and shall be worn when there is a reasonable probability of injury that can be prevented by such equipment. (See original equipment manufacturer specifications.)
- 5.3.6 Foot and Leg Protection.** All operators shall be supplied with waterproof boots with steel toecaps and shanks. **Metatarsal guards and leg guards shall be used by the jetting gun operators.**
- 5.3.7 Hearing Protection.** Pressure water jetting operations may produce noise levels in excess of 90 dB(A). Suitable ear protection issued in accordance with the recommended practices of the original equipment manufacturer must be worn. Provision shall be made for regular inspection and maintenance, including daily cleaning of hearing protection devices that are of the reusable type. All personnel and operators shall receive instruction in the correct use of ear protectors such that noise exposure lies within the limits as specified by the original equipment manufacturer's instructions.
- 5.3.8 Respiratory Protection.** A respiratory protection program shall be implemented where there is a reasonable probability of injury that can be prevented by such a program.



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	7 of 15

energized, shielded, or otherwise made safe. GFCIs shall be used for any necessary power hook-ups.

5.5 Operational Procedures

- 5.5.1 Work Area.** Isolate the workpieces/items to be jetted from any unprotected areas to a protected pressure water jetting area. Cutting or cleaning in place or adjacent to the installed position can be done with the necessary clearance and permission of the occupier and equipment/facility owner.
- 5.5.2 Area Limits.** Area limits applicable to the cutting or cleaning operations shall be defined by barriers and should be marked with notices to warn against access to other personnel and specific hazards present. Suitable barriers shall be an approved form of hazard warning, rope, or tape, as a minimum. Alternatively, a suitable barrier shield is acceptable at any reasonable distance. Notices should read “Danger - Keep Clear, Pressure Water Jetting in Operation - Severe Injury May Result”, or other suitable wording.
- 5.5.3 Corrosive Materials.** Where there is a possibility of encountering corrosive or toxic material, the general contractor or employer or owner shall be requested to inform the person in charge of pressure water jetting of any precautions that may be necessary, including the collection and disposal of waste materials.
- 5.5.4 Work Surface.** Operators should have good access to the workpiece, safe walking and working surfaces, and secure footing. The work area should be kept clear of loose items and debris to prevent tripping and slipping hazards.
- 5.5.5 Unauthorized Access.** Prevent access by unauthorized persons into the area where pressure water jet cleaning or cutting, or both, is taking place. The area shall be secured as described in Section 5.5.2. The perimeter should be outside the effective range of the jet wherever possible.
- 5.5.6 Approaching the Operator.** Personnel having reasons to enter the pressure water jet cleaning and cutting area must wait until the jet is stopped and their presence is known. Personnel wishing to have the jet stopped shall approach a team member other than the jet operator. The jet operator shall not be distracted until the jet has been stopped.
- 5.5.7 Side Protection.** Suitably placed side shields shall be provided to safeguard personnel and equipment against contact with grit or solids removed by the jet.
- 5.5.8 Pressurizing the System.** Increase pressure slowly on the system while it is being inspected for leaks or faulty components, or both. Repair or replace components only when the equipment is properly locked out and tagged. The system shall be depressurized, shut down, and the key removed for repairs.



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	9 of 15

5.5.18 Fitness. The operator and other team members shall be capable of performing the required operations safely. All shall be capable of speaking and reading the instructions and warnings in the language of their place of work.

5.6 Single Person Operation

Single person operation is allowed where the pressure does not constitute a hazard to personnel. Single person operations are prohibited at operating pressures exceeding 1000 psig and may be deemed unsafe at lower pressures due to jobsite conditions.

(NOTE: All HAZWOPER operations are required to use the buddy system.)

5.6.1 Single Operator Guidelines. All other recommendations pertaining to team operations shall apply.

5.7 Shotgunning

5.7.1 Controls. The person operating the nozzle shall have direct control of the dump system.

5.7.2 Attendance. The pressurized system shall never be left unattended.

5.7.3 Multiple Operation. When more than one shotgunning operation is being performed within the same area, install a physical barrier or maintain adequate spacing between operators to prevent the possibility of injury from the pressure water.

5.7.4 Target Holding. Never manually hold objects to be cleaned.

5.7.5 Connection Protection. The point where the hose connects to the gun shall be shrouded by a protective device such as a heavy duty hose, shoulder guard, and the like, to prevent injury to the operator should the hose, pipe, or fitting rupture.

5.7.6 Minimum Length. When used, the minimum length of the shotgun lance extension shall be 4 feet (1.2 mm) from the triggering device to the nozzle.

5.7.7 Hose Protection. Use steel-braided hoses on air-operated, fail-safe systems to keep the system from being activated by someone stepping on the hose or running over it.

5.8 Moleing or Flex Lancing

5.8.1 Control. The operator shall have direct control of the dump system.

5.8.2 Reversing. A positive method shall be used to prevent the nozzle from reversing direction inside the item being cleaned. Safety guards for this purpose shall be used.

5.8.3 Retrojets. During manual operations, the entrance to a line or pipe shall not be cleaned with a nozzle containing back jets without adequate shielding.



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	11 of 15

- 5.11.2 Adjustments.** Apart from operational procedures, no attempt shall be made to perform maintenance or adjust any nut, hose connection, fitting, etc., while the system is under pressure. Stop the pumps, discharge any pressure in the line, and remove the key prior to making any such adjustment. Take care to release the pressure in the dry shut-off gun and the line when the unit is switched off.
- 5.11.3 Equipment Malfunction.** If for any reason the water flow does not shut off when the trigger or foot pedal is released, cease work until the item has been serviced, repaired, or changed by properly trained personnel. Equipment shall be shut down, depressurized, and the key removed prior to making repairs.
- 5.11.4 Reaction Force.** The operators shall be allowed to experience the reaction force of the jet progressively until the required operating pressure is reached. Use the lowest pressure compatible with the work to be done. Do not adjust the pressure without the operator being aware of this operation.
- 5.11.5 Effect of Line Pulses.** Operators shall be made aware of the reactive effect of pressure in the line that can transmit a severe jolt to the operator when the dump valve or dry shut-off valve is operated. To minimize this effect, keep total hose lengths as short as possible. Damping devices shall be introduced into the system in accordance with the original equipment manufacturer's designs or instructions.
- 5.11.6 Thermoplastic Hoses.** Thermoplastic hose shall not be used for water jetting unless specifically designed for this purpose.
- 5.11.7 Operator Position.** While operating, the team members shall be safely positioned. Stop the jetting if any person encroaches into the working area.
- 5.11.8 Work Stoppage.** Stop work in the following cases:
- In the event that leaks or damage become apparent;
 - If any person becomes aware of any change in conditions or of any hazards being introduced or existing;
 - If plant or work alarms are sounded; or
 - If any of the practices in this procedure are not being followed.
- 5.11.9 Hose Protection.** Protect all hoses from being run over and crushed by vehicles, fork lift trucks, and the like.
- 5.11.10 Back Thrust.** The back thrust from a linearly directed jet can be calculated from the equation:
- $$B = 0.052 Q(P)^{0.5}$$
- where:
- B = Back thrust, lb(kg)
 - Q = Flow rate, gal/min (or metric equivalents), and
 - P = Jet pressure (psi)



Procedure No.	HS303
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	13 of 15

The HS professional for the job shall include appropriate assessment and hazard control information in the project HASP.

6.0 EXCEPTION PROVISIONS

Exceptions shall be per the requirements of Shaw E & I Procedure HS013.

7.0 CROSS REFERENCES

ASTM E-1575-93, *Standard Practice for Pressure Water Cleaning and Cutting*
Water Jet Technology Association's *Recommended Practices for the Use of Manually Operated High Pressure Water Jetting Equipment*

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Reservice and Operational Checklist for Pressure Water Jet Cleaning and Cutting Equipment



**ATTACHMENT 2 - RESERVICE & OPERATIONAL CHECKLIST FOR PRESSURE
 WATER JET CLEANING AND CUTTING EQUIPMENT**

The following information shall be verified before starting work:

ITEM #	DESCRIPTION	⊗
1.	Date (Print): _____	
2.	Location: _____	
3.	Equipment being cleaned (Print): _____	
4.	Is the area, including the other end of unit being cleaned, properly secured?	
5.	Have precautions been taken to protect all electrical equipment?	
6.	Is there any hazard to personnel resulting from damage to the equipment such as release of corrosive chemicals, flammable liquids, gases, or the like?	
7.	Are all fittings of the correct pressure rating?	
8.	Are all hoses of the correct pressure rating?	
9.	Are all fittings in good operating condition?	
10.	Are all hoses in good operating condition?	
11.	Are all nozzles free from plugging and in good operating condition?	
12.	Have precautions been taken to prevent line-mole reversal?	
13.	Is the filter on the pump suction clean and in good operating condition?	
14.	Is there an adequate water supply?	
15.	Have precautions been taken against freezing?	
16.	Do all personnel have proper personal protective equipment for this job?	
17.	Do all personnel have proper training for this job?	
18.	Are all personnel qualified to perform this work?	
19.	Has the complete hook-up been flushed and air removed from the system prior to installing the nozzle?	
20.	Has hook-up, including pipes, hoses, and connections, been pressure tested with water at the maximum operating pressure?	
21.	Is the dump system operating properly (will it dump when released)?	
22.	Are all control systems operational?	
23.	Is the location of emergency medical aid known?	



PROCEDURE

Subject: EXCAVATION AND TRENCHING

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to describe the company requirements for excavation and trenching safety. These requirements are based on the federal Occupational Safety and Health Administration (OSHA) excavation standard found in 29 Code of Federal Regulations (CFR) 1926, Subpart P.

Some company activities are likely to occur in states or localities that either currently have or will have requirements that differ from those contained within the federal standard. In such circumstances, the local health and safety representative will be responsible for ensuring that these requirements are included in either a site health and safety plan or a similar document and conveyed to all affected employees. If federal, state, or local regulations vary or conflict, the more protective requirements and practices will be followed.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
 - 5.1 Pre-Excavation Requirements
 - 5.1.1 Underground Utilities
 - 5.1.2 Surface Encumbrances
 - 5.1.3 Vehicular Traffic
 - 5.1.4 Training
 - 5.2 Excavation Work Practices
 - 5.2.1 General
 - 5.2.2 Supervision
 - 5.2.3 Soil Classification
 - 5.2.4 Access and Egress
 - 5.2.5 Protective Systems
 - 5.2.6 Exposure to Falling Loads
 - 5.2.7 Warning System for Mobil Equipment
 - 5.2.8 Hazardous Atmospheres
 - 5.2.9 Water Accumulation Hazards
 - 5.2.10 Stability of Adjacent Structures
 - 5.2.11 Protection from Loose Rock or Soil
 - 5.2.12 Inspections



Procedure No.	HS307
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 16

Registered Professional Engineer

An individual currently registered as a professional engineer (preferably civil) in the state where work is to be performed.

Sheeting

Members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield

A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields may be pre-manufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

Shoring

Structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping

A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Support System

A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated Data

Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench

A narrow (in relation to its length) excavation made below the surface of the ground. In general, the depth is greater than the width at the bottom, but the width of a trench at the bottom is not greater than 15 feet.

Type A Soil

Cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, soil is NOT Type A if:

- The soil is fissured;
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects;



Procedure No.	HS307
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 16

Utility companies or a utility location service shall be contacted within the established pre-notification time, advised of the proposed work, and asked to delineate the location of all underground utilities. Employees should be careful to protect and preserve the utility markings until they are no longer required for safe excavation. At least 3 feet of clearance between any underground utility and the cutting edge or point of powered excavation equipment will be maintained until the precise location of the utility is determined. Initial excavation within this 3 foot area will be conducted manually.

5.1.2 Surface Encumbrances. All surface encumbrances (trees, poles, boulders, etc.) that may create a hazard to employees shall be removed or supported.

5.1.3 Vehicular Traffic. Employees exposed to vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Traffic control devices (i.e., barricades, signs, cones, flagpersons, etc.) shall be specified and used in accordance with regulations applicable to the roadway or area in which excavation activities are occurring.

5.1.4 Training. Those who supervise the entry of personnel into an excavation must have completed a training course that included instruction in:

- Types of hazards associated with excavation operations;
- Safe work practices and techniques;
- A review of applicable Federal, state and local regulations; and
- A review of this procedure.

Employees who enter excavations are required to complete a site-specific training session to enable them to recognize unsafe conditions in and around the excavation. This training can be conducted during a tailgate safety meeting that emphasizes the specific excavation hazards that may be encountered.

Training documentation shall be maintained in the project file with a copy forwarded to the Knoxville Training Department.

As part of standard employee supervision process, training shall be complemented with on-the-job instruction and reinforcement of accepted practices to the extent necessary to assure compliance with this procedure and all other applicable regulations.



Procedure No.	HS307
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	7 of 16

loaded or unloaded provided the vehicles are equipped with a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

5.2.7 Warning System for Mobil Equipment. When mobile equipment is operated adjacent to an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.

5.2.8 Hazardous Atmospheres. Where an oxygen deficient (less than 19.5% O₂) or hazardous atmosphere exists, or could reasonably be expected to exist, the excavation shall be tested before employees enter. Testing shall be conducted as often as necessary to ensure that the atmosphere remains safe. Some excavations may be considered confined spaces which require compliance with Shaw E & I Procedure HS300.

Adequate precautions shall be taken to prevent employee exposure to oxygen deficient or hazardous atmospheres. As appropriate, ventilation and/or respiratory protective devices shall be used.

5.2.9 Water Accumulation Hazards. Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. If water is controlled or prevented from accumulating by the use of water removal equipment, the process shall be monitored by a competent person to ensure proper operation.

If the excavation work interrupts the natural drainage of surface water (streams, run-off channels), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to run-off from heavy rains shall be regularly inspected by a competent person.

5.2.10 Stability of Adjacent Structures. Structures adjoining an excavation shall be evaluated to assess their stability. Excavation below the level of the base or footing of any foundation or retaining wall that could reasonably be expected to pose a hazard to employees shall only be permitted when:

- A support system (underpinning) is provided to ensure the safety of employees and the stability of the structure;
- The excavation is in stable rock;
- A registered professional engineer has determined that the structure will be unaffected by the excavation; or
- A registered professional engineer has determined that such excavation will not pose a hazard to employees.



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS307
0
04/25/02
04/25/02
9 of 16

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS050 Training Requirements
HS051 Tailgate Safety Meetings
HS300 Confined Spaces
29 CFR 1926 Subpart P - Excavations

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Excavation Inspection
3. Soil Classification Worksheet
4. Selection of Protective Systems for Excavations 20 Feet or Less in Depth
5. Sloping Options
6. Shoring or Shielding Options



Procedure No.
 Revision No.
 Date of Revision
 Last Review Date
 Page

HS307
 0
 04/25/02
 04/25/02
 11 of 16

**ATTACHMENT 2
 EXCAVATION INSPECTION**

**THIS INSPECTION IS TO BE COMPLETED BY THE COMPETENT PERSON
 EACH DAY THAT EMPLOYEES WILL BE ENTERING AN EXCAVATION.**

Project Name: _____ Project No.: _____

Date: _____ Time: _____ Competent Person: _____

Soil Classification (see Soil Classification Worksheet): _____

Excavation Depth: _____ Excavation Width: _____

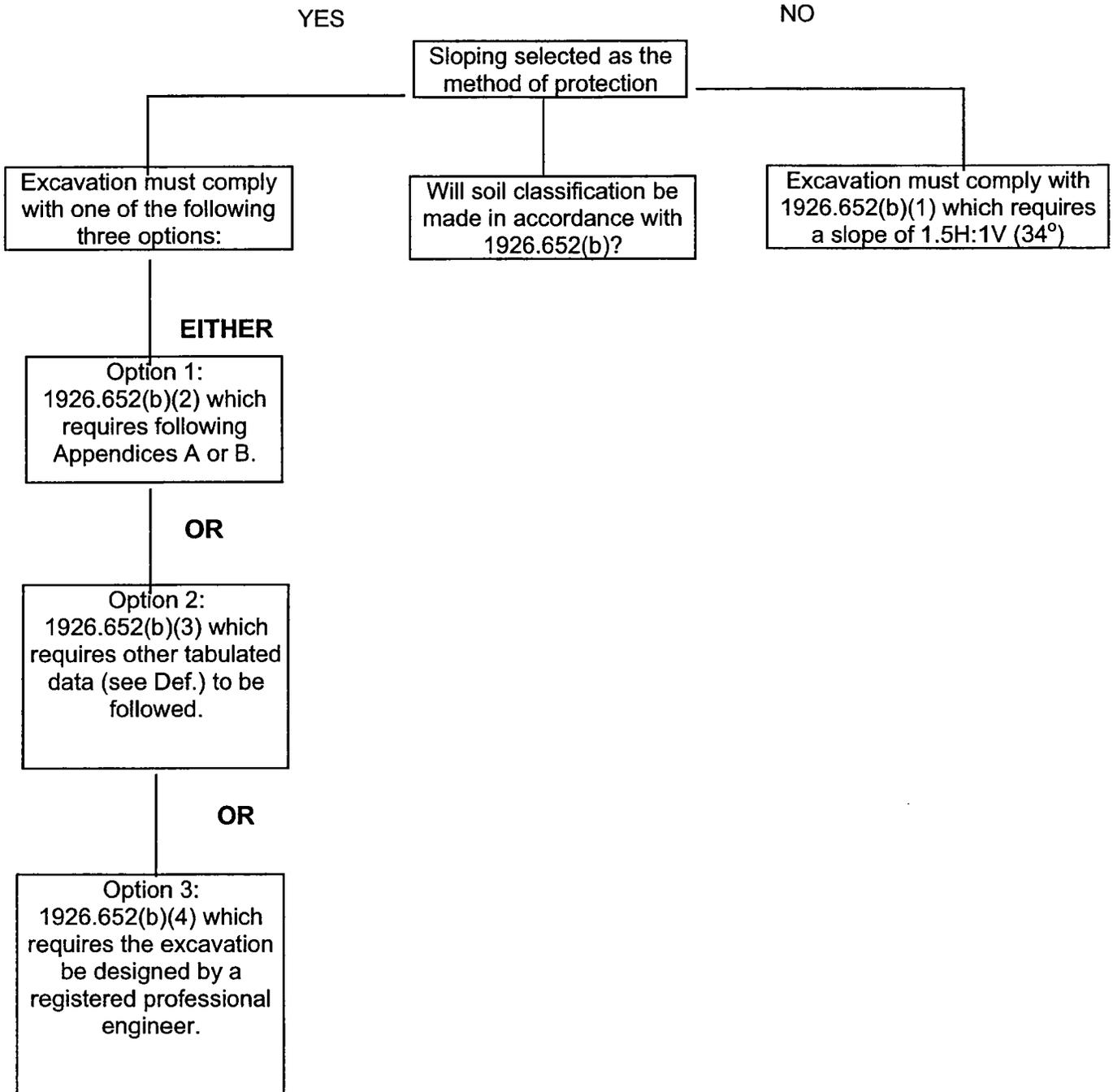
Type of Protective System Used: _____

		<input checked="" type="checkbox"/>		
		YES	NO	N/A
1 GENERAL:				
Surface encumbrances removed or supported				
Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the				
Hard hats, steel-toed boots, and safety glasses worn by all employees.				
Spoils, materials, and equipment set back at least 2 feet from the edge of the excavation.				
Walkways over excavations 6 feet or more above lower levels are equipped with standard guardrails.				
Warning vest or other highly visible clothing provided and worn by all employees exposed to public				
Employees required to stand away from vehicles being loaded or unloaded.				
Warning system established and utilized when mobile equipment is operating near excavation edge.				
Employees prohibited from going under suspended loads.				
2 UTILITIES:				
Utility companies contacted and/or utility locations delineated.				
Underground installations protected, supported, or removed while excavation is open.				
3. MEANS OF ACCESS AND EGRESS:				
Lateral travel to means of egress no greater than 25 feet in trench excavations 4 feet or more in depth.				
Ladders used in excavations secured and extended 3 feet above the edge of the trench.				
Structural ramps used by employees designed by a competent person.				
Structural ramps used for equipment designed by a registered professional engineer.				
4. WET CONDITIONS:				
Precautions taken to protect from the accumulation of water.				



**ATTACHMENT 5
OPTIONS**

SLOPING





PROCEDURE

Subject: HEAT STRESS

1.0 PURPOSE AND SUMMARY

This procedure establishes the guidelines to protect employees from the effects of heat related illness. It describes the four major types of heat-induced illnesses, methods of prevention, types of treatment, and includes discussions on the monitoring of heat stress situations.

Some clients may have monitoring requirements that differ from those contained in this procedure. In such circumstances, the more protective monitoring requirements will be followed.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
 - 5.1 Signs, Symptoms, and Treatment
 - 5.1.1 Heat Rash
 - 5.1.2 Heat Cramps
 - 5.1.3 Heat Exhaustion
 - 5.1.4 Heat Stroke
 - 5.2 Prevention
 - 5.3 Monitoring
 - 5.3.1 Wet Bulb Globe Temperature
 - 5.3.2 Physiological
 - 5.4 Training
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.



Procedure No.	HS400
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 7

5.1.2 Heat Cramps

Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. This often robs the larger muscle groups (stomach and quadriceps) of blood which can cause painful muscle spasms and pain.

Signs and Symptoms: Muscle spasms and pain in the extremities and abdomen.

Treatment: Remove employee to a cool place and give sips of water or an electrolytic drink. Watch for signs of heat exhaustion or stroke.

5.1.3 Heat Exhaustion

Heat exhaustion is a mild form of shock caused by increased stress on various organs to meet increased demand to cool the body. Onset is gradual and symptoms should subside within one hour.

Signs and Symptoms: Weak pulse; shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; fatigue.

Treatment: Remove employee to a cool place and remove as much clothing as possible. Give sips of water or electrolytic solution and fan the person continually to remove heat by convection. CAUTION: Do not allow the affected person to become chilled ☞ treat for shock if necessary.

5.1.4 Heat Stroke

Heat stroke is the most severe form of heat stress; the body must be cooled immediately to prevent severe injury and/or death. **THIS IS A MEDICAL EMERGENCY!**

Signs and Symptoms: Red, hot, dry skin (skin may be wet from previous perspiration particularly when evaporation-preventing clothing is worn); body temperature of 105 degrees Fahrenheit (°F) or higher; no perspiration; nausea; dizziness and confusion; strong, rapid pulse.

Treatment: Heat stroke is a true medical emergency. Transportation of the victim to a medical facility must not be delayed. Prior to transport, remove as much clothing as possible and wrap the victim in a sheet soaked with water. Fan vigorously while transporting to help reduce body temperature. Apply cold packs, if available; place under the arms, around the neck, or any other place where they can cool large surface blood vessels. If transportation to a medical facility is delayed, reduce body temperature by immersing victim in a cool water bath (however, be careful not to over-chill the victim once body temperature is reduced below 102°F). If this is not possible, keep victim wrapped in a sheet and continuously douse with water and fan.



Procedure No.	HS400
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 7

- Heart Rate - Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate of any individual exceeds 75 percent of their calculated maximum heart rate (MHR = 200 - age) at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work until his/her sustained heart rate is below 75 percent of their calculated maximum heart rate.
- Temperature - Each individual will measure his/her oral temperature with a disposable thermometer for one minute as early as possible in the first rest period. If the temperature exceeds 99.6 degrees F at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same.
- An individual is not permitted to return to work if his/her temperature exceeds 100.4 degrees F

5.4 Training

Employees potentially exposed to heat stress conditions will be instructed on the contents of this procedure. This training can be conducted during daily tailgate safety meetings.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variances
HS051 Tailgate Safety Meetings

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Heat Stress Monitoring Record



PROCEDURE

Subject: COLD STRESS

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish the guidelines necessary to protect employees from the adverse health effects caused by exposure to low temperature environments.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Text
 - 4.1 Signs and Symptoms of Cold Stress
 - 4.1.1 Frostbite
 - 4.1.2 Hypothermia
 - 4.2 Precautionary Measures
 - 4.3 Training
- 5.0 Exception Provisions
- 6.0 Cross References
- 7.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The responsibility matrix is Attachment 1.

4.0 TEXT

Most cold related worker fatalities have resulted from failure to escape low air temperatures, or from immersion in low temperature water. Employees should be protected from exposure to cold so that their deep core temperature does not fall below 96.8 degrees Fahrenheit. Core body temperatures below this level will likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences.

4.1 Signs and Symptoms of Cold Stress



- If appropriate, approved space heaters may be provided in the work area to warm the hands, feet, etc.
- The buddy system shall be practiced. Any employee observed with signs of cold stress shall immediately proceed to the break area.
- Employees will be reminded to layer their clothing, i.e., wear thinner, lighter clothing next to the body with heavier clothing layered outside the inner clothing.
- Avoid overdressing when going into warm areas or when performing activities which are strenuous. This could potentially lead to heat stress situations.
- Auxiliary heated versions of handwear, footwear, etc., can be used in lieu of mittens, insulated socks, etc. if extremely cold conditions exist.
- Employees handling liquids with high evaporation rates (gasoline, hexane, alcohol, etc.) shall take special precautions to avoid soaking of clothing with the liquids because of the added danger of cold injury caused by evaporative cooling.
- Work shall be arranged in such a way that sitting still or standing for long periods is minimized.
- If the air temperature is 20 degrees F or below the hands shall be protected by mittens or gloves prior to contact with cold surfaces such as metal, etc.

Air temperature is not the only factor to be considered while evaluating cold stress situations. Wind chill cooling rate and the cooling power of air are critical factors. The higher the wind speed the greater the risk of experiencing cold related injuries. For exposed skin, continuous exposure should not be permitted when the air speed and temperature result in an equivalent chill temperature of -25 degrees F or less. The wind chill table provided in attachment two can be used to help assess hazardous conditions attributable to wind chill effects.

4.3 Training

Training on the contents of this procedure will be conducted during tailgate safety meetings held at project or office locations where employees are exposed to cold temperatures. Topics to be discussed during this training will include:

- Proper rewarming procedures and first aid treatment of cold related cases
- Proper clothing practices
- Eating and drinking habits
- Recognition of signs and symptoms of cold stress
- Safe cold weather work practices.



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS401
0
04/25/02
04/25/02
5 of 6

**ATTACHMENT 1
COLD STRESS**

Responsibility Matrix

Action	Procedure Section	Employee	Local HS Representative	Vice President Health and Safety
Issuance, revision and maintenance of this procedure	3.1			X
Provide training	4.2		X	
Receive training	4.2	X		



PROCEDURE

Subject: HEARING CONSERVATION PROGRAM

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish guidelines for the company hearing conservation program. Regulatory requirements mandate that the company administer a hearing conservation program whenever employee sound exposures equal or exceed an 8-hour time-weighted average (TWA) sound level of 85 decibels (dB).

Evidence is well established that worker exposure to sound of sufficient intensity and duration can result in hearing damage. This procedure prescribes the control measures required to prevent employee exposure to excessive sound levels and includes provisions for:

- Monitoring of the workplace to determine employee exposures.
- An audiometric testing program which includes baseline and annual audiograms.
- An employee training and information program.
- Description of various control measures that can be used to decrease exposures.
- Providing hearing protection to all affected employees when administrative or engineering controls fail to reduce sound levels to below the action level.
- Recordkeeping requirements.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
 - 5.1 General
 - 5.2 Monitoring
 - 5.3 Audiometric Testing
 - 5.3.1 Baseline Audiogram
 - 5.3.2 Annual Audiograms
 - 5.4 Employee Training and Information
 - 5.5 Control Measures



Sound level monitoring instrumentation will be operated on the A-weighted scale in slow response mode. Employee sound exposures will be computed in accordance with Attachment 2 and without regard to any attenuation provided by the use of hearing protection.

5.3 Audiometric Testing

Audiometric testing will be provided to all employees exposed at or above the action level. Testing will be in accordance with Procedure HS100, Medical Policies and Procedures.

5.3.1 Baseline Audiogram. Audiometric test results obtained from the pre-hire medical examination will be used as the baseline audiogram. Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace sound. Employees will also be notified of the need to avoid high levels of non-occupational sound exposure during this 14-hour period.

5.3.2 Annual Audiograms. Annual audiograms will be conducted for all employees exposed at or above the action level during the preceding year. Each annual audiogram will be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a STS has occurred.

5.4 Employee Training and Information

All employees who are exposed to sound levels above the action level are required to participate in a formal training program. This program will be presented by a health and safety representative and include, as a minimum, the following information:

- The effects of sound on hearing.
- The purpose of hearing protection; the advantages, disadvantages, and attenuation of various types; and instructions on selection, fitting, use, and care.
- The specific nature of operations which could result in exposure to excessive sound levels.
- The purpose of audiometric testing and an explanation of the test procedures.
- The engineering controls and administrative practices associated with the employee's job assignment.

This training program will be repeated annually. Participating employees are required to complete the Hearing Protection Training Completion Record (Attachment 3). This record will be maintained by the company Training Department in Knoxville. In addition, tailgate safety meetings will be periodically used to instruct employees on the need for hearing protection in designated areas.



Procedure No.	HS402
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 12

- Reduce impact or impulse sound by reducing the weight, size, or height of fall of impacting mass.
- Reduce speed in machines and flow velocities and pressure in fluid conveyance systems.
- Balance rotating parts to control machinery sound and vibration of fans, fly wheels, pulleys, cams, shafts, etc.
- Reduce frictional resistance between rotating, sliding, or moving parts by frequent lubrication and proper alignment; static and dynamic balancing of rotating parts; and/or correction of eccentricity or “out-of-roundness” of wheels, gears, rollers, pulleys, etc.
- Reduce resistance in air or fluid systems by use of low flow velocities, smooth surfaces of duct or pipe systems, and long-radius turns and flared sections in pipes, etc., to reduce turbulence.
- Isolate vibration elements in machinery; install motors, pumps, etc., on most massive part of machine; use belt or roller drives in place of gear trains; use flexible hoses and wiring instead of rigid piping and stiff wiring; etc.
- Apply vibration damping materials such as liquid mastics; pads of rubber, felt, foam, or fibrous blankets; or sheet metal viscoelastic laminates or composites to vibrating machine surface.
- Reduce sound leakage from the interior of machines such as compressors by sealing or covering all openings or applying acoustical materials to machine interiors.

5.5.2 Sound Control in the Transmission Path. Another effective way to limit employee exposure to sound is through the use of transmission path controls. These controls may include, but are not necessarily limited to:

- Separation of the sound source and receiver.
- Use of sound absorbing materials on ceiling, floor, or wall surfaces.
- Use of sound barriers and deflectors in the sound path.
- Use of acoustical lining on inside surfaces of passageways, ducts, pipe chases, or electrical channels.



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS402
0
04/25/02
04/25/02
7 of 12

ATTACHMENT 1
HEARING CONSERVATION PROGRAM

Responsibility Matrix

Action	Procedure Section	Responsible Party		
		Health and Safety Representative	Project/Location Manager	Vice President, Health and Safety
Issue, Revise, and Maintain Procedure	3.1			X
Monitor Employee Exposures	5.2	X		
Provide Training	5.4	X		
Make Available/Post 29 CFR 1910.95	5.4		X	



Procedure No.
 Revision No.
 Date of Revision
 Last Review Date
 Page

HS402
 0
 04/25/02
 04/25/02
 9 of 12

Table 1
Permissible Sound Exposure

A-Weighted Sound Level (decibels)	Permitted Duration Per Workday (T) (hours)	A-Weighted Sound Level (decibels)	Permitted Duration Per Workday (T) (hours)
80	32.0	106	0.87
81	27.9	107	0.76
82	24.3	108	0.66
83	21.1	109	0.57
84	18.4	110	0.50
85	16.0	111	0.44
86	13.9	112	0.38
87	12.1	113	0.33
88	10.6	114	0.29
89	9.2	115	0.25
90	8.0	116	0.22
91	7.0	117	0.19
92	6.1	118	0.16
93	5.3	119	0.14
94	4.6	120	0.125
95	4.0	121	0.11
96	3.5	122	0.095
97	3.0	123	0.082
98	2.6	124	0.072
99	2.3	125	0.063
100	2.0	126	0.054
101	1.7	127	0.047
102	1.5	128	0.041
103	1.3	129	0.036
104	1.1	130	0.031
105	1.0		



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS402
0
04/25/02
04/25/02
11 of 12

ATTACHMENT 3

HEARING PROTECTION TRAINING COMPLETION RECORD

- | | <u>INITIAL</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. I have been informed about the health hazards associated with exposure to excessive sound levels and its potential effect on hearing. | <input type="checkbox"/> |
| 2. I have been informed about the types of work that may result in exposure to excessive sound levels, and the necessary protective steps to prevent excessive exposure, including engineering controls and administrative practices. | <input type="checkbox"/> |
| 3. I understand the purpose for, proper use, and limitations of hearing protection devices, and I have received instructions on selection, fitting, use, and care of such devices. | <input type="checkbox"/> |
| 4. I have been informed about the purpose of audiometric testing and an explanation of the test procedures. | <input type="checkbox"/> |
| 5. Copies of the applicable regulations governing occupational exposure to excessive sound have been made available to me. | <input type="checkbox"/> |

PRINT NAME: _____

SIGNATURE: _____

EMPLOYEE NUMBER: _____

DATE: _____

Please File Completed Forms and Forward a Copy to the Knoxville Training Department



PROCEDURE

Subject: PERSONAL PROTECTIVE EQUIPMENT

1.0 PURPOSE AND SUMMARY

This procedure stipulates that the company will provide the personal protective equipment necessary for employees to perform their work safely, as established by the Health & Safety Department. Special purchasing programs for prescription safety glasses and safety shoes are also described. Head, eye, body, and foot protection are discussed in this procedure. Respiratory and hearing protection are cross referenced to the appropriate company procedures.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
- 4.0 Definitions
- 5.0 Text
 - 5.1 Eye Protection
 - 5.2 Foot Protection
 - 5.3 Head Protection
 - 5.4 Respiratory Protection
 - 5.5 Hearing Protection
 - 5.6 Body Protection
 - 5.7 Providing Personal Protective Equipment to Non-Company Personnel
 - 5.8 Management Duties
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President of Health & Safety, is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Company – All wholly-owned subsidiaries of Shaw Environmental & Infrastructure, Inc (Shaw E & I).



Procedure No.	HS600
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 6

Lenses shall be clear polycarbonate or plastic. Special tints or dark lenses can be obtained for special applications (e.g., extended outdoor work) with prior written approval from the Health & Safety Department.

Employees requiring corrective lenses inside of respirator face-pieces will be provided with safety lenses and frames sized for respirators and the respirator insert, in addition to conventional prescription safety glasses.

Employees will arrange and pay for the eye examination through the company-provided vision care program. The company will pay for fitting services and the safety glasses.

The company has established a national contract with a protective eyewear provider. Employees should contact the local HS representative (with current lens prescription), who will coordinate with the local purchasing representative to order eyewear. Employees choosing to use another provider will be reimbursed up to \$65 for safety or computer glasses, after the Health & Safety Department has verified that the glasses meet the ANSI Standard requirements.

5.2 Foot Protection

Basic foot protection is required for all job sites and industrial locations. Specialized footwear shall be provided as required by the nature of the work. Special foot protection may include, but is not limited to, chemically resistant, thermally shielded, metatarsal guards, etc.

5.2.1 Leather Safety Shoes. Safety shoes may be used in place of chemical resistant footwear when an employee will be working in a clean or uncontaminated work areas. Generally, when the employee desires to use safety footwear other than standard chemical resistant footwear provided, the company considers it the responsibility of the employee to provide such footwear and ensure that it meets ANSI Standard Z41. Company supervision will enforce the use of appropriate protective footwear per the requirements of the site-specific Health and Safety Plan. Where state or local regulations require (i.e., California and Connecticut), the company will provide all necessary safety equipment.

Employees can purchase safety shoes through national purchasing agreements established by the company. Under the limited circumstances where the company will provide safety shoes, such purchases must be approved by the project or appropriate department/local manager. After the Health & Safety Department has verified that the safety shoes meet ANSI requirements, the employee will be reimbursed for the actual purchase price of the shoes up to a maximum of \$90.00.



Procedure No.	HS600
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 6

Variations and exceptions shall be permitted pursuant to the provisions of Procedure HS013, "Health & Safety Procedure Variations".

7.0 CROSS REFERENCES

HS050 Training Requirements

HS402 Hearing Conservation Program

HS601 Respiratory Protection Program

ANSI Standard Z41, *Personal Protection - Protective Footwear*

ANSI Standard Z87.0, *Practice for Occupational and Educational Eye and Face Protection*

ANSI Standard Z89.1, *Protective Headwear for Industrial Workers*

8.0 ATTACHMENTS

1. Responsibility Matrix



PROCEDURE

Subject: RESPIRATORY PROTECTION PROGRAM

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to prescribe the requirements of the company Respiratory Protection Program (RPP). This procedure provides information and guidance on the proper selection, medical evaluation, training, use, and care of respiratory protective equipment and complies with the requirements of 29 CFR 1910.134 (1998).

All operations which require the use of respiratory protection are subject to the provisions of this procedure.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
 - 5.1 Assignment of Equipment to Contractor/Labor Pool Personnel
 - 5.2 Approval, Selection, and Purchase of Respiratory Protective Equipment
 - 5.2.1 Approval
 - 5.2.2 Selection
 - 5.2.3 Purchase
 - 5.3 Medical Evaluation
 - 5.4 General Program Requirements
 - 5.4.1 Responsibilities
 - 5.4.2 Use of Corrective Lens Eyewear
 - 5.4.3 Obstruction of Face Seal
 - 5.5 Instruction, Training, and Fit Test
 - 5.5.1 Instruction and Training
 - 5.5.2 Fit Testing
 - 5.6 Maintenance Program
 - 5.6.1 Inspection
 - 5.6.2 Cleaning and Sanitizing
 - 5.6.3 Repair
 - 5.6.4 Storage
 - 5.7 Field Use
 - 5.7.1 General Requirements
 - 5.7.2 Specific Requirements
 - 5.7.3 IDLH Atmospheres
 - 5.8 Recordkeeping



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 39

Emergency - Emergency means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Exposure Limit - Several published airborne contaminant concentration values exist which are used in establishing acceptable personnel exposures to contaminants. OSHA publishes the Permissible Exposure Limit (PEL), NIOSH publishes the Recommended Exposure Limit (REL), and the ACGIH publishes the Threshold Limit Value (TLV). All of these exposure limits are based on an 8-hour work shift, 40-hour work week, and 40-year work life. The values may vary from contaminant to contaminant as well as between publishing bodies.

Field Office - Any office or satellite office performing field activities which may require the use of respiratory protection.

Filtering Facepiece (Dust Mask) - A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit Factor (FF) - This term means a quantitative estimate of the fit of a particular respirator to a specific individual and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. The FF incorporates a safety factor of 10 because protection factors in the workplace tend to be much lower than the fit factors achieved during fit testing. Acceptable fit factors are 100 for a tight-fitting half facepiece and 500 for a tight-fitting full facepiece respirators.

HASP - Health and Safety Plan.

Health and Safety Representative - A member of the company Health and Safety Functional Resource Group who, through credentials, training, or experience, has the necessary qualifications and authority to specify respiratory protection and evaluate respiratory protection program elements.

Immediately Dangerous to Life or Health (IDLH) - An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Labor Pool Personnel - Temporary personnel hired for a given expertise or ability. Labor pool personnel report directly to an employee of the company.

Nuisance Level - Level of airborne contaminants which is below one-half the action level for that contaminant and presents no other health or safety hazard.

Permissible Exposure Guideline (PEG) - This term designates a specific exposure limit and is based on the best available information. The PEG will be the lower (more protective) of the values for the PEL and TLV. However, the REL shall take precedence for Hazardous Waste Operations (subject to 29 CFR 1910.120 or 1926.65) if no PEL exists, or for contaminants where no PEL or TLV exists. If there is no PEL, TLV, or REL, a Health and Safety Representative shall determine an appropriate permissible exposure guideline.



This RPP provides specific requirements for selection, assignment, training, and medical evaluation for persons expected to wear respiratory protection.

5.1 Assignment of Equipment to Contractor/Labor Pool Personnel

Contractor personnel shall provide their own respiratory protective equipment and shall also confirm meeting all other requirements of their own RPP and that of the company's RPP (i.e., medical clearance, training, etc.).

The company may provide the following respiratory protective equipment to Contractor Personnel:

- Disposable equipment such as filter elements.
- Hardware for airline systems (up to, but not including, the airline and facepiece) which employees are sharing.

The company will not provide the following respiratory protective equipment to Contractor Personnel:

- APR or PAPR facepieces.
- SCBAs, SAR respirators, or airline.

The company may provide respiratory protective equipment to Labor Pool Personnel if the following have been established:

- The labor pool personnel have successfully completed training as required by 29 CFR 1910.134 and other applicable regulations.
- The labor pool personnel have been fit tested in relation to projected exposure levels and contaminants to be encountered.
- The labor pool personnel have been medically approved to wear respirators.
- All other RPP requirements have been met.

5.2 Approval, Selection, and Purchase of Respiratory Protective Equipment

The following requirements are designed to guide correct selection of respiratory protective equipment.

5.2.1 Approval. The Vice President, Health and Safety has approved respirators manufactured by Survivair as the primary respirators for use by employees. For employees who cannot achieve a satisfactory fit or comfort factor in Survivair respirator, Mine Safety Appliance (MSA) respirators will be selected. The list of approved model respirators is included in Attachment 2. Contractor personnel may select any respiratory protective equipment that has received approval from NIOSH.



If this equation is false, a respirator with a greater PF must be selected. Also review Attachment 3 to determine the required fit testing for the expected maximum anticipated contaminant concentration. The Health and Safety Representative may determine that a more conservative approach (e.g., 50 percent PF) may be needed. Decision to do so should be documented in the Project HASP.

- Manufacturer-established limitations of the APR filter elements relative to the contaminants of concern shall be used to establish further justification for the selected respirator should the APR's FF not disqualify its use (e.g., maximum anticipated contaminant concentration).

5.2.3 Purchase. The purchase request of respiratory protective equipment (including cartridges, airlines, compressed air) should be reviewed by a Health and Safety Representative to indicate that the ordered material meets established requirements. **Under no circumstances may anyone (purchasing, warehouse, project manager, etc.) purchase or provide other than the specific respiratory protection equipment selected by the Health and Safety Representative.**

5.3 Medical Evaluation

No employee shall be assigned to a task that requires the use of a respirator unless it has been determined that he/she is physically able to perform the work while using the required respirator. The medical evaluation must be conducted prior to fit testing and work requiring the use of respiratory equipment.

The medical evaluation shall be performed by a physician typically in conjunction with a physical examination meeting the requirements of 29 CFR 1910.120 (f) *Medical Surveillance*. The physician will be informed of the type of work expected of the employee, the types of respiratory protection and personal protective equipment required, and other information indicating the expected stresses of the task. The company medical director shall be given a copy of the company RPP and a copy of 1910.134 (e) *Medical Evaluation*.

The company medical director shall provide a written recommendation regarding the employee's ability to use respiratory protection. The company shall ensure that the company medical director supplies the employee with a copy of this recommendation.

Additional medical evaluations will be provided to the employee if:

- Any medical signs or symptoms due to respirator use are reported by the employee, supervisory, or health and safety personnel.
- A change in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	9 of 39

- Health and Safety Representatives shall maintain or oversee maintenance of all other records required by this RPP and shall provide for the training and fit testing of personnel assigned respiratory protective equipment.
- Health and Safety Representatives shall appoint a RPP Coordinator for each location which uses or may have a need to use respiratory protection. The Health and Safety Representative must assure the RPP Coordinator has the necessary training to fulfill his/her responsibilities.

RPP Coordinator

- The RPP Coordinator shall be responsible for cleaning, maintenance, and storage of all respirators not routinely used or not individually assigned.
- The RPP Coordinator shall maintain respirator supplies, including spare parts; submit purchase requests for new equipment; and assure that sufficient quantities of cartridges are available for each field office/project.
- The RPP Coordinator shall assure that air supply and emergency respiratory protection is properly inspected and maintained.
- Respirators shall be repaired by either qualified personnel under the direction of the RPP Coordinator, or by contracted supplier.
- The RPP Coordinator shall maintain models and sizes of respirators available for selection and fitting.
- The RPP Coordinator shall conduct fit testing.

Training Department

- Records pertaining to training and fit testing will be maintained by the Training Department.

Employee

- The employee shall use the provided respiratory protective equipment when instructed to do so in accordance with training received.
- The employee shall clean, disinfect, and properly store the assigned respirator, unless other arrangements are made on a project level.
- The employee shall guard against damage to the assigned respirator.
- The employee shall inspect the respirator before each use and after cleaning.



- Proper fitting, including demonstrations and practice in wearing, adjusting, and determining the fit of the respirator. A selection of respirators shall be available to determine the most comfortable respirator and the best fit.
- Instruction on how to test the face-to-facepiece seal.
- A familiarization period of wear in ambient air.
- For APRs, wearing the respirator in a test atmosphere (typically irritant smoke) for qualitative fit testing. The qualitative fit test shall follow the guidelines outlined in Section 5.5.2.
- Training to recognize and cope with emergency situations (including respirator failure)
- Training and fit testing shall be repeated annually, unless specific OSHA regulations require a more frequent time period (e.g., asbestos, lead operations). Each person receiving training shall complete the Respirator Fit Test Form (Attachment 5).
- Training records will be maintained by the Training Department and the location Health and Safety Representative. On-site records of training and fit testing will be maintained as required by specific regulation (e.g., asbestos work) (refer to Section 5.8).
- It is the responsibility of the RPP Coordinator to verify that all project personnel meet the requirements of this RPP.

5.5.2 Fit Testing. Prior to the use of any negative or positive pressure tight-fitting facepiece, the employee must be fit tested.

- All employees assigned to operations requiring the use of respiratory protective equipment shall have been fit tested within 12 months, or as required by specific regulations (e.g., asbestos, lead operations). Fit test and qualification cards (or a copy of the completed Attachment 5) must be available during operations.
- The employee shall be fit tested with the same size and model as they are expected to wear.
- Qualitative fit test (QLFT) shall be used when a protection factor of 10 or less is required for a negative pressure respirator.
- Quantitative fit test (QNFT) shall be used when a protection factor of greater than 10 is required for a negative pressure respirator. When



5.6.1 Inspection

- All respiratory protective equipment systems shall be inspected by the wearer for defects and/or deterioration immediately prior to and after each use.
- Any defects shall be reported to their supervisor immediately and the respirator removed from use until it can be repaired or replaced.
- Respiratory protective equipment systems not used routinely (including all SCBAs and equipment designated only for emergency use) shall be inspected before and after each use and at least every 30 days. Cylinders shall be recharged whenever the pressure falls below 90 percent of the manufacturer's recommended pressure level. This inspection shall be documented by some method on the unit (i.e., tag). Records of inspections shall be kept through appropriate documentation. Attachment 6 provides an example of inspection documentation for SCBAs. At a minimum, these records will include: date, inspector, and any unusual finding or condition. Any repairs or modifications shall be documented in detail.
- General field inspection shall include a check of the following: tightness of all connections, facepiece, valves, and any connecting tubes or filtering elements.
- Employees who are manufacturer-qualified repair technicians shall be used for all maintenance beyond field inspections, tests, and user-performed cleaning.
- Air supplied respiratory systems shall be inspected by a manufacturer's authorized representative at the manufacturer's recommended schedule. Manufacturers typically require an annual flow test and a complete overhaul every 5 to 7 years.
- **Specific inspection procedures are outlined in Attachment 7.**

5.6.2 Cleaning and Sanitizing. Employees maintaining their own respirators shall be thoroughly briefed on how to clean and disinfect them. On projects where employees clean their own respirator, the generally accepted procedure involves washing with detergent and warm water using a soft brush, submersion in sanitizing agent, thoroughly rinsing in clean water, drying in a clean place, and storage in sealed plastic bags or equivalent. Precautions to be taken to prevent damage from rough handling during this procedure are detailed in Attachment 7.

At locations where employees share respirators, a centralized cleaning and maintenance facility with specialized equipment and/or materials and personnel



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	15 of 39

5.7.1 General Requirements. The following general requirements shall be followed whenever respiratory protection is used:

- Employees shall be allowed to leave the regulated area to readjust the facepiece or to wash their faces and to wipe clean the facepieces of their respirators in order to minimize potential skin irritation associated with respirator use.
- Respiratory protective equipment shall not be passed on from one person to another until it has been cleaned and sanitized, per program requirements.
- Respirators will be inspected, and a positive/negative pressure test performed prior to each use.
- Entry into oxygen-deficient (< 19.5 percent O₂) atmospheres, Immediately Dangerous to Life and Health (IDLH) atmospheres, or areas requiring EPA Level A protection is prohibited without the prior approval of the Vice President, Health and Safety or the CIH assigned to the business line.
- Head coverings such as Tyvek hoods shall not be allowed to pass between the face-to-facepiece seal.
- The harness straps of tight-fitting respirators shall not be positioned or worn over hard hats.

5.7.2 Specific Requirements. The following information details specific requirements by respirator class:

Air Purifying Systems

- When APRs are worn, new filter elements shall be installed at the beginning of operations. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury cartridges). When no ESLIs are available, filter replacement will be based on the calculations performed by the Health and Safety Representative. Additionally, the cartridges will be replaced if "breakthrough" is perceived or whenever an increase in breathing resistance is detected. In most cases, the cartridges will be replaced a minimum of once daily, usually at the end of the work shift.

Powered Air Purifying Systems

- When PAPRs are worn, employees shall change filter elements after each day's activities. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	17 of 39

- The hose line length shall not exceed 300 feet from the air bank regulator to the user.
- No more than three connections, excluding the connection to the regulator and final connection to the respirator, shall be between the breathing air cylinders and the user.
- Breathing air hose shall be protected from direct contact with chemical materials which may permeate the hose. Acceptable methods of protection include suspension of the hose from the surface or covering with a commercially available sleeve or visqueen. Breathing air hose which has become contaminated will be removed from service and disposed of properly.
- The breathing air regulator shall be adjusted to provide air pressure as per the manufacturer's recommendations. For Survivair units, this pressure shall be between 80 to 125 psi pressure.
- Cascade systems shall be equipped with low pressure warning alarms or similar warning devices to indicate air pressure in the manifold below 500 psi.
- When a cascade system is used to supply breathing air, a worker outside the Exclusion Zone shall be assigned as safety standby within audible range of the low pressure alarm.
- When a cascade system is used to recharge SCBA air cylinders, it shall be equipped with a high-pressure supply hose and coupling rated at a capacity of at least 3,000 psi. The supply hose and coupling shall be relatively short (≤ 3 feet) and secured to prevent whipping when pressurized.
- Large supplied air cylinders shall be stored and handled to prevent damage to the cylinder or valve. Cylinders shall be stored upright with the protective valve cover in place and in such a way (e.g., supported with substantial rope or chain in the upper one-third of the cylinder, or in racks designed for the purpose) as to prevent the cylinder from falling. Cylinders shall not be dropped, dragged, rolled, or allowed to strike each other or to be struck violently. Cylinders shall never be exposed to temperatures exceeding 125 degrees F. Cylinders with visible external damage, evidence of corrosion, or exposure to fire shall not be accepted or used.
- Only cylinders within current hydrostatic test periods shall be used. For fiber wrapped bottles designated by the DOT-E label, hydrostatic testing shall be completed every 3 years. Maximum service life for these cylinders is 15 years. Steel or aluminum cylinders shall be



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	19 of 39

- Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied air respirator with escape/egress unit.
- Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry. Equivalent means of rescue can be considered.

5.8 Recordkeeping

The following documents must be part of the site recordkeeping program:

- Employees' medical clearances for respirator use
- Respirator training and fit testing forms.

5.9 Program Evaluation

This RPP shall be reviewed annually at the direction of the Vice President, Health and Safety.

6.0 EXCEPTION PROVISIONS

Variances and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variances.

7.0 CROSS REFERENCES

Title 29, Code of Federal Regulations, Section 1910.134.

AIHA, *Respiratory Protection, A Manual and Guideline*, 1980.

American National Standards Institute Practices for Respiratory Protection Z88.2-1992 (or most recent publication)

NIOSH, *Certified Equipment List* (most recent version)

Company Health and Safety Procedures:

- HS013 Health and Safety Procedure Variances
- HS040 Stop Work Authority
- HS050 Training Requirement
- HS052 Health and Safety Plans
- HS102 Management of Employee Exposure and Medical Records
- HS104 Employee Notification of Industrial Hygiene Monitoring Records
- HS300 Confined Spaces
- HS304 Compressed Gas Cylinders
- HS600 Personal Protective Equipment



Procedure No.
 Revision No.
 Date of Revision
 Last Review Date
 Page

HS601
 0
 04/25/02
 04/25/02
 21 of 39

**ATTACHMENT 1
 RESPIRATORY PROTECTION PROGRAM**

Responsibility Matrix

Action	Procedure Section	Responsible Party					
		Employee	Health and Safety Representative	Project/ Location Management	VP, Health and Safety	Training	RPP Coordinator
Issue, Revise, and Maintain Procedure	3.1				X		
Assure Proper Selection of Respirators	5.2.2		X				
Review Purchase Requests for Respiratory Equipment	5.2.3		X				
Conduct Fit Testing	5.4		X				X
Assure Compliance with RPP	5.4		X	X			X
Assure Training	5.4		X	X			X
Audit Program Compliance	5.4		X		X		X
Assist/Approve Local Training Program	5.4					X	
Maintenance Program	5.6	X	X	X			X
Field Use	5.7	X	X	X			X
Recordkeeping	5.8	X	X			X	X
Program Evaluation	5.9				X		



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS601
0
04/25/02
04/25/02
23 of 39

ATTACHMENT 3

RESPIRATOR TYPE, PROTECTION FACTOR, AND FIT TESTING METHOD

Respirator Type	Protection Factor	QLFT	QNFT
Half-Face, Negative Pressure (<100 Fit Factor) ¹	10	Yes	Yes
Full-Face, Negative Pressure (<100 Fit Factor) Used in Atmosphere up to 10 Times the PEG	10	Yes	Yes
Full-Face, Negative Pressure (>100 Fit Factor) Used in Atmospheres Over 10 Times the PEG ²	50	No	Yes
PAPR	100	Yes	Yes
SCBA/SAR Used in Positive Pressure (Pressure Demand Mode)	10,000	Yes	Yes

Footnotes:

1. If quantitatively fit tested, the device must demonstrate a fit factor of at least 100.
2. If quantitatively fit tested, the device must demonstrate a fit factor of at least 500.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	25 of 39

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache, or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
10. If a test subject exhibits difficulty in breathing during the tests, he/she shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing his/her duties.
11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
12. *Exercise Regimen:* Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
14. *Test Exercises:* The following test exercises are to be performed for all fit testing methods prescribed in this attachment, except for the controlled negative pressure (CNP) method. A separate fit testing exercise regimen is contained in the CNP protocol.

Each test exercise shall be performed for one minute, except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

The test subject shall perform exercises, in the test environment, in the following manner:

- a. *Normal Breathing:* In a normal standing position, without talking, the subject shall breathe normally.
- b. *Deep Breathing:* In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
- c. *Turning Head Side to Side:* Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	27 of 39

4. The smoke take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
 5. The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the buildup of irritant smoke in the general atmosphere.
- b. Sensitivity Screening Check: The person to be tested must demonstrate his/her ability to detect a weak concentration of the irritant smoke.
1. The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
 2. The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
 3. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.
- c. Irritant Smoke Fit Test Procedure:
1. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
 2. The test subject shall be instructed to keep his/her eyes closed.
 3. The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.
 4. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
 5. The exercises identified in Item A.14 of this attachment shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
 6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	29 of 39

wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.

3. Check the following conditions for the adequacy of the respirator fit: chin properly placed; adequate strap tension, not overly tightened; fit across nose bridge; respirator of proper size to span distance from nose to chin; tendency of the respirator to slip; and self-observation in a mirror to evaluate fit and respirator position.
4. Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
5. Follow the manufacturer's instructions for operating the Portacount^b and proceed with the test.
6. The test subject shall be instructed to perform the exercises in Item A.14 of this attachment.
7. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

b. Portacount^b Test Instrument:

1. The Portacount^b will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
 2. Since the pass or fail criterion of the Portacount^b is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this attachment.
 3. A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.
3. Controlled Negative Pressure (CNP) Quantitative Fit Testing Protocol - The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer, Dynatech Nevada, also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his/her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	31 of 39

turning head side to side exercise, the subject needs to hold head full left and hold his/her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his/her breath for 10 seconds during test measurement.

4. Moving Head Up and Down: Standing in place, the subject shall slowly move his/her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his/her head full up and hold his/her breath for 10 seconds during test measurement. Next, the subject shall hold his/her head full down and hold his/her breath for 10 seconds during test measurement.

5. Talking: The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.

6. Grimace: The test subject shall grimace by smiling or frowning for 15 seconds.

7. Bending Over: The test subject shall bend at the waist as if he/she were to touch his/her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.

8. Normal Breathing: The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

c. CNP Test Instrument:

1. The test instrument shall have an effective audio warning device when the test subject fails to hold his/her breath during the test. The test shall be terminated whenever the test subject failed to hold his/her breath. The test subject may be refitted and retested.

2. A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.



Procedure No.
 Revision No.
 Date of Revision
 Last Review Date
 Page

HS601
 0
 04/25/02
 04/25/02
 33 of 39

ATTACHMENT 6

EMERGENCY RESPIRATORY PROTECTIVE EQUIPMENT
MONTHLY INSPECTION CHECKLIST

INSPECTED BY (Print): _____

DATE:

BACKPACK#: _____

AIR CYLINDER#:

			PASS	FAIL
A. Backpack and Harness Assembly	1. Straps	Inspect for complete set Inspect for damaged straps	<input type="checkbox"/>	<input type="checkbox"/>
	2. Buckles	Inspect for mating ends Check locking function	<input type="checkbox"/>	<input type="checkbox"/>
	3. Backplate and Cylinder Lock	Inspect backplate for cracks, missing screws/rivets Inspect cylinder hold down strap Inspect strap tightener	<input type="checkbox"/>	<input type="checkbox"/>
B. Cylinder and Cylinder Valve Assembly	1. Cylinder	Cylinder tight to backplate Current Hydrostatic Test Inspect cylinder for dents, gouges Is cylinder at least 90% filled?	<input type="checkbox"/>	<input type="checkbox"/>
	2. Head and Valve Assembly	Inspect cylinder valve lock for presence Inspect cylinder gauge for condition Proper function of cylinder valve lock Test for cylinder leakage	<input type="checkbox"/>	<input type="checkbox"/>
C. Regulator and High Pressure Hose	1. High Pressure Hose and Connector	Leakage in hose Leakage in hose to cylinder connector	<input type="checkbox"/>	<input type="checkbox"/>
	2. Regulator and Low Pressure Alarm	Read regulator gauge (at least 1,000 psi) Low pressure alarm sounds at 500 psi Test integrity of diaphragm Test for positive pressure Test bypass system	<input type="checkbox"/>	<input type="checkbox"/>
D. Facepiece and Corrugated Breathing Tube	1. Facepiece	Inspect harness for deterioration Inspect facepiece body for deterioration Inspect lens Inspect exhalation valve	<input type="checkbox"/>	<input type="checkbox"/>
	2. Breathing Tube and Connector	Inspect breathing tube for deterioration Inspect connector for threads and gasket	<input type="checkbox"/>	<input type="checkbox"/>
	3. Leak Test and Cleaning	Perform negative pressure test on facepiece/ breathing tube Clean and sanitize facepiece	<input type="checkbox"/>	<input type="checkbox"/>

Note: Any item marked ◀Fail▶ will place the equipment out of service until repaired or replaced.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	35 of 39

- h. Reassemble parts on respirator inlet covering assemblies.
- i. Visually inspect and, where possible, test parts and respirator assemblies for proper function.
- j. Place assembled respirators in appropriate containers for storage.

Machines may be used to expedite the cleaning, sanitizing, rinsing, and drying of large numbers of respirators. Extreme care shall be taken to ensure against tumbling, agitation, or exposure to temperatures above those recommended by the manufacturer (normally 43 degrees C or 100 degrees F maximum), as these conditions are likely to result in damage to the respirators.

Ultrasonic cleaners, clothes washing machines, dishwashers, and clothes dryers have been specially adapted and successfully used for cleaning and drying respirators.

Cleaner sanitizers that effectively clean the respirator and contain a bactericidal agent are commercially available. The bactericidal agent frequently used is a quaternary ammonium compound. Strong cleaning and sanitizing agents and many solvents can damage rubber or elastomeric respirator parts. These materials must be used with caution.

Alternatively, respirators may be washed in a detergent solution and then sanitized by immersion in a sanitizing solution. Some sanitizing solutions that have proven effective are: (a) a hypochlorite (bleach) solution (50 parts per million chlorine), 2-minute immersion; (b) an aqueous iodine solution (50 parts per million of iodine), 2-minute immersion; or (c) a quaternary ammonium solution (200 parts per million of quaternary ammonium compounds in water with less than 500 parts per million total hardness), 2-minute immersion.

Inflammation of the skin of the respirator user (dermatitis) may occur if the quaternary ammonium compounds are not completely rinsed from the respirator. The hypochlorite and iodine solutions are unstable and break down with time; they may cause deterioration of rubber or other elastomeric parts and may be corrosive to metallic parts. Immersion times should not be extended beyond the mentioned time periods, and the sanitizers shall be thoroughly rinsed from the respirator parts.

Respirators may become contaminated with toxic materials. If the contamination is light, normal cleaning procedures should provide satisfactory decontamination; otherwise, separate decontamination steps may be required before cleaning.

2. **Inspection**

The user shall inspect the respirator immediately prior to each use to ensure that it is in proper working condition. After cleaning and sanitizing, each respirator shall be inspected to determine if it is in proper working condition, if it needs replacement parts or repairs, or if it should be discarded. Each respirator stored for emergency or rescue use shall be inspected at least monthly.



Procedure No.	HS601
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	37 of 39

- Heat or fire damage to a cylinder is evident by discoloration, charring, or burning of the composite, labels, paint, or plastic components of the valve. Such damage would cause a cylinder to be removed from service and condemned. Note: If the cylinder is only soiled from smoke or other debris and is found to be intact underneath, it may be returned to service.

3. Maintenance and Repair

Replacement of parts or repairs shall be done only by persons trained in proper respirator maintenance and assembly. Replacement parts shall be only those designated for the specific respirator repaired. Reducing or admission valves, regulators, and alarms shall be adjusted or repaired by the respirator manufacturer or a technician trained by the manufacturer. Instrumentation for valve, regulator, and alarm adjustments and tests should be calibrated to a standard traceable to the National Institute of Standards and Technology (NIST), at a minimum of every 3 years.

4. Storage

Respirators shall be stored in a manner that will protect them against physical and chemical agents such as vibration, shocks, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. Respirators shall not be stored in such places as lockers and tool boxes, unless they are protected from contamination, distortion, and damage. Emergency and rescue respirators that are placed in the work areas shall be quickly accessible at all times, and the storage cabinet or container in which they are stored shall be clearly marked.

5. Assurance of Breathing Air Quality

Compressed gaseous air, compressed gaseous oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Compressed gaseous air shall meet at least the requirements of the specification for Type I-Grade D breathing air, and liquid air shall meet at least the requirements for Type II-Grade B breathing air as described in ANSI/CGA G-7.1-1989.

The CGA designation for Grade D and Grade E breathing air is as follows:

- Grade D breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 19.5 and 23.5 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, and a maximum of 1,000 ppm carbon dioxide.
- Grade E breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 20 and 22 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, a maximum of 500 ppm carbon dioxide, and 25 ppm total hydrocarbon content (as methane).
- Note: The quality verification for oil is not required for synthesized air whose oxygen and nitrogen components are produced by air liquefaction. Carbon monoxide quality verification is not required for Grade D breathing air if synthesized air when nitrogen component was previously analyzed and meets National Foundry (NF) specification and



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS601
0
04/25/02
04/25/02
39 of 39

As part of acceptance testing, and prior to initial use, representative sampling of the compressor air output shall be performed to ensure that it complies with the requirements in Paragraph 1 of this section. To ensure a continued high-quality air supply, and to account for any distribution system contaminant input, a representative sample should be taken at distribution supply points. Samples should be collected on a periodic basis, as directed by the Program Coordinator. Specific test recommendations are given in the following table.

Type/Sample	Oil Lubricated	Non-Oil Lubricated	Combustion Engine Powered
Water Vapor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Carbon Monoxide	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Condensed Hydrocarbon	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Carbon Dioxide			<input checked="" type="checkbox"/>
Odor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

NOTES:

1. When using air compressors, intake location shall be carefully selected and monitored closely to ensure air supplied to the compressor is of adequate quality.
2. No frequency for periodic checks of air quality is specified, due to wide variation in equipment types, use, working environments, and operating experience.
3. Continuous monitoring of temperature and carbon monoxide are not required.
4. For non-oil lubricated compressors that operate at less than 35 psi, no sampling for water is required.
5. These requirements apply to systems designed for breathing air, other air-supply systems need to be evaluated on a case-by-case basis for the type and frequency of testing.

Further details on sources of compressed air and its safe use can be found in CGA G-7-1988.



PROCEDURE

Subject: MOTOR VEHICLE OPERATION: GENERAL REQUIREMENTS

1.0 PURPOSE AND SUMMARY

This procedure prescribes the general requirements for the operation of motor vehicles on company business. All operators of company owned, leased, and rented vehicles, as well as personal vehicles used on company business, are covered by this procedure. U.S. Department of Transportation (DOT) regulated personnel must also comply with the guidelines contained in Procedure HS810. Key elements of this procedure include:

- All employees who drive or may drive on company business must be familiar with the requirements of this procedure and certify their acceptance of the Company Rules for Motor Vehicle Operation (Attachment 2). In addition, the most current version of Attachment 2 must be signed annually during each employee's performance review.
- All new hire candidates shall complete the Pre-employment Driving Record Certification (Attachment 3). This certification will be evaluated via the established point system to determine driving privilege status.
- Employees must report all vehicular citations incurred while on company business to their supervisor. Once reported, the established evaluation criteria in Section 5.4 will be used to determine corrective actions.
- Employees utilizing vehicles while on company business are required to review this procedure and attend a company-designated driver training class.
- Requests for the re-instatement of denied or revoked driving privileges can be made to the appropriate business line health and safety manager.

2.0 TABLE OF CONTENTS

1.0	Purpose and Summary
2.0	Table of Contents
3.0	Responsibility Matrix
3.1	Procedure Responsibility
3.2	Action/Approval Responsibilities
4.0	Definitions
5.0	Text
5.1	Company Rules for Motor Vehicle Operation
5.2	Pre-employment Evaluation
5.3	Pre-employment Driving Record Point System
5.4	Employee Evaluation Criteria



5.0 TEXT

5.1 Company Rules for Motor Vehicle Operation

All employees who will or may be required to operate a company owned, leased, or rented motor vehicle or a personal vehicle used on company business shall acknowledge acceptance of the Company Rules for Motor Vehicle Operation (Attachment 2) prior to such operation. The signed form shall be retained in the employee's personnel file. Each year during performance appraisals, covered employees shall be required to sign a copy of the most current Company Rules for Motor Vehicle Operation, which will then replace the previous copy in the personnel file.

5.2 Pre-employment Evaluation

The local Health and Safety Assistant shall distribute a copy of this procedure to all new hire candidates for the completion of Attachments 2 and 3. Information provided shall be evaluated via the point system in Section 5.3, and the hiring manager advised regarding any hiring or driving privilege restrictions that may apply. Hiring of persons with regular driving duties (e.g., field technicians and leadmen, sales persons, or others with assigned company motor vehicles) may only proceed after the information contained in Attachment 3 is evaluated.

Once Attachment 3 is completed, it is to be faxed to the Corporate Health and Safety Department at (412) 858-3976. The driving status of the prospective employee will be reported to the appropriate Human Resources Department in two to three working days. The local Health & Safety Assistant will notify the appropriate Human Resources manager when the attachments are not returned.

Discrepancies between the certified driving record report and Attachment 3 shall be reviewed with the prospective employee. Deliberate falsification of driving record information will disqualify prospective employees from being hired.

5.3 Pre-employment Driving Record Point System

The following point system will be used to evaluate the driving record of all new hire candidates that can reasonably be expected to operate a motor vehicle during their employment. For contested accidents or citations, conviction/settlement dates shall be used to determine point system applicability.

Pre-employment Driving Record Point System	
Description	Assigned Point Value
Overweight, loss of load, vehicular equipment infraction, etc.	1
Moving violation: speeding, failure to stop, failure to signal turn, etc.	2
At-fault accident	3
Major citation: reckless driving, hit and run, suspended license, speed contest, open container, etc.	6
Driving under the influence	8

If a new hire candidate has accumulated three (3) points or less in the last twelve (12) months or five (5) points or less in the last twenty-four (24) months, they will be given the privilege to drive motor vehicles on company business without restrictions.



Procedure No.	HS800
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 11

5.4.2 Major Citation

When an employee is given a major citation (i.e., reckless driving, suspended license, hit and run, speed contest, etc.), the supervisor will hold a meeting with the employee, at which time the supervisor will complete the company Disciplinary Action Form (Procedure HR207) thereby informing the employee that any additional infractions will lead to more severe disciplinary action. In addition, the employee will be required to attend a recognized defensive driving course on his/her own time and will be suspended from work for one day without pay. A copy of the Disciplinary Action Form shall be forwarded to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.3 Failure to Notify

Should an employee fail to notify his/her supervisor of a work-related citation or accident within 24 hours of occurrence, his/her company driving privilege will be revoked. The supervisor will also take disciplinary action that is appropriate for the unreported event. If the unreported event is either an at-fault accident or driving under the influence case, the termination process will be initiated. All disciplinary actions shall be documented to the employee by the supervisor. This copy, and any written response by the employee, shall be forwarded to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.4 At-Fault Accident

Whenever an employee operating a company owned/leased/rented vehicle or their personal vehicle on company business is involved in an at-fault vehicle accident, an Accident Review Board shall be convened and recommend the corrective action to be taken. At a minimum, the action shall include the completion of a recognized driver safety course on their time and at their expense. All disciplinary actions resulting from at-fault vehicle accidents will be reviewed for consistency by the appropriate Safety Council.

Depending upon the circumstances and severity of the accident, termination of the employee can be considered. As above, this must be approved by the appropriate Human Resources Department. All communication to the employee regarding the accident and resulting action shall be in writing with a copy to the appropriate Human Resources Department for their information and inclusion in the employee's personnel file.

5.4.5 Driving Under the Influence

Whenever an employee is convicted or pleads no contest to a company-related driving under the influence charge, he/she will be immediately terminated.

5.5 Training

All employees who will, or may reasonably be expected to, drive a company owned/leased/rented vehicle shall review this procedure and complete the currently-designated company driver training class prior to such operation. This class is designed



Procedure No.
 Revision No.
 Date of Revision
 Last Review Date
 Page

HS800
 0
 04/25/02
 04/25/02
 7 of 11

ATTACHMENT 1

MOTOR VEHICLE OPERATION: GENERAL REQUIREMENTS
RESPONSIBILITY MATRIX

Action	Procedure Section	Responsible Party					
		Local Health & Safety Assistant	Business Line Health and Safety Manager	Supervisor	Accident Review Board	Corporate Health and Safety	Vice President, Health and Safety
Issue, Revise, and Maintain This Procedure	3.1						X
Ensure Employees Complete Attachment 2	5.1			X			
Distribute HS800 to New Hire Candidates for Completion of Attachments 2 and 3	5.2	X					
Request Evaluation of New Hire Driving Record	5.2	X					
Obtain Driving Record and Determine Driving Status	5.2					X	
Initiate Corrective Actions	5.4			X			
Ensure Completion and Distribution of Attachment 4	5.4			X			
Accident Review	5.4.4				X		
Ensure Drivers Meet Training Requirements	5.5			X			
Specify Program for Reinstatement of Driving Privilege	5.6		X				
Reinstatement of Driving Privilege	5.6						X



Procedure No.	HS800
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	9 of 11

17. In case of an accident, the following steps shall be taken:
 - A. Stop.
 - B. Call for medical assistance in case of injuries.
 - C. Notify police.
 - D. Complete Vehicle Accident Report and submit to your supervisor as soon as possible.
18. Whenever a vehicle is stopped upon the traveled portion of a highway or the shoulder of a highway, for any cause other than necessary traffic stops, the driver shall, as soon as possible, place or activate the warning devices with which the vehicle is equipped.
19. Employee must notify the supervisor within one (1) working day regarding work related citations, accidents, and license expiration, suspension, or revocation.
20. Before operating any company vehicle, the operator shall briefly walk around the vehicle to inspect for unsafe conditions or obstructions, and to check that the load (if applicable) is properly secured.
21. No employee is authorized to operate a company vehicle (including rentals) after having been on duty for a period of 16 hours. No employee may drive for more than 12 hours in any single on-duty period. Once either of these criteria have been met, a period of 8 consecutive hours off duty is required before driving duties may be resumed. These are maximum, not minimum, requirements and employees may be unfit to drive after shorter on-duty periods. Commercial DOT drivers are subject to the more restrictive hours of service regulations described in Procedure HS810.
22. Project-assigned hourly employees are not permitted to operate company owned, leased, or rented vehicles after 10:00 p.m. without written authorization from their supervisor.

I have read and understand company Procedure HS800 and the company Rules for Motor Vehicle Operation, and agree to abide by all requirements.

Employee's Name (Printed)

Employee's Signature

Date



Procedure No. HS800
Revision No. 0
Date of Revision 04/25/02
Last Review Date 04/25/02
Page 11 of 11

ATTACHMENT 4

NOTIFICATION OF WORK-RELATED CITATION

This form is to be completed by employees incurring a work-related vehicular citation. Once complete, it is to be signed by the employee's supervisor and forwarded to the appropriate Human Resources Department for inclusion in the employee's personnel file.

Employee Name _____ Employee No. _____ Date _____

Nature of Citation _____

Location of Citation (City, State) _____

Date/Time Citation Received _____

Is Citation Being Contested? No Yes Details _____

Employee Signature _____ Date _____

Corrective Action Being Taken _____

Supervisor Signature _____ Date _____



PROCEDURE

Subject: FORKLIFT OPERATION

1.0 PURPOSE AND SUMMARY

The purpose of this procedure is to establish the requirements for the safe operation, maintenance, and inspection of forklift-type powered industrial trucks. It is intended to address the requirements of Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.178, which regulates the operation and maintenance of forklifts. A copy of this procedure shall be conspicuously posted at a place frequented by forklift operators.

2.0 TABLE OF CONTENTS

- 1.0 Purpose and Summary
- 2.0 Table of Contents
- 3.0 Responsibility Matrix
 - 3.1 Procedure Responsibility
 - 3.2 Action/Approval Responsibilities
- 4.0 Definitions
- 5.0 Text
 - 5.1 Operation
 - 5.2 Training
 - 5.3 Inspection
 - 5.4 Standard Forklift Safety Features
 - 5.5 Maintenance
- 6.0 Exception Provisions
- 7.0 Cross References
- 8.0 Attachments

3.0 RESPONSIBILITY MATRIX

3.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

3.2 Action/Approval Responsibilities

The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

Company - All wholly-owned subsidiaries of Shaw Environmental and Infrastructure, Inc. (Shaw E & I).

Qualified Trainer - An employee who has the knowledge, training, and experience necessary to train forklift operators and evaluate their competence.



Procedure No.	HS820
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	3 of 8

- Grades shall be ascended or descended slowly. When ascending or descending grades in excess of 10 percent, loaded forklifts shall be driven with the load upgrade.
- Forks shall always be carried as low as possible, consistent with safe operations.
- When leaving a forklift unattended, the power shall be shut off, brakes set, the mast brought to the vertical position, the load engaging means left in down position, and key removed from the ignition and left in the custody of a qualified operator or supervisor. When left on an incline, the wheels shall be chocked.
- Forklifts shall not be operated on floors, loading docks, or platforms that will not safely support the loaded forklift. Caution shall be exercised while driving over wet or slippery surfaces.
- Forklifts shall not be driven in and out of trucks or trailers at unloading docks until such trucks are securely blocked and brakes set.
- A width of one foot shall be the minimum distance maintained from the forklift and the leading edge of any elevated platform, dock, freight car, or truck.
- A loaded forklift shall not be moved until the load is safe and secure.
- Extreme care shall be taken when tilting loads. Tilting forward with the load engaging means elevated shall be prohibited except when picking up a load. Elevated loads shall not be tilted forward except when the load is being deposited onto a storage rack or equivalent. When stacking or turning, backward tilt shall be limited to that necessary to stabilize the load.
- Forklift operators shall avoid making quick starts and sudden stops.
- Loads shall not be raised or lowered while the forklift is in motion.
- Since fuels for forklifts vary, the manufacturer's recommendations for fueling or battery charging will be followed. The recharging of batteries shall comply with 29 CFR 1910.178(g).
- Seat belts are required to be worn at all times a forklift is being operated.
- Forklifts will not be used to elevate personnel unless they have been specifically designed to do so and the platform meets the requirements established in 29 CFR 1910.67.
- Operators must always face the forklift when dismounting and always have two hands and one foot or vice versa in contact with the forklift.



Procedure No.	HS820
Revision No.	0
Date of Revision	04/25/02
Last Review Date	04/25/02
Page	5 of 8

- Portable fire extinguisher
- Horn
- Seat belt.

5.5 Maintenance

Only authorized personnel shall perform maintenance or repair activities on forklifts. Guidelines for the maintenance of forklifts are contained in the operations and maintenance manual developed for the specific make and model of forklift being maintained. All work shall be done in accordance with the manufacturer's guidelines. Because forklifts are typically used every day, it is particularly important for personnel to follow these manufacturer-established maintenance, lubrication, and inspection schedules. Special attention should be given to forklift control and lifting features such as brakes, steering, lift overload devices, tilt mechanism, and safety features.

6.0 EXCEPTION PROVISIONS

Variations and exceptions may be requested pursuant to the provisions of Procedure HS013, Health and Safety Procedure Variations.

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variations
HS050 Company Employee and Subcontractor Training Requirements

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Employee Training Record - Forklift Training
3. Daily Forklift Pre-Use Inspection Checklist



Procedure No.
Revision No.
Date of Revision
Last Review Date
Page

HS820
0
04/25/02
04/25/02
7 of 8

ATTACHMENT 2

EMPLOYEE TRAINING RECORD FORKLIFT TRAINING

NAME _____ LOCATION _____ SUPERVISOR _____

EMPLOYEE NUMBER _____ INITIAL OR REFRESHER TRAINING (CIRCLE ONE)

FORKLIFT MAKE/MODEL _____

- I have reviewed and agree to abide by the requirements established in the forklift operation procedure.
- I have reviewed, understand, and agree to abide by the forklift operational rules described in Procedure HS820 and the manufacturer's operating manual.
- I acknowledge that it is my responsibility to conduct a daily inspection of the forklift that I will be expected to operate.

EMPLOYEE SIGNATURE _____ DATE _____

- I have observed a demonstration of the forklift operational skills for the above employee and feel that they understand the forklift's operational features, are familiar with safety rules and operational requirements, and have demonstrated satisfactory operating skills.

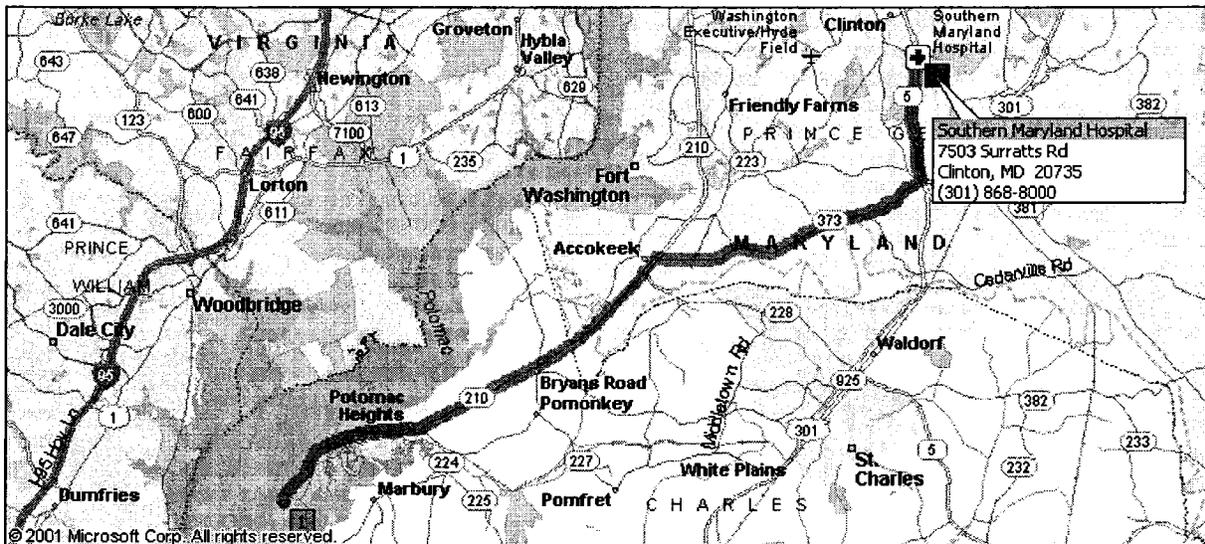
INSTRUCTOR SIGNATURE _____ DATE _____

A copy of this training record is to be forwarded to the Knoxville Health and Safety Training Department and the original maintained in the project/location file.

ATTACHMENT H
ROUTE TO HOSPITAL

ATTACHMENT H ROUTE TO HOSPITAL

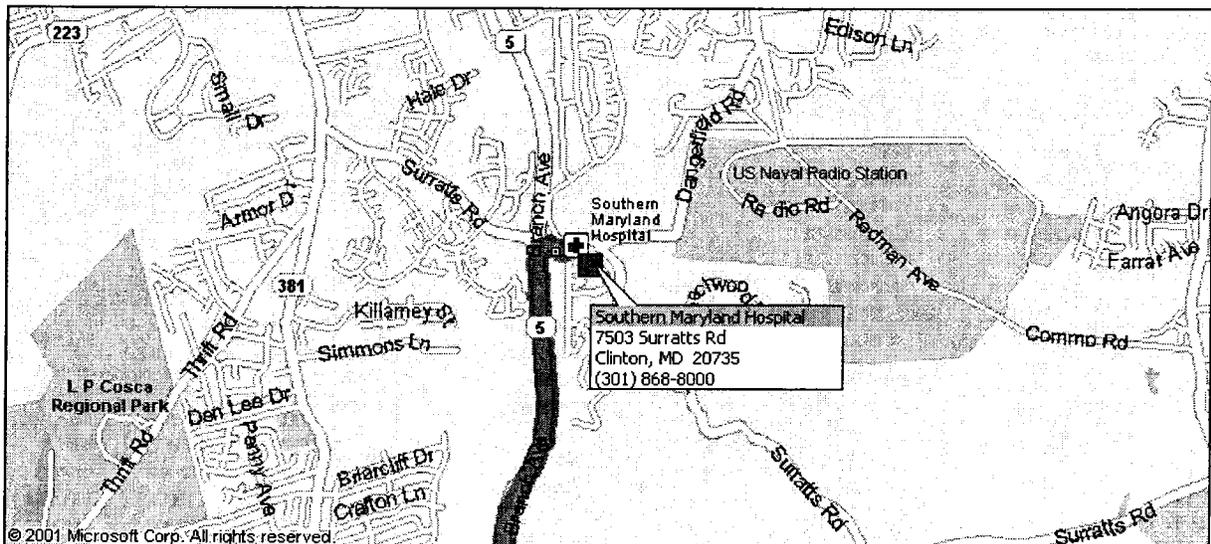
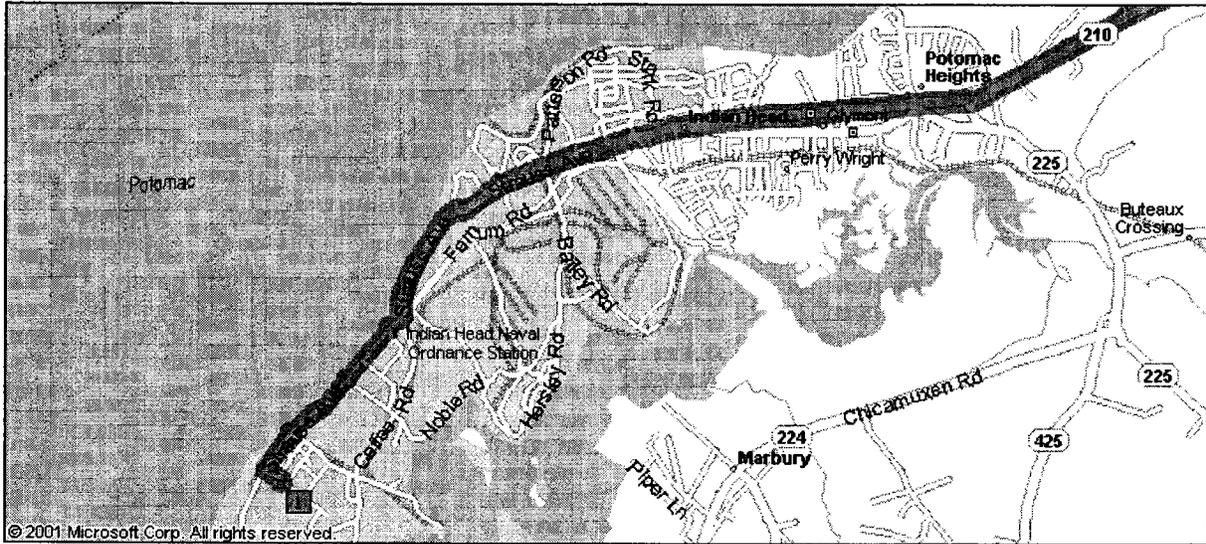
*Directions to
Southern Maryland Hospital
7503 Surratts Road
Clinton, MD 20735
(301) 868-8000*



Summary: 24.7 miles (47 minutes)

Mile	Instruction	For	Toward
0.0	Depart Indian Head Naval Ordnance Station on Local road(s) (North)	43 yds	
0.1	Turn LEFT (West) onto Voegeli Rd	0.1 mi	
0.1	Turn RIGHT (North-East) onto Strauss Ave	2.7 mi	
2.8	Continue (East) on Indian Head Hwy	0.5 mi	
3.3	Continue (East) on SR-210 [Indian Head Hwy]	6.7 mi	
10.0	Bear LEFT (North-East) onto Indian Head Hwy	0.6 mi	
10.6	Continue (North-East) on SR-210 [Indian Head Hwy]	2.5 mi	
13.1	Turn RIGHT (East) onto SR-373 [Livingston Rd]	8.1 mi	
21.1	Turn LEFT (North) onto SR-5 [Branch Ave]	3.4 mi	
24.6	Continue (North) on Local road(s)	131 yds	
24.6	Bear RIGHT (East) onto Surratts Rd	174 yds	
24.7	Arrive Southern Maryland Hospital [7503 Surratts Rd, Clinton, MD 20735, (301) 868-8000]		

ATTACHMENT H ROUTE TO HOSPITAL

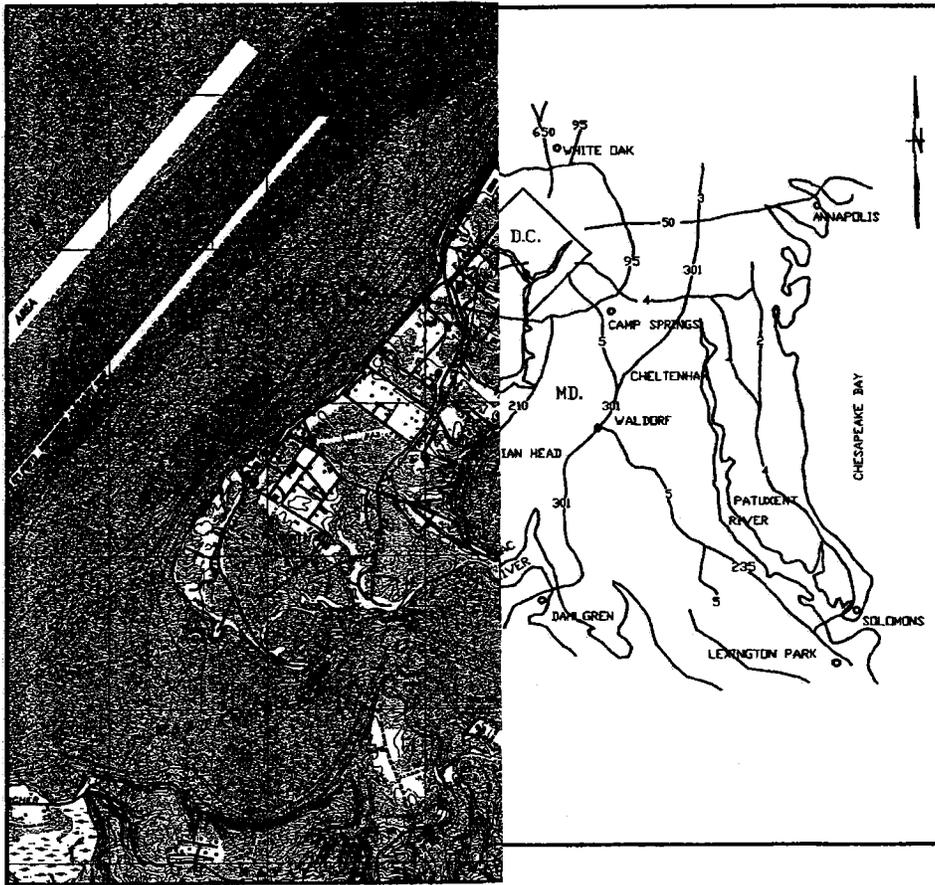


APPENDIX E
DESIGN DRAWINGS AND SPECIFICATIONS

DESIGN DRAWINGS

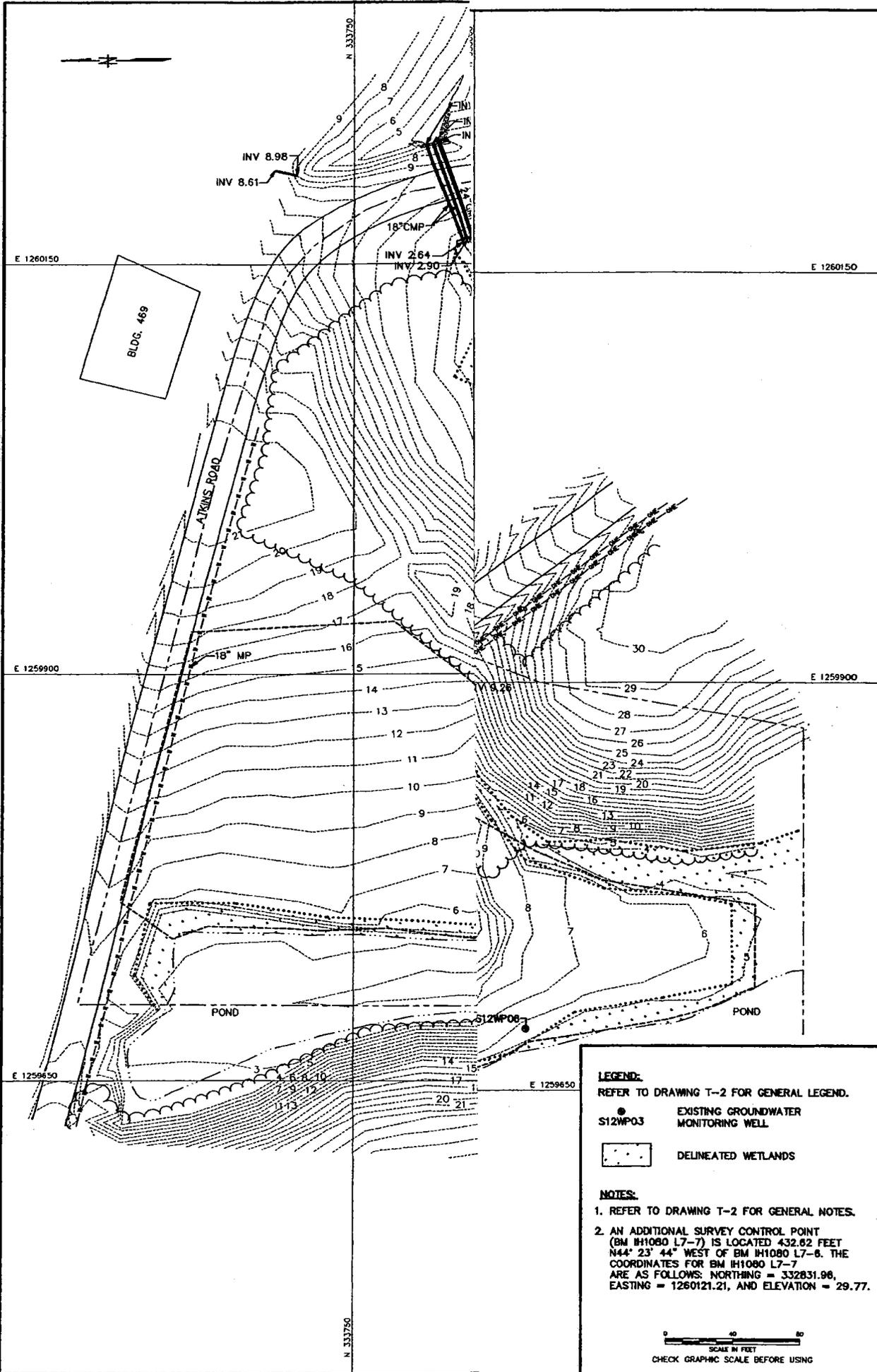
INDIAN HI CENTER

RAC C62-01



PROJECT LOCATION MAP
 NOT TO SCALE
 SCALE IN MILES

DEPARTMENT OF THE NAVY ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND		TITLE SUBMISSION SITE 12 - TOWN GUT LANDFILL REMEDIAL ACTION DESIGN TITLE SHEET	
CODE LD. NO. 80091 DRAWING SIZE: D CONST. CONT. NO. N62470-97-D-5000 SPEC. 21-97-3000-093-01 NAVFAC DRAWING NO. 3458628 SHEET 1 OF 11	TITLE SHEET DATE APPROVED BY DATE APPROVED BY DATE	TITLE SHEET DATE APPROVED BY DATE APPROVED BY DATE	TITLE SHEET DATE APPROVED BY DATE APPROVED BY DATE
DEPARTMENT OF THE NAVY ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND		TITLE SHEET DATE APPROVED BY DATE APPROVED BY DATE	
DEPARTMENT OF THE NAVY ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND ENGINEERING FIELD ACTIVITY - CHESAPEAKE NAVAL FACILITIES ENGINEERING COMMAND		TITLE SHEET DATE APPROVED BY DATE APPROVED BY DATE	



LEGEND:
 REFER TO DRAWING T-2 FOR GENERAL LEGEND.
 ● EXISTING GROUNDWATER MONITORING WELL
 S12WPO3
 [Dotted Area] DELINEATED WETLANDS

NOTES:
 1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
 2. AN ADDITIONAL SURVEY CONTROL POINT (BM IH1080 L7-7) IS LOCATED 432.82 FEET N44° 23' 44" WEST OF BM IH1080 L7-8. THE COORDINATES FOR BM IH1080 L7-7 ARE AS FOLLOWS: NORTHING = 332831.98, EASTING = 1260121.21, AND ELEVATION = 29.77.

0 40 80
 SCALE IN FEET
 CHECK GRAPHIC SCALE BEFORE USING

		ENGINEERING FIELD ACTIVITY-CHESAPEAKE FINAL SUBMISSION SITE 12 - TOWN GUT LANDFILL REMEDIAL ACTION DESIGN EXISTING CONDITIONS PLAN	
DES. NO. 04 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 403 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 404 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 405 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 406 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 407 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 408 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 409 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 410 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 411 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 412 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 413 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 414 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 415 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 416 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 417 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 418 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 419 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 420 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 421 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 422 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 423 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 424 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 425 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 426 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 427 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 428 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 429 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 430 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 431 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 432 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 433 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 434 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 435 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 436 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 437 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 438 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 439 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 440 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 441 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 442 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 443 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 444 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 445 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 446 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 447 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 448 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 449 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 450 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 451 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 452 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 453 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 454 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 455 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 456 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 457 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 458 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 459 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 460 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 461 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 462 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 463 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 464 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 465 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 466 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 467 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 468 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 469 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 470 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 471 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 472 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 473 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 474 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 475 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 476 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 477 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 478 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 479 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 480 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 481 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 482 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 483 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 484 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 485 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 486 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 487 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 488 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 489 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 490 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 491 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 492 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 493 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 494 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 495 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 496 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 497 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 498 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 499 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 500 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 501 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 502 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 503 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 504 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 505 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 506 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 507 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 508 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 509 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 510 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 511 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 512 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 513 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 514 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 515 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 516 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 517 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 518 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 519 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 520 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 521 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 522 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 523 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 524 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 525 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 526 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 527 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 528 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 529 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 530 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 531 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 532 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 533 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 534 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 535 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 536 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 537 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 538 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 539 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 540 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 541 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 542 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 543 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 544 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 545 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 546 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 547 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 548 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 549 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 550 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 551 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 552 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 553 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 554 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 555 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 556 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 557 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 558 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 559 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 560 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 561 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 562 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 563 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 564 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 565 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 566 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 567 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 568 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 569 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 570 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 571 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 572 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 573 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 574 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 575 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 576 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 577 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES. NO. 578 DATE 1/10/02	E.I.C. 401 DATE 2/10/02	DES. NO. 579 DATE 1/10/02	E.I.C. 402 DATE 2/10/02
DES			

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

- I. INSTALL EROSION AND SEDIMENT CONTROL STRUCTURES (EITHER TEMPORARY OR PERMANENT) SUCH AS SUPER SILT FENCE AND SILT FENCE PRIOR TO OTHER SITE DISTURBANCE. FOR FAILURES AND MAKE NECESSARY REPAIRS, WITHIN THE PLANTING SEASON.
- II. PERFORM ALL GRADING OPERATIONS AT RIGHT ANGLES TO THE SLOPE AND SHAPING IS NOT NECESSARY FOR TEMPORARY SEEDING. ESTABLISHED, THE SITE SHALL HAVE 90% GROUND COVER TEMPORARILY STABILIZED, AS DETERMINED BY THE ROICC.
- III. SCHEDULE REQUIRED SOIL TESTS TO DETERMINE SOIL AMENDMENT CATEGORIES AND APPLICATION RATES. SUBMIT TEST RESULTS AND RECOMMENDATIONS FOR SEED MIXTURE AND FERTILIZER RATES FOR APPROVAL BY ROICC. FERTILIZER, SEEDBED PREPARATION, AND SEEDING BETWEEN 40% AND 90% GROUND COVERAGE, OVERSEEDING AT THE RATES ORIGINALLY APPLIED MAY BE USED AND DIRECTED BY THE ROICC.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

- I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS OF FERTILIZER AND LIME. SOIL ANALYSIS PERFORMED BY A RECOGNIZED COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSIS.
- II. FERTILIZERS SHALL BE UNIFORM IN COMPOSITION, FREE FLOWING, AND APPLICABLE TO THE SITE. MANURE OR GRAIN USED TO PROVIDE COVER ON DISTURBED AREAS FOR LONGER DURATION OF VEGETATIVE COVER, PERMANENT FERTILIZERS SHALL BE DELIVERED TO THE SITE, FULLY LABELED ACCORDING TO APPLICABLE STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADEMARK, AND WARRANTY OF THE PRODUCER.

TEMPORARY SEEDING SUMMARY

SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE	LIME RATE
		(10-10-10)	
2/1-4/30 AND 8/15-11/1	1/4-1/2 INCHES	600 lb/ac (15 lb/1000 sf)	4000 lb/ac (100 lb/1000 sf)

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

- a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 4 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS, CHISEL PLOWS, OR MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENEED, IT SHOULD NOT BE ROLLED OR DRAGGED SMOG IN THE ROUGHENED CONDITION. SLOPED AREAS (GREATER THAN 3H:1V) SHOULD BE TRACKED BY A DOZER LEAVING THE SURFACE IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
- b. APPLY SOIL AMENDMENTS AS PER SOIL TEST AND AS PRESENTED IN THE SEEDING SUMMARY.
- c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISCING OR OTHER SUITABLE MEANS.

II. PERMANENT SEEDING

- a. MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATION ESTABLISHMENT: TO ESTABLISH GROUND COVER FOR A MINIMUM PERIOD OF YEARS GENERALLY RECEIVING LOW MAINTENANCE.

PERMANENT SEEDING SUMMARY

SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE	LIME RATE
		(10-20-20)	
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES	900 lb/ac (20 lb/1000 sf)	4000 lb/ac (100 lb/1000 sf)
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES		
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES		
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES		
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES		
3/1-5/15 AND 8/15-11/15	1/4-1/2 INCHES		

D. SEED SPECIFICATIONS

- I. ALL SEED USED SHALL HAVE BEEN TESTED WITHIN 12 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON THIS JOB. ALL SEED SHALL BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED SHALL MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED ACT.

NOTE: SEED TAGS SHALL BE MADE AVAILABLE TO ROICC TO VERIFY SEED TYPE AND RATE OF SEED USED.

NO STANDARD FERTILIZER AND LIME, PERFORM SOIL TESTS TO DETERMINE FERTILIZER RATIOS AND APPLICATION RATES.

(10-20-20) REFERS TO THE PERCENT N, P₂O₅, AND K₂O.

REVISIONS
 DATE APPROVED
 DESCRIPTION
 SYMBOL

DATE
 REVIEWED BY ROICC
 APPROVED
 FOR COMMANDER NAVFAC

403
404
405
408
418

403
404
405
408
418

USA
 FEDERAL BUREAU OF SURVEY
 WASHINGTON, D.C.

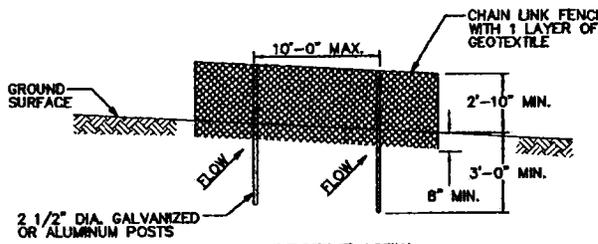
TITLE
 DATE
 E.I.C.
 DATE
 DATE
 DATE

DEPARTMENT OF THE NAVY
 ENGINEERING FIELD ACTIVITY - CHESAPEAKE
 NAVFAC DRAWING NO. 3458633

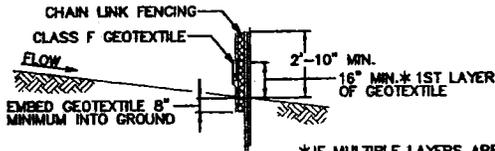
FINAL SUBMISSION
 SITE 12 - TOWN GUT LANDFILL
 REMEDIAL ACTION DESIGN
 REVEGETATION NOTES

CODE LD. NO. 80091
 DRAWING SIZE: D
 CONST. CONT. NO. N82470-97-D-5000
 SPEC. 21-97-5000-002-01
 SHEET 6 OF 11

C-4

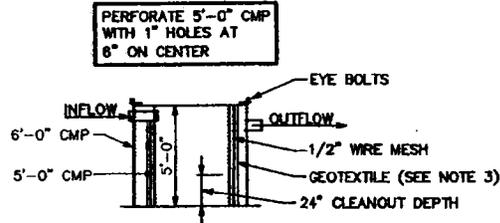


PERSPECTIVE VIEW

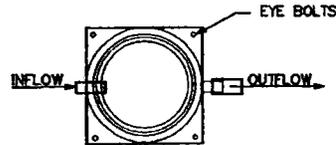


CROSS SECTION

*IF MULTIPLE LAYERS ARE REQUIRED TO ATTAIN 3'-6"



ELEVATION



PLAN VIEW

NOTES:

- FENCE POST SPACING SHALL NOT EXCEED 10'-0" CENTER TO CENTER. WHEN GEOTEXTILE SECTIONS ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 8" AND FOLDED.
- FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH LATEST MARYLAND STATE HIGHWAY DETAILS FOR CHAIN LINK FENCING.
- CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS, POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.
- GEOTEXTILE SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH SPACED 24" AT THE TOP AND MID-SECTION AND SHALL MEET THE REQUIREMENTS OF CLASS F GEOTEXTILE. CHAIN LINK FENCE AND GEOTEXTILE WILL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.

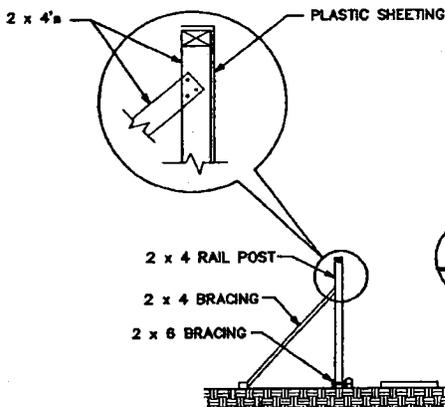
OF A TYPICAL SEDIMENT TANK IS SHOWN. OTHER CONTAINER MAY BE USED IF THE STORAGE VOLUME IS ADEQUATE AND APPROVAL FROM THE ROICC AND MDE.

SEDIMENT TANKS SHALL BE PLACED IN SERIES IF ADDITIONAL STORAGE VOLUME OR CAPACITY IS REQUIRED. ONE CUBIC FOOT OF STORAGE VOLUME PROVIDED FOR EACH GALLON PER MINUTE OF PUMP DISCHARGE. WESH SIDE MAY VARY FROM TANK TO TANK IF TANKS ARE IN SERIES. ALL GEOTEXTILES SHALL HAVE AOS LESS THAN 0.3 MM, AND TENSILE STRENGTH GREATER THAN 0.01 CM/SEC, GRAB TENSILE GREATER THAN BURST STRENGTH GREATER THAN 145 PSL. THE DOWNSTREAM-GEOTEXTILE SHALL HAVE BURST STRENGTH GREATER THAN 320 PSL. PORTABLE SEDIMENT TANKS SHALL BE CONTROLLED TO PREVENT SLOPE AREAS FROM EROSION. EROSION CONTROLS (E.G. EROSION MATTING, RIPRAP, ETC.) SHALL BE SUBJECT TO ROICC APPROVAL.

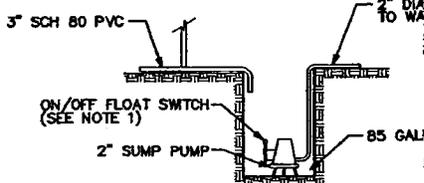
SUPER SILT FENCE DETAIL

NTS

1
C-2/C-3



SECTION B
C-3/C-3



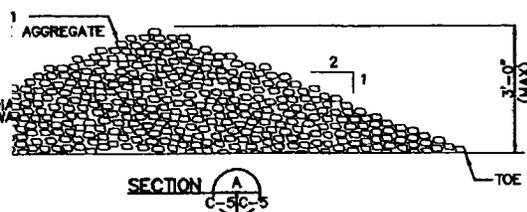
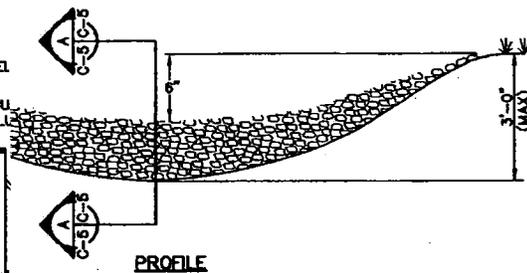
SECTION C
C-3/C-3

NOTES:

- ON/OFF OPERATION OF PUMP IS CONTROLLED BY FLOAT SO THAT PUMP STARTS WHEN SUMP WATER LEVEL REACHES 4" BELOW SUMP INLET AND SHUTS OFF WHEN WATER LEVEL DROPS TO PUMP DISCHARGE LEVEL.
- DRAIN COUPLING IS TO BE FITTED WITH QUICK DISCONNECT AND 3" DIA. SCH 80 PVC (INNER COUPLING) OR 3" DIA. RUBBER DISCHARGE HOSE (OUTER COUPLING) TO SUMP. THE OUTER DRAIN COUPLING IS TO BE USED ONLY AFTER VEHICLE HAS LEFT THE PAD. PLUG ALL DRAINS NOT BEING USED.

PORTABLE SEDIMENT TANK

DETAIL 5
C-2/C-5
NOT TO SCALE

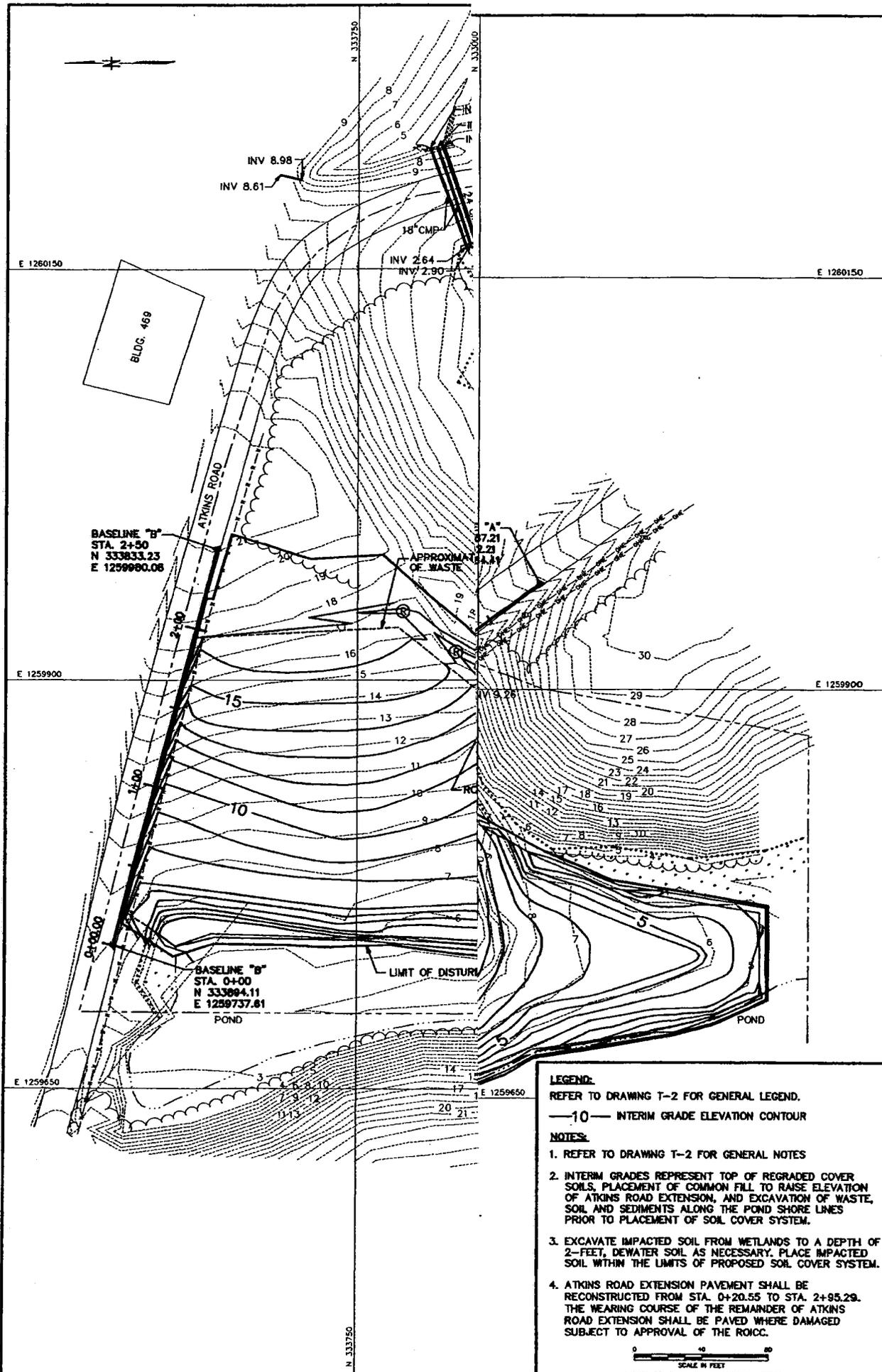


MS WILL BE REMOVED FOLLOWING FINAL STABILIZATION. MS IS TO BE PLACED WHERE INDICATED ON DRAWING C-2 SO THAT UPSTREAM DAM (CHANNEL INVERT) IS AT THE SAME ELEVATION AS THE DOWNSTREAM ROCK CHECK DAM. MS IS TO BE REMOVED FROM BEHIND ROCK CHECK DAM WHEN IT HAS DROPPED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE ROCK CHECK DAM.

ROCK CHECK DAM

DETAIL 6
C-2/C-5
NTS

DATE APPROVED	
DESCRIPTION	REVISIONS
SYMBOL	
DATE	
REVIEWED BY	DATE
403	09A
404	04
405	E.I.C.
406	401
407	402
408	402
409	402
410	402
411	402
412	402
413	402
414	402
415	402
416	402
417	402
418	402
419	402
420	402
421	402
422	402
423	402
424	402
425	402
426	402
427	402
428	402
429	402
430	402
431	402
432	402
433	402
434	402
435	402
436	402
437	402
438	402
439	402
440	402
441	402
442	402
443	402
444	402
445	402
446	402
447	402
448	402
449	402
450	402
451	402
452	402
453	402
454	402
455	402
456	402
457	402
458	402
459	402
460	402
461	402
462	402
463	402
464	402
465	402
466	402
467	402
468	402
469	402
470	402
471	402
472	402
473	402
474	402
475	402
476	402
477	402
478	402
479	402
480	402
481	402
482	402
483	402
484	402
485	402
486	402
487	402
488	402
489	402
490	402
491	402
492	402
493	402
494	402
495	402
496	402
497	402
498	402
499	402
500	402
501	402
502	402
503	402
504	402
505	402
506	402
507	402
508	402
509	402
510	402
511	402
512	402
513	402
514	402
515	402
516	402
517	402
518	402
519	402
520	402
521	402
522	402
523	402
524	402
525	402
526	402
527	402
528	402
529	402
530	402
531	402
532	402
533	402
534	402
535	402
536	402
537	402
538	402
539	402
540	402
541	402
542	402
543	402
544	402
545	402
546	402
547	402
548	402
549	402
550	402
551	402
552	402
553	402
554	402
555	402
556	402
557	402
558	402
559	402
560	402
561	402
562	402
563	402
564	402
565	402
566	402
567	402
568	402
569	402
570	402
571	402
572	402
573	402
574	402
575	402
576	402
577	402
578	402
579	402
580	402
581	402
582	402
583	402
584	402
585	402
586	402
587	402
588	402
589	402
590	402
591	402
592	402
593	402
594	402
595	402
596	402
597	402
598	402
599	402
600	402
601	402
602	402
603	402
604	402
605	402
606	402
607	402
608	402
609	402
610	402
611	402
612	402
613	402
614	402
615	402
616	402
617	402
618	402
619	402
620	402
621	402
622	402
623	402
624	402
625	402
626	402
627	402
628	402
629	402
630	402
631	402
632	402
633	402
634	402
635	402
636	402
637	402
638	402
639	402
640	402
641	402
642	402
643	402
644	402
645	402
646	402
647	402
648	402
649	402
650	402
651	402
652	402
653	402
654	402
655	402
656	402
657	402
658	402
659	402
660	402
661	402
662	402
663	402
664	402
665	402
666	402
667	402
668	402
669	402
670	402
671	402
672	402
673	402
674	402
675	402
676	402
677	402
678	402
679	402
680	402
681	402
682	402
683	402
684	402
685	402
686	402
687	402
688	402
689	402
690	402
691	402
692	402
693	402
694	402
695	402
696	402
697	402
698	402
699	402
700	402
701	402
702	402
703	402
704	402
705	402
706	402
707	402
708	402
709	402
710	402
711	402
712	402
713	402
714	402
715	402
716	402
717	402
718	402
719	402
720	402
721	402
722	402
723	402
724	402
725	402
726	402
727	402
728	402
729	402
730	402
731	402
732	402
733	402
734	402
735	402
736	402
737	402
738	402
739	402
740	402
741	402
742	402
743	402
744	402
745	402
746	402
747	402
748	402
749	402
750	402
751	402
752	402
753	402
754	402
755	402
756	402
757	402
758	402
759	402
760	402
761	402
762	402
763	402
764	402
765	402
766	402
767	402
768	402
769	402
770	402
771	402
772	402
773	402
774	402
775	402
776	402
777	402
778	402
779	402
780	402
781	402
782	402
783	402
784	402
785	402



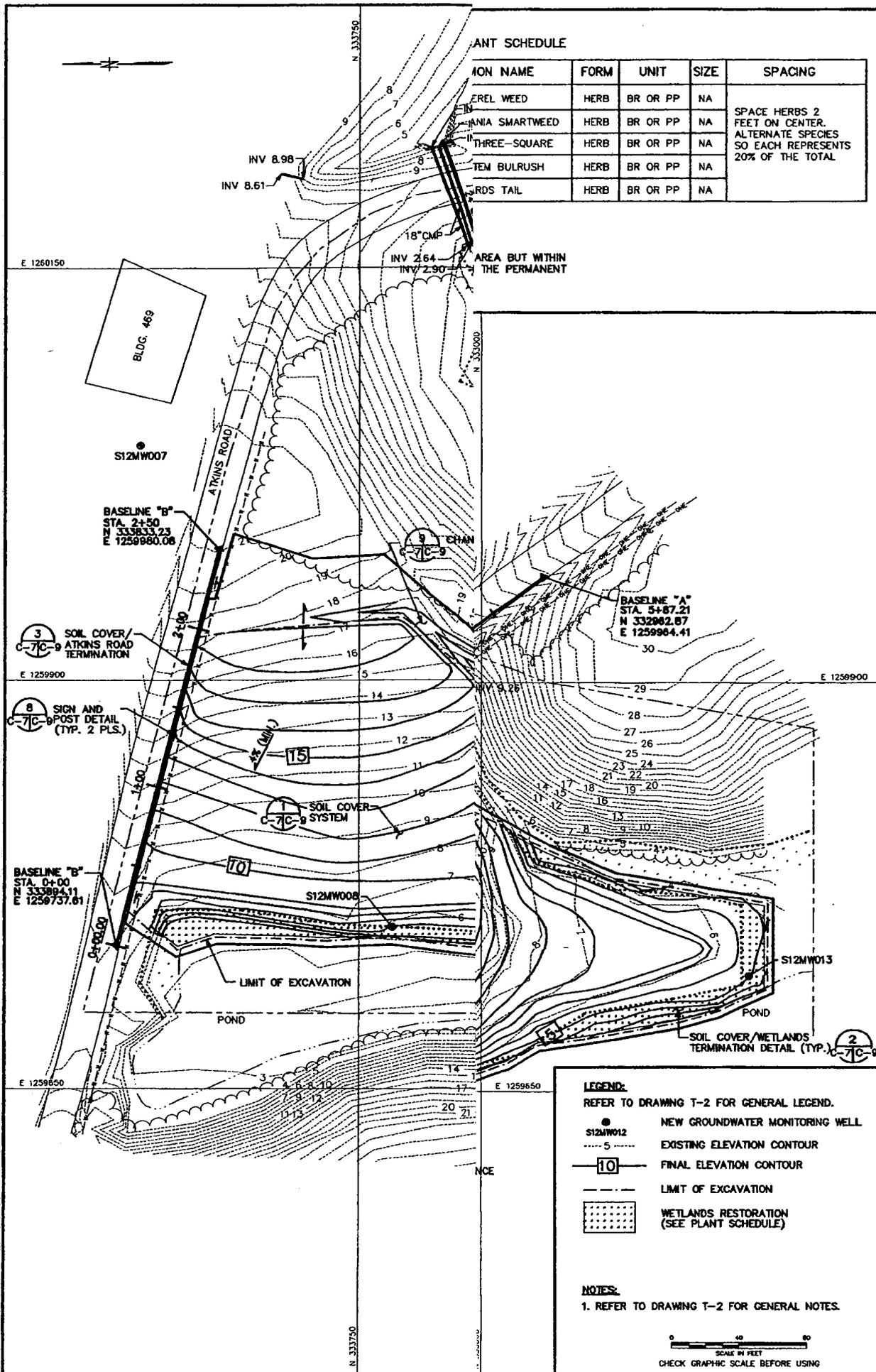
LEGEND:
 REFER TO DRAWING T-2 FOR GENERAL LEGEND.
 —10— INTERIM GRADE ELEVATION CONTOUR

NOTES:

- REFER TO DRAWING T-2 FOR GENERAL NOTES
- INTERIM GRADES REPRESENT TOP OF REGRADED COVER SOILS. PLACE OF COMMON FILL TO RAISE ELEVATION OF ATKINS ROAD EXTENSION, AND EXCAVATION OF WASTE, SOIL AND SEDIMENTS ALONG THE POND SHORE LINES PRIOR TO PLACEMENT OF SOIL COVER SYSTEM.
- EXCAVATE IMPACTED SOIL FROM WETLANDS TO A DEPTH OF 2- FEET, DEWATER SOIL AS NECESSARY. PLACE IMPACTED SOIL WITHIN THE LIMITS OF PROPOSED SOIL COVER SYSTEM.
- ATKINS ROAD EXTENSION PAVEMENT SHALL BE RECONSTRUCTED FROM STA. 0+20.55 TO STA. 2+95.29. THE WEARING COURSE OF THE REMAINDER OF ATKINS ROAD EXTENSION SHALL BE PAVED WHERE DAMAGED SUBJECT TO APPROVAL OF THE ROICC.

SCALE IN FEET
 CHECK GRAPHIC SCALE BEFORE USING

DEPARTMENT OF THE ARMY ENGINEERING FIELD ACTIVITY—CHESAPEAKE WASHINGTON, D.C.		TITLE FINAL SUBMISSION SITE 12 - TOWN GUT LANDFILL REMEDIAL ACTION DESIGN INTERIM GRADING PLAN	
DRAWING NO. M62470-97-D-5000	DRAWING SIZE: D	CODE I.D. NO. 80091	DATE APPROVED 04B
SPEC. 21-97-5000-062-01	CONST. CONT. NO.	REVIEWED BY 401	DATE 04B
NAVFAC DRAWING NO. 3458635	SHEET 8 OF 11	SYMBOL 403 404 405 408	DESCRIPTION REVISIONS
SEAL AREA		DATE APPROVED	



PLANT SCHEDULE

PLANT NAME	FORM	UNIT	SIZE	SPACING
PERENNIAL WEED	HERB	BR OR PP	NA	SPACE HERBS 2 FEET ON CENTER. ALTERNATE SPECIES SO EACH REPRESENTS 20% OF THE TOTAL
PERENNIAL SMARTWEED	HERB	BR OR PP	NA	
THREE-SQUARE	HERB	BR OR PP	NA	
PERENNIAL BULRUSH	HERB	BR OR PP	NA	
PERENNIAL GRASS TAIL	HERB	BR OR PP	NA	

AREA BUT WITHIN THE PERMANENT

		REVISIONS SYMBOL DATE 403 404 405 408 409	
APPROVED: DATE: 02/27/02		APPROVED: DATE: 02/27/02	
DESIGNED BY: DATE: 02/27/02		CHECKED BY: DATE: 02/27/02	
DRAWN BY: DATE: 02/27/02		PROJECT NO.: 80091	
TITLE: ENGINEERING FIELD ACTIVITY-CHESAPEAKE FINAL SUBMISSION SITE 12 - TOWN GUT LANDFILL REMEDIAL ACTION DESIGN FINAL GRADING PLAN		CODE ID. NO. 80091 DRAWING SIZE: D CONST. CONT. NO. N82470-97-D-5000 SPEC. NO. 21-97-5000-082-01 NAVFAC DRAWING NO. 3458636 SHEET 9 OF 11	

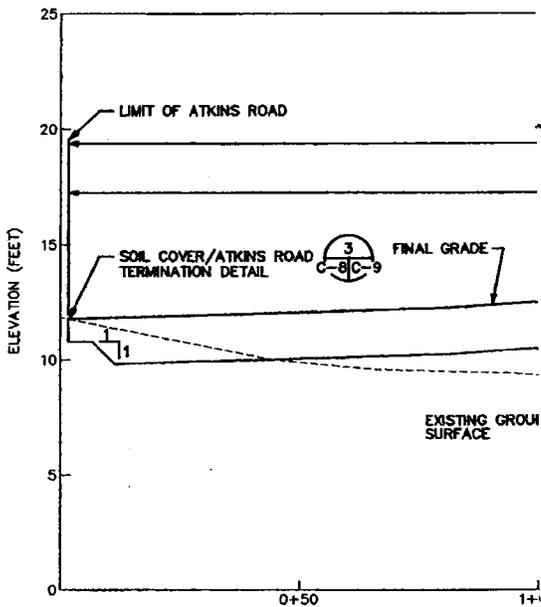
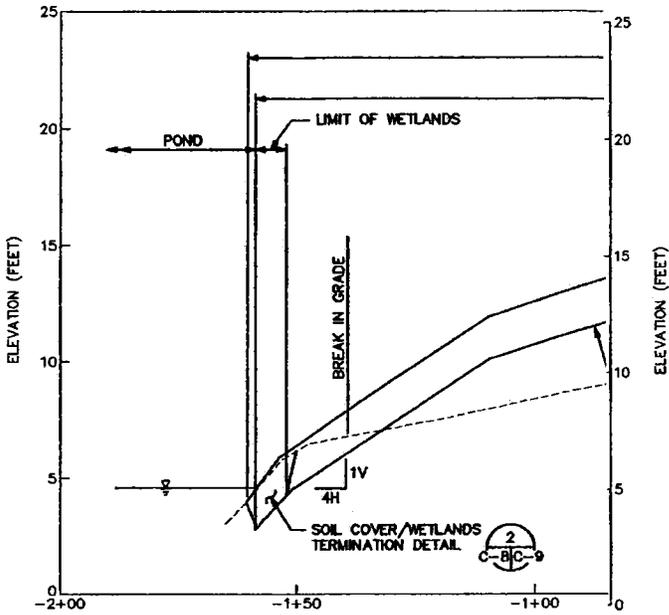
LEGEND:

- S12MW012 NEW GROUNDWATER MONITORING WELL
- 5 --- EXISTING ELEVATION CONTOUR
- 10 FINAL ELEVATION CONTOUR
- - - - - LIMIT OF EXCAVATION
- WETLANDS RESTORATION (SEE PLANT SCHEDULE)

NOTES:

- REFER TO DRAWING T-2 FOR GENERAL NOTES.

SCALE IN FEET
 CHECK GRAPHIC SCALE BEFORE USING



LEGEND: REFER TO DRAWING T-2 FOR GENERAL LEGEND.	CODE I.D. NO. 80091
	DRAWING SIZE: D
NOTES: REFER TO DRAWING T-2 FOR GENERAL NOTES.	CONST. CONT. NO. N62470-97-D-5000
	SPEC-21-97-5000-062-01 NAVFAC DRAWING NO. 3458637
	SHEET 10 OF 11
	C-8

REVISIONS

NO.	DATE	DESCRIPTION
403		
404		
405		
408		
04B		

SYMBOL

09A
04

E.I.C.
401

402

DATE

DATE

DATE

DATE

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

DATE: 1/2/02

APPROVED BY: [Signature]

DATE: 1/2/02

DATE

DATE

NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY - CHESAPEAKE
REMEDIAL ACTION DESIGN
CROSS SECTIONS

SPECIFICATIONS

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY - CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND
BUILDING 212, WASHINGTON NAVY YARD
WASHINGTON, D.C. 20374

SPECIFICATION NO:
21-97-5000-062-01

CONTRACT NO:
N62470-97-D-5000-062-01

SITE 12
TOWN GUT LANDFILL
REMEDIAL ACTION DESIGN
at the
NAVAL SURFACE WARFARE CENTER, INDIAN HEAD
INDIAN HEAD, MARYLAND

DESIGN BY:
TETRA TECH NUS, INC.
600 CLARK AVENUE, SUITE 3
KING OF PRUSSIA, PENNSYLVANIA 19406-1433

SPECIFICATION PREPARED BY:

Architectural:

N/A

Electrical:

N/A

Structural:

N/A

Submitted by:



FEBRUARY 2002

SPECIFICATION APPROVED BY: _____

DATE: _____

PROJECT TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01115 GENERAL PARAGRAPHS (REMEDIAL ACTION CONTRACTS)
01140N WORK RESTRICTIONS
01450N QUALITY CONTROL
01525 SAFETY REQUIREMENTS
01575N TEMPORARY ENVIRONMENTAL CONTROLS

DIVISION 02 - SITE WORK

02223 TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL
02224 GEOGRAPHIC INFORMATION SYSTEM (GIS) GRADE-B POST-CONSTRUCTION
LOCATION
02315 EXCAVATION AND FILL
02525 MONITORING WELLS
02742 PAVEMENT WITH A BITUMINOUS CONCRETE SURFACE
02951 MITIGATED WETLANDS AREA, SHRUBS, PLANTS, AND GRASS

-- End of Project Table of Contents --

SECTION 01115

GENERAL PARAGRAPHS (REMEDIAL ACTION CONTRACTS)

PART 1 GENERAL

1.1 REFERENCES

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

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards
29 CFR 1926 Safety and Health Regulations for Construction
29 CFR 1926-SUBPART V Power Transmission and Distribution

STATE OF MARYLAND CODE OF MARYLAND REGULATIONS (COMAR)

COMAR 26.17 Department of the Environment, Water Management

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EP 1110-1-8 (1997) Construction Equipment Ownership and Operating Expense Schedule
COE EM 385-1-1 (1996) Safety and Health Requirements Manual

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 833/R-92-001 (1992) Storm Water Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practices; Summary Guidance

FEDERAL STANDARDS (FED-STD)

FED-STD-595 (Rev. B) Colors Used in Government Procurement

MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE)

MDE SESC (1994) Standards and Specifications for Soil Erosion and Sediment Control

U. S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD-461 (Rev. D) Control of Electromagnetic Interference Emissions and Susceptibility
MIL-STD-462 (Rev. D) Measurement of Electromagnetic Interference Characteristics

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241

(1996) Safeguarding Construction,
Alteration, and Demolition Operations

1.2 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

SD-01 Preconstruction Submittals

Work Plan

SD-11 Closeout Submittals

As-Built records

Environmental Conditions Report

Status reports

QC meeting minutes

Test Results Summary Report

Contractor Production Report

QC Report

Rework Items List

Permits

Stormwater Pollution Prevention Plan

Notice of Intent

Notice of Termination

Contractor's Closeout Report

1.3 WORK PLAN

Submit a Work Plan consisting of the following elements:

- a. Narrative: Provide a description of the project objectives, scheduling, sampling and analysis requirements, decontamination procedures; removal, excavation and regrading procedures; compaction procedures; wastewater treatment plan (water resulting from decontamination, excavation dewatering, and excavated soil, sediment, and landfill material dewatering); and storage, transportation, and treatment requirements for off-site soil, sediment, and landfill material disposal; and a detailed sequence of events for the construction.
- b. Technical Specifications: Provide, in an amendment format, any additional specifications and any modifications to the contract

specifications required to accurately describe the materials and work procedures envisioned to satisfy the requirements of the delivery order. Contact Design Navy Technical Representative (NTR) for availability of guide specification sections for those sections required, but not included in the contract documents.

- c. Shop drawings: Shop drawings shall detail and describe components of the project not currently indicated on the contract drawings such that the shop drawings and the contract drawings, when taken together, provide a complete representation of the project requirements. Shop drawings shall be prepared and sealed by a registered professional engineer.
- d. Environmental Protection Plan: At the preconstruction conference, meet with the Resident Officer in Charge of Construction's (ROICC's) Navy Technical Representative (NTR) to discuss environmental protection requirements for the project. Prepare and submit an Environmental Protection Plan in accordance with Section C, Part 4.0, of the Basic Contract, and as specified herein.

(1) Hazardous materials (HM) to be brought onto the station: Any hazardous materials planned for use on the station shall be included in the station Hazardous Material Tracking Program maintained by the safety department. To assist in this effort, the Contractor shall submit a list (including quantities) of HM to be brought to the station and copies of the corresponding material safety data sheets (MSDS). This list shall be submitted to the ROICC NTR. At project completion, any hazardous material brought onto the station shall be removed from the site by the Contractor. The Contractor shall account for the quantity of HM brought to the station, the quantity used or expended during the job, and the leftover quantity which (1) may have additional useful life as a HM and shall be removed by the Contractor, or (2) may be a hazardous waste, which shall then be removed as specified herein.

(2) Hazardous waste (HW) generated: The Environmental Protection Plan shall list and quantify any HW to be generated during the project.

(3) Storage of hazardous waste: In accordance with station regulations, HW shall be stored near the point of generation up to a total quantity of one quart of acutely HW or 55 gallons of HW. Any volume exceeding these quantities shall be moved to an HW permitted area within 1 day. Prior to generation of HW, contact the ROICC NTR and IHDIV-NSWC Environmental Office for HW management requirements.

(4) Minimization of hazardous waste: In accordance with station regulations, the Contractor should substitute materials as necessary to reduce the generation of HW and include a statement to that effect in the Environmental Protection Plan.

(5) Environmental conditions likely to be encountered during this project: Contact the ROICC NTR for conditions in the area of the project which may be subject to special environmental procedures. Include this information in the Preconstruction Survey. Describe in the Environmental Protection Plan any permits required prior to working the area, and contingency plans in case an unexpected environmental condition is discovered.

(6) Permitting plans for any transportation and disposal, excavation, or construction of hazardous waste that will require an environmental permit from an issuing agency: The Contractor is responsible for generating the permits and delivering the completed documents to the ROICC NTR. The ROICC NTR will review the permits and the Contractor shall file the documents with the appropriate agency and complete disposal with the approval of the ROICC NTR. Correspondence with the State concerning the environmental permits and completed permits shall be delivered to the ROICC NTR.

(7) Environmental Protection Plan format

ENVIRONMENTAL PROTECTION PLAN

Contracting Organization
Address and Telephone Numbers

1. Hazardous materials to be brought onto the station
2. MSDS package
3. Employee training documentation
4. HW storage plan
5. HW to be generated
6. Preconstruction Survey results
7. Permitting requirements identified

e. Health and Safety Plan: Provide a site specific Health and Safety Plan (HASP) in accordance with Section C, Part 3.0, of the Basic Contract. The HASP shall include, but is not limited to, the following:

- (1) Names of the health and safety officer and names of alternates responsible for health and safety.
- (2) 29 CFR 1910.
- (3) 29 CFR 1926.
- (4) 29 CFR 1926-SUBPART V, tagout and lockout procedures.
- (5) Contract Clause "FAR 52.236-13, Accident Prevention."
- (6) Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data."
- (7) NFPA 241.

f. QC Plan: Provide a QC Plan in accordance with Section C, Part 6.0, of the Basic Contract, and as specified herein.

(1) Table of Contents

- I. QC ORGANIZATION
- II. NAMES AND QUALIFICATIONS
- III. DUTIES, RESPONSIBILITY, AND AUTHORITY OF QC PERSONNEL
- IV. OUTSIDE ORGANIZATIONS
- V. APPOINTMENT LETTERS
- VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER
- VII. TESTING LABORATORY INFORMATION

- VIII. TESTING PLAN AND LOG
- IX. PROCEDURES TO COMPLETE REWORK ITEMS
- X. DOCUMENTATION PROCEDURES

(2) Submittal Register: As part of the QC Plan, submit a completed Submittal Register to document quality control for materials, inspection, and testing in accordance with Section C, Part 7.0 of the Basic Contract. A copy of the Submittal Register is provided at the end of this section.

(3) Testing laboratory qualifications: As part of the QC Plan, submit qualifications for each laboratory which shall be used in accordance with Section C, Part 6.0, of the Basic Contract. Laboratories engaged in hazardous materials testing shall meet the requirements of Section C, Part 6.0 of the Basic Contract.

1.3.1 Forwarding Preconstruction Submittals

Within 30 calendar days of issuance of the delivery order, and before procurement, fabrication, or mobilization, submit to the ROICC NTR, and to distribution as directed by the ROICC NTR, the Work Plan, complete as specified. The Architect-Engineer shall review the Work Plan for the ROICC NTR to determine compliance of the Contractor's Work Plan with the requirements of the contract documents for this delivery order.

1.3.2 Review Comments

The Contractor's Work Plan shall be reviewed. The ROICC NTR shall compile and coordinate Government review comments, and forward consolidated review comments to the Contractor. Review comments on the Work Plan shall be resolved, and Work Plan modified as required. After the correction of the Work Plan, submit one corrected final copy to the ROICC NTR for final review. The Work Plan shall be approved prior to commencement of any other work associated with this delivery order.

1.4 RECORDS

1.4.1 As-Built Records

Maintain two sets of full size contract drawings and two sets of full size approved shop drawings marked to show any deviations which have occurred, including buried or concealed construction and utility features revealed during the course of construction. Record horizontal and vertical locations of buried utilities that differ from the contract drawings. These drawings shall be available for review by the ROICC NTR at any time. At the completion of the work, deliver marked sets of the contract drawings to the ROICC NTR. As-built conditions shall be incorporated onto the drawings electronically. Provide a post-construction survey for final topography, structures, and utilities, and other requirements of Section 02224, "Geographic Information System (GIS) Grade-B Post-Construction Location." The A/E shall supply the CADD files to be used.

1.4.2 Environmental Conditions Report

Prior to starting work, perform a preconstruction survey with the ROICC NTR. Take photographs showing existing environmental conditions on and adjacent to the site. Prior to starting work, submit the results of the survey in an Environmental Condition Report to the ROICC NTR.

1.4.3 Contract Management System (CMS)

The CMS shall be a system able to provide, as a minimum, the activities in sorts or groups as specified in the Basic Contract and any subsequent delivery orders.

- a. Status reports: Status reports shall comply with the Basic Contract and any subsequent delivery orders. Submit a Technical Progress Report, Cost Performance Report, modification log, time-scaled logic diagram, and Waste Materials Report. Submit the first delivery order status report approximately 15 days after the end of the month in which the Contractor's Work Plan was approved. Thereafter, submit status reports every 30 days. Status report periods shall be consistent with the invoice reporting periods.

1.4.4 QC Meeting Minutes

The QC representative shall document QC meetings by delivering copies of the minutes to the ROICC NTR within 3 calendar days after each QC meeting. The submittals shall comply with Section C, Part 6.0 of the Basic Contract.

1.4.5 Test Results Summary Report

A summary report of field tests, geotechnical laboratory, and laboratory analytical results shall be submitted to the ROICC NTR within 30 days after laboratory receipt of samples and in accordance with Section C, Part 6.0 of the Basic Contract. A separate report shall be required for each set of analytical data.

1.4.6 Contractor Production Report (CPR)

The CPR shall be prepared and submitted daily to the ROICC NTR in accordance with Section C, Part 6.0, of the Basic Contract.

1.4.7 QC Report

The QC Report shall be submitted by the QC representative to the ROICC NTR every day work is performed, material is delivered, direction is pending, or a labor force is present in accordance with Section C, Part 6.0, of the Basic Contract.

1.4.8 Rework Items List

The QC representative shall deliver a copy of the Rework Items List to the ROICC NTR on a monthly basis in accordance with Section C, Part 6.0, of the Basic Contract.

1.4.9 Permits

Fifteen days prior to beginning on site work, submit draft copies of the following permits required for on site activities:

- a. Hot Works Permit; from the Public Works Officer, Utilities Division.
- b. Dig Permit; from the Public Works Officer, Utilities Division.
- c. Outage Permit; from the Public Works Officer, Utilities Division.

1.4.10 Contractor's Closeout Report

Submit upon completion of the project. This report shall include: introduction, summary of action, final Health and Safety Report, summary of record documents, field changes and contract modification, final documents, complete set of field test and laboratory analytical results, geotechnical laboratory, documentation of off-site transportation and treatment of materials, QC Summary Report, surveyed As-builts, color photographs documenting each major task of the project, and final cost data.

1.5 FORWARDING SUBMITTALS

After approval of the work plan, and before procurement or fabrication, submit, except as specified otherwise, to the ROICC NTR, the shop drawings and technical data required in the technical sections of this specification. As requested by the ROICC NTR, the Architect-Engineer for this project may review and provide surveillance for the ROICC NTR to determine if Contractor-approved submittals comply with the contract requirements, and shall review and approve for the ROICC NTR those submittals not permitted to be Contractor approved to determine if submittals comply with the contract requirements. At each "Submittal" paragraph in the individual specification sections, a notation "G," following a submittal item, indicates the Architect-Engineer, acting as the agent for the ROICC NTR, is the approving authority for that submittal item. One copy of the transmittal form for submittals shall be forwarded to the ROICC NTR.

1.6 PROJECT DESCRIPTION

This work includes the preparation of a work plan as previously described, and the provision of earthworks, site restoration, and other related work.

The remedial action consists of general site preparation work, excavation and placement of waste-contaminated soil and sediment under a soil cover in order to protect potential ecological and human receptors, and site restoration. Specifically, the selected remedy is to excavate along the edge of the wetlands to the approximate limit of waste. The excavated material would then be placed beneath the soil cover. Large items of waste and debris would be disposed off-site at an approved disposal facility. The remedial action will also include regrading of the existing soil cover and waste, followed by the addition of select fill to a depth of at least 18 inches and topsoil to a depth of 6 inches. Wetlands restoration will be performed to restore the wetlands disturbed during excavation activities.

1.7 LOCATION

The work shall be located at the Indian Head Division Naval Surface Warfare Center, Indian Head, Maryland, Site 12.

1.8 DESCRIPTION OF CONTAMINANTS PRESENT

Site 12 - Town Gut Landfill is one of several Installation Restoration (IR) sites located at the IHDI-NSWC facility. The site was used from 1968 until 1980 for disposal of landscaping waste, fill material, and rubble. Some unauthorized dumping of paints, varnishes, and other chemical waste may have occurred at Site 12.

1.8.1 Previous Investigations

The first investigation at Site 12 was an Initial Assessment Study (IAS)

(Hart, 1983) that began in 1982. The IAS included the collection of one water sample from a small runoff point along the bank of a stream. The IAS concluded that Site 12 exhibited a potential threat, and a Confirmation Study was warranted.

During the Confirmation Study conducted in 1985 (CH2M Hill, 1985), one surface water sample and one sediment sample were collected from the edge of Site 12, in the same approximate area as the earlier surface water sample. The Confirmation Study concluded that Site 12 had no detectable impact on the surrounding surficial environment.

In 1997, a Remedial Investigation (RI) was performed at Site 12 (TtNUS, 1999). The RI, which included a baseline risk assessment, concluded the following: potential risks to human health do not warrant additional action at this time; additional ecological study in connection with Site 12 is not recommended; an action such as placement of a cap may be necessary at Site 12 to mitigate the surface soil ecological exposure routes and the transport of surface soil chemicals to the ponds in runoff.

1.8.2 Sources of Contamination

The only known source of contamination at the site is the past practice of disposal of landscaping waste, fill material, rubble, and reportedly paint, varnishes, and other chemical wastes.

1.8.3 Description of Contamination

Site 12 is estimated to contain approximately 70,000 cubic yards of mixed solid waste materials, primarily landscaping wastes, tree stumps, and demolition debris. There is indication that paint, varnish, and chemical wastes may also have been disposed at the site. Soil, sediment, and groundwater samples were collected and analyzed to determine the extent of contamination at Site 12. A summary of the frequency of detection and concentration range of surface and subsurface soil COCs is summarized in Table 1.

TABLE 1

CHEMICALS OF CONCERN BY MEDIA
SITE 12 - TOWN GUT LANDFILL
IHDIV-NSWC, INDIAN HEAD, MARYLAND

<u>Analyte</u>	<u>Frequency of Detection</u>	<u>Concentration Range</u>
SOIL		
INORGANICS (mg/kg)		
Arsenic	5/5	5.5 - 14.4
Iron	5/5	20,600 - 23,000
GROUNDWATER		
VOLATILE ORGANIC COMPOUNDS (ug/L)		
Cis-1,2-Dichloroethene	1/6	306
Trichloroethene	1/6	12
Vinyl Chloride	1/6	317
INORGANICS (mg/kg)		

Arsenic	5/6	3.3 - 32.8
Iron	6/6	30,400 - 83,700
Lead	5/6	1.6 - 34.5
Manganese	6/6	624 - 4,470

1.8.3.1 Surface and Subsurface Soil

Soil COCs based on unacceptable risks to human health are arsenic and iron. Each of these metals was detected in all soil samples collected at the site.

1.8.3.2 Groundwater

Shallow groundwater COCs based on unacceptable risks to human health are cis-1,2-dichloroethene, vinyl chloride, arsenic, iron, and manganese. Additional COCs based on exceedances of federal and state MCLs are trichloroethene and lead. The metals were the most frequently detected COCs. The organics were only detected in one shallow groundwater sample.

1.8.4 Contaminant Migration

It appears that some migration of metals from soil to shallow groundwater has occurred at the site.

1.9 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

Time for completion includes both the time for construction and the time to obtain an approved Work Plan. The Contractor shall be required to (a) commence work on the Work Plan within 5 calendar days after receiving the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 135 calendar days (45 calendar days to obtain an approved Work Plan and 90 calendar days for time of construction) after receiving the notice to proceed. The time stated for completion shall include final cleanup of the premises and the restoration of the site.

1.10 PROJECT INFORMATION

1.10.1 Contract Drawings

Contract drawings are as follows:

<u>DWG No.</u>	<u>NAVFAC DWG No.</u>	<u>Title</u>
T-1	3458628	Title Sheet
T-2	3458629	General Notes and Legend
C-1	3458630	Existing Conditions Plan
C-2	3458631	Erosion and Sediment Control Plan
C-3	3458632	Erosion and Sediment Control Notes
C-4	3458633	Revegetation Notes
C-5	3458634	Erosion and Sediment Control Details
C-6	3458635	Interim Grading Plan
C-7	3458636	Final Grading Plan
C-8	3458637	Cross Sections
C-9	3458638	Miscellaneous Details

1.10.2 Reference Reports

The following reference reports are available for examination in the office

of the ROICC NTR and are intended only to show the existing conditions. The reports and drawings are the property of the Government and shall not be used for any purpose other than that intended by the specification.

Reports

- a. Initial Assessment Study of Naval Ordnance Station, Indian Head, Maryland, (13-021), Naval Energy and Environmental Support Activity (NEESA), Fred C. Hart Associates, Inc., May 1983.
- b. Naval Assessment and Control of Installation Pollutants (NACIP) Confirmation Study Naval Ordnance Station, Indian Head, Maryland, CH2M Hill, 1985.
- c. Background Investigation Report, Indian Head and Stump Neck Annex, Naval Surface Warfare Center, Indian Head, Maryland, Tetra Tech NUS, Inc., December 1997.
- d. Remedial Investigation(RI) Report, Site 12 - Town Gut Landfill, Site 41 - Scrap Yard, Site 42 - Olsen Road Landfill, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland, Tetra Tech NUS, Inc., July 1999.
- e. Feasibility Study Report, Site 12 - Town Gut Landfill, Site 41 - Scrap Yard, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland, Tetra Tech NUS, Inc., January 2001.
- f. Draft Final Record of Decision, Site 12 - Town Gut Landfill, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland, U.S. Environmental Protection Agency, Maryland Department of the Environment, and Naval Warfare Center, Indian Head Division, November 2001.

1.11 SCHEDULING

The IHDIV-NSWC and Atkins Road will remain in operation during the entire construction period. The Contractor shall schedule the work as to cause the least amount of interference with station operations. Work schedules shall be subject to the approval of the ROICC NTR. Permission to interrupt station roads shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. Notify the ROICC NTR 48 hours prior to starting excavation.

1.11.1 Regular Work Hours

Regular working hours shall consist of an 8 1/2 hour daily period established by the ROICC NTR, Monday through Friday, excluding Government holidays.

Working hours are subject to obtaining Department of Defense Explosive Safety Board (DDESB) approval prior to commencing work due to active explosives operating building and magazine near site. The Navy has submitted the application to DDESB.

1.11.2 Work Outside Regular Hours

Work outside regular hours requires ROICC NTR approval. Contractor shall submit an application to the ROICC NTR, 2 regular working days prior to the scheduled working date, to allow ample time to enable satisfactory

arrangements to be made by the Government for inspecting the work in progress. At night, the Contractor shall light the different parts of the work in an approved manner.

1.12 SECURITY REQUIREMENTS

The Contractor shall comply with the general security requirements as stipulated in Section C, Part 2.0, of the Basic Contract.

1.13 STORAGE AND TEMPORARY BUILDINGS

1.13.1 Storage in Existing Buildings

Storage in existing buildings shall not be allowed.

1.13.2 Open Site Storage Size and Location

The open site available for storage, laydown, soil, sediment, and landfill material dewatering, decontamination pads, and stabilized stone construction entrance(s) shall be confined to the areas indicated by the ROICC NTR.

1.13.3 Trailers, Storage, and Temporary Buildings

Locate trailers, storage, and temporary buildings where directed and within the indicated operations area. Trailers or storage buildings shall be permitted where space is available subject to the approval of the ROICC NTR. The trailers or storage buildings shall be suitably painted and kept in a good state of repair. Failure of the Contractor to maintain the trailers or storage buildings in good condition shall be considered sufficient reason to require their removal. Trailers shall be anchored to resist high winds and shall meet applicable State or local standards for anchoring mobile trailers. A sign that conforms to the following requirements and shows the company name, telephone number, and emergency telephone number, shall be mounted on the trailer or building.

Graphic panel: Aluminum, painted blue; FED-STD-595 25053

Copy: Screen painted or vinyl die-cut, white, Univers 65 u/lc typeface.

1.13.4 Contractor Quality Control Field Office

Provide a trailer of sufficient size for an office trailer work area and floor area for the exclusive use of the quality control (QC) representative. Also provide room in the same trailer for the QC records. Provide the QC representative with a 4 by 8 foot plan table, a standard size office desk and chair, and telephone service. QC records shall be filed in the office and available at all times to the Government. QC field office trailer shall comply with the requirements specified above for other Contractor trailers.

1.14 LOCATION OF UNDERGROUND UTILITIES

Contractor shall comply with the requirements specified in Section C, Part 2.0 of the Basic Contract, and with requirements specified herein. Obtain station digging permits prior to the start of excavation activities. Verify elevations of existing underground utilities and obstructions before installing new work closer than the nearest manhole or other structure at which an adjustment can be made.

1.15 UTILITY SERVICES

1.15.1 Temporary Utilities

Contractor shall provide his own utilities.

1.15.2 Utility Cutovers and Interruptions

Make utility cutovers and interruptions outside regular working hours. Conform to procedures specified herein for work outside regular working hours. Ensure that new utilities are complete, except for the connection, before interrupting the existing service.

1.16 RESTRICTIONS ON EQUIPMENT

1.16.1 Radio Transmitter Restrictions

The Contractor shall conform to the restrictions and procedures for the use of radio transmitting equipment, as directed by the ROICC NTR. Do not use transmitters without prior approval.

1.16.2 Electromagnetic Interference Suppression

Electric motors shall comply with MIL-STD-461 relative to radiated and conducted electromagnetic interference. A test for electromagnetic interference will not be required for motors that are identical physically and electrically to those that have previously met the requirements of MIL-STD-461. An electromagnetic interference suppression test will not be required for electric motors without commutation or slip rings having no more than one starting contact and operated at 3600 revolutions per minute or less.

Devices other than electric motors used by the Contractor shall comply with MIL-STD-461 for devices capable of producing radiated or conducted interference.

Conduct tests on electric motors and the Contractor's construction equipment in accordance with MIL-STD-461 and MIL-STD-462. The test location shall be reasonably free from radiated and conducted interference.

Furnish the testing equipment, instruments, and personnel for making the tests; a test location; and other necessary facilities.

1.17 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

In conjunction with the Contract Clause "DFARS 252.236-7000, Modification Proposals-Price Breakdown," and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, equipment use rates shall be based upon the applicable provisions of the COE EP 1110-1-8.

1.18 PUBLIC RELEASE OF INFORMATION

Contractor shall comply with requirements stated in Section C, Part 2.0, of the Basic Contract.

1.19 STORM PROTECTION

Contractor shall conduct storm protection measures in accordance with the

requirements of Section C, Part 2.0, of the Basic Contract, and as specified herein.

1.19.1 Hurricane Condition of Readiness

Unless directed otherwise, comply with:

- a. Condition ONE (sustained winds of 50 knots or greater expected within 12 hours): Secure the jobsite, and leave Government premises.
- b. Condition TWO (sustained winds of 50 knots or greater expected within 24 hours): Curtail or cease routine activities until securing operation is complete. Reinforce or remove form work and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear missile hazards and loose equipment from general base areas. Contact ROICC NTR for weather and condition of readiness (COR) updates and completion of required actions.
- c. Condition THREE (sustained winds of 50 knots or greater expected within 48 hours): Maintain Condition FOUR requirements and commence securing operations necessary for Condition ONE which cannot be completed within 18 hours. Cease routine activities which might interfere with securing operations. Commence securing and stow gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to Condition TWO and continue action as necessary to attain Condition THREE readiness. Contact ROICC NTR for weather and COR updates and completion of required actions.
- d. Condition FOUR (sustained winds of 50 knots or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove debris, trash, or objects that could become missile hazards. Contact ROICC NTR for COR updates and completion of required actions.

1.20 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the delivery order, environmental protection as defined in Section C, Part 4.0, of the Basic Contract, and as specified herein.

1.20.1 Stormwater Pollution Prevention Plan

Prepare a Stormwater Pollution Prevention Plan (SWPPP), a completed Notice of Intent (NOI) form, and a completed Notice of Termination (NOT) form in accordance with the requirements of the State's general permit for storm water discharges from construction sites. The SWPPP shall be prepared in accordance with EPA 833/R-92-001 Storm Water Management Guidances. Submit SWPPP, NOI, and the appropriate permit fee to the ROICC NTR a minimum of 14 days prior to ground-disturbing activities. No work will be allowed on site until an approved permit is received from the State. Implement and maintain the measures specified in the SWPPP and periodically review and update the SWPPP.

Within 14 days after substantial completion and acceptance by the ROICC NTR, complete and submit NOT to EPA. Submit a duplicate copy of the NOT to the Contracting Officer.

The Contractor shall keep a copy of the SWPPP and the approved permit on site at the Contractor's trailer at all times. The SWPPP shall be continually updated as necessary to reflect current and changing conditions on site.

1.20.2 Fire Protection

Comply with COE EM 385-1-1, NFPA 241, and activity fire regulations. Post the activity fire poster in conspicuous locations and at telephones in construction trailers.

1.20.3 Responsible Person

In accordance with COMAR 26.17.01.06, a trained and certified "responsible person" must be on site during construction. The purpose of the "responsible person" is to train field personnel on techniques and standards that assist with the field implementation of erosion and sediment controls.

1.21 PRECONSTRUCTION CONFERENCE

After approval of the Work Plan, but prior to commencement of any work at the site, Contractor shall meet with the ROICC NTR to discuss and develop a mutual understanding relative to the administration of the HASP, preparation and submission of submittals, scheduling, programming, and prosecution of the work. Major subcontractors who will be engaged in the work shall also attend.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CLEANING UP

During the progress of the remediation, the work area and adjacent areas shall be kept clean and free of rubbish, surplus materials, and unneeded construction equipment. No material or debris shall be allowed to flow or wash into watercourses, ditches, gutters, drains, or pipes. Upon completion of the work, sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish, and construction facilities from the site.

3.2 EROSION AND SEDIMENT CONTROL

Implement and maintain the approved erosion and sediment control measures shown on the approved Erosion and Sediment Control Plan and in the Stormwater Pollution Prevention Plan. For any Contractor proposed changes to the approved plan, it shall be the sole and complete responsibility of the Contractor to obtain approval of the revised plan by the appropriate reviewing authority with no delay to the Government. Any Erosion and Sediment Control Plan revisions shall be completed in accordance with MDE SESC. Erosion and sediment control measures are only to be removed when

all upstream areas are stabilized as determined by the Contracting Officer unless noted otherwise.

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

SITE 12, TOWN GUT LANDFILL, RAD, IH DIV-NSWC, MD

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT OR CLASSIFICATION REVIEW	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTRV	REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER			ACTION CODE
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01115	SD-01 Preconstruction Submittals														
			Work Plan	1.3													
			SD-11 Closeout Submittals														
			As-Built records	1.4.1													
			Environmental Conditions Report	1.4.2													
			Status reports	1.4.3													
			QC meeting minutes	1.4.4													
			Test Results Summary Report	1.4.5													
			Contractor Production Report	1.4.6													
			QC Report	1.4.7													
			Rework Items List	1.4.8													
			Permits	1.4.9													
			Stormwater Pollution Prevention Plan	1.20.1													
			Notice of Intent	1.20.1													
			Notice of Termination	1.20.1													
			Contractor's Closeout Report	1.4.10													
		01450N	SD-01 Preconstruction Submittals (QC) Plan	1.6													
		01525	SD-07 Certificates														
			Accident Prevention Plan	1.4.1													
			Activity Hazard Analysis	1.4.2													
			Health and Safety Plan	1.4.3													
			SD-11 Closeout Submittals														
			Daily Confined Space Entry Permit	3.3.7													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

SITE 12, TOWN GUT LANDFILL, RAD, IH DIV-NSWC, MD

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01525	Reports	1.17													
		01575N	SD-01 Preconstruction Submittals														
			Environmental Protection Plan	1.9													
			Sediment and Erosion Control Plan	1.4													
			SD-06 Test Reports														
			Laboratory analysis	1.5													
			Laboratory analysis	1.6.2													
			SD-11 Closeout Submittals														
			Solid waste disposal permit	1.6.1													
			Waste determination documentation	1.6.2													
			Waste determination documentation	3.5.1													
			Disposal documentation for hazardous and regulated waste	1.6.3													
			Contractor 40 CFR employee training records	1.6.4													
			Regulatory notification	1.6.5													
			Erosion and sediment control inspection reports	1.6.6													
			Solid waste disposal report	1.6.7													
			Contractor Hazardous Material Inventory Log	1.11													
		02223	SD-07 Certificates														
			Treatment facility permits	1.2.1.1													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

SITE 12, TOWN GUT LANDFILL, RAD, IHDIV-NSWC, MD

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTRV	REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE			DATE OF ACTION
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		02223	SD-11 Closeout Submittals														
			Shipment manifests	1.2.2.1													
			Delivery certificates	1.2.2.2													
			Disposal Site Decontamination Certificates	1.2.2.3													
			Work Site Decontamination Certificates	1.2.2.4													
			Treatment and Disposal Certificates	1.2.2.5													
		02224	SD-11 Closeout Submittals														
			Buried Utility Location Plan	2.1													
			Survey Report	2.2													
			GIS CADD file(s)	2.3													
			F-Size plot	2.4													
		02315	SD-06 Test Reports														
			Borrow Site Testing	1.6													
			Common Fill	3.11.2.1													
			Select Fill	3.11.2.2													
			Density tests	3.11.2.3													
			SD-07 Certificates														
			Excavation and handling work plan	1.3.1													
			Dewatering work plan	3.2.1													
		02525	SD-02 Shop Drawings														
			Well construction	1.6.1													
			SD-03 Product Data														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

SITE 12, TOWN GUT LANDFILL, RAD, IH DIV-NSWC, MD

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT OR CLASSIFICATION REVIEWER	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/	REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE			DATE OF ACTION
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		02525	Well riser	2.1													
			Well screen	2.2													
			Filter pack	2.3													
			Cement/bentonite grout	2.4.2													
			Bentonite pellet seal	2.4.1													
			SD-07 Certificates														
			Well Drilling/Development	1.6.2													
			Material Handling Plan														
			Field Sampling and Laboratory	1.6.4													
			Testing Plan														
			Treatment facility permit	1.6.5													
			Installation Survey Report	3.7													
			Well Development Report	1.6.6													
			Well Abandonment Report	1.6.7													
			Borehole Analysis Report	3.2.2													
			SD-11 Closeout Submittals														
			Well Construction Permit	1.6.8													
		02742	SD-06 Test Reports														
			Subbase material density	3.2													
			Shoulder material density	3.6													
			Subbase Course	3.8.1													
			Bituminous Concrete Courses	3.8.2													
			Test														
			SD-07 Certificates														
			Subbase materials	2.1													
			Tack coat	2.4													

SECTION 01140N

WORK RESTRICTIONS

PART 1 GENERAL

1.1 REFERENCES

The publication listed below forms a part of this specification to the extent referenced. The publication is referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EM 385-1-1

(1996) Safety and Health Requirements Manual

1.2 SPECIAL SCHEDULING REQUIREMENTS

- a. Atkins Road will remain in operation during the entire construction period. The Contractor shall conduct his operations so as to not cause any interference with normal operations of the activity.

1.3 CONTRACTOR ACCESS AND USE OF PREMISES

1.3.1 Station Regulations

Ensure that Contractor personnel employed on the Station become familiar with and obey Station regulations. Keep within the limits of the work and avenues of ingress and egress as directed. Do not enter any restricted areas unless required to do so and until cleared for such entry. Permission to interrupt any station roads, railroads, or utility services shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. The Contractor's equipment shall be conspicuously marked for identification.

1.3.1.1 Additional Station Regulations

Specific routes to the job sites will be designated for Contractor personnel. No Contractor's employee will be permitted to deviate from these routes, nor will Contractor's employees leave the job site to enter other areas of the Station without permission of the Commanding Officer as granted via the Contracting Officer. Contractor employees shall not bring matches and/or lighters into the restricted area of the Station. All matches and lighters shall be given to the Security Personnel at Building 1665 (Post No. 2) prior to entering this area. Any Contractor's employee who violates the provisions of this paragraph may, at the discretion of the Commanding Officer via the Contracting Officer, be escorted from the Station forthwith and barred from further entry.

1.3.2 Working Hours

In accordance with Section 01115 "General Paragraphs (Remedial Action Contracts)."

1.3.3 Work Outside Regular Hours

In accordance with Section 01115 "General Paragraphs (Remedial Action

Contracts)."

1.3.4 Utility Cutovers and Interruptions

In accordance with Section 01115 "General Paragraphs (Remedial Action Contracts)."

1.4 SECURITY AND SAFETY REQUIREMENTS

Contract Clause "FAR 52.204-2, Security Requirements, Alternate II," "FAC 5252.236-9301, Special Working Conditions and Entry to Work Area."

1.4.1 IHDIV-NSWC Access

No employee or representative of the Contractor will be admitted to the work site unless he furnishes satisfactory proof that he is a citizen of the United States or is specifically authorized admittance by the Contracting Officer.

1.4.2 IHDIV-NSWC Access Information

The station is a secured facility. Furnish to the Contracting Officer a list showing the names and social security numbers of all employees and representatives to be engaged at the site. Update the list with each addition or deletion to such engagement.

1.4.3 Restrictions to Ensure Safety

When the work at IHDIV-NSWC is within a restricted area the work is potentially hazardous due to danger from explosives. Pursuant to the clause of the Basic Contract entitled "Accident Prevention" and the paragraph entitled "Station Regulations," safety shall be given particular emphasis. Paragraph (f) of the clause of the Basic Contract entitled "Accident Prevention" is applicable. It is the Contractor's responsibility to comply with COE EM 385-1-1, additional safety requirements into daily working procedures that will provide safe working conditions for contract duration. Any Contractor's employee who violates these regulations may, at the discretion of the Commanding Officer, be escorted from the Station and barred from further entry.

1.4.4 Restricted Area Safety Regulations

Extraordinary safety regulations for the restricted area include the following:

1. Prior to starting any maintenance, repair, or construction, contract job superintendent must meet with an IHDIV-NSWC Safety Department representative to become familiar with IHDIV-NSWC safety regulations.
2. Authorization (Work Permits) to commence scope of contract will be obtained from the IHDIV-NSWC Safety Department via Contracting Officer.
3. Smoking, carrying matches, lighters, or other flame or spark-producing items on person, in vehicles, or other carriers, is prohibited in the Restricted Area of IHDIV-NSWC. Smoking areas will be designated by the IHDIV-NSWC Safety Department, upon request, via the Contracting Officer. Approval will be based on

the specific operational safety concerns within the area requested.

4. The use of welding equipment, tar pots, gas burners, etc., is prohibited unless authorized by the IHDIV-NSWC Safety Department. Once approved these instruments that may be lighted by use of striker must be done so. If matches are required, they will be provided by the IHDIV-NSWC Safety Department - for use only as authorized - to the contract superintendent. Note: LPG is not allowed within the explosives areas of IHDIV-NSWC.
5. All hot (open-flame) work will be secured 30 minutes prior to leaving work area unless a watchman is on duty for at least 30 minutes after end of work period. At no time will open-flame burning for debris disposal or other purposes be authorized.
6. Prior to any maintenance or repair to explosives-contaminated equipment, such equipment must be inspected by the IHDIV-NSWC Safety Department and by IHDIV-NSWC area supervisor. All explosives-contaminated materials must be decontaminated by IHDIV-NSWC methods and supervision prior to removal from the Restricted Area.
7. All traffic rules, regulations, and control devices must be adhered to. Speed limits as posted prevail, intra-plant area roadways require 15 mph unless posted otherwise, and 10 mph must be maintained on Nobel Road. All other roads 25 mph unless otherwise posted.
8. Only necessary, approved, Contractor vehicles will be allowed in the Restricted Area. These must be equipped with adequate exhaust systems and maintained in good mechanical and physical condition at all times. Spark arrestor devices, where designated, must be provided by Contractor and subjected to inspection by the IHDIV-NSWC Safety Department prior to entering posted hazards. For all vehicles entering into the explosive areas of IHDIV-NSWC, Safety Inspections will be required prior to receiving a vehicle pass from the IHDIV-NSWC Safety Department.
9. Blocking of roadways with equipment will not be allowed at any time. Securing roadways with barricades will be accomplished only upon approval of the IHDIV-NSWC Safety Department and notification of IHDIV-NSWC Security and Fire Departments. Where possible, an adequate fire lane must be provided around approved obstruction(s) for emergency equipment.
10. Securing of plant utilities (air, steam, water, etc.) will be accomplished only upon approval of IHDIV-NSWC Utilities Division, only when written outage has been obtained via contracting office.
11. Securing of Fire Protection devices will be accomplished only on the approval of the Fire Chief, or his designated acting Chief, through the Contracting Officer.
12. All roadways and walkways will be kept clear of debris at all times. Cleaning of same will be accomplished by the Contractor at least daily, or as frequently as conditions necessitate.
13. No powder actuated tools or devices may be used.

14. Contractor employees are restricted from buildings not included in contract with exception of lunchrooms, change houses, etc., agreed to be area Division Head and Contracting Officer.
15. Fuels, oils, and lubricants
 - a. Refueling of equipment and vehicles with flammable liquids will be done in areas designated by the IHDIV-NSWC Safety Department. All equipment used in flammables handling or operations must be of an approved type, per Underwriters' Laboratory or Factory Mutual certifications. Adequate fire protection devices must be on the scene during refueling operations.
 - b. Used oil, oil filters, and empty oil cans will be removed from IHDIV-NSWC by the Contractor.
 - c. The Contractor must inform the IHDIV-NSWC Safety and Public Works Department representatives of all Contractor-owned Hazardous Material that will be used, stored, or handled at IHDIV-NSWC. If IHDIV-NSWC employees are exposed to these materials, or potential for exposure exists, IHDIV-NSWC employees shall:
 - (1) Be informed and trained as required by IHDIV-NSWC NAVSURFWARZEN 5100.22G.
 - (2) Have a Material Safety Data Sheet accessible at the workplace for each material used for their review.
 - d. The Contractor shall ensure that Contractor employees have been informed/trained about the identification and hazards of the hazardous materials used for this project at IHDIV-NSWC.
16. The IDHDIV-NSWC routinely works with electro-explosive devices (EEDs) such as igniters, squibs, detonators, and blasting caps. Radio frequency transmissions can, under certain circumstances, provide enough energy to initiate or degrade performance of these devices. Inadvertent initiation of EEDs can result in injury or death of personnel and damage or destruction of property. Degradation of the EED can result in injury or death of personnel and damage or destruction of property. Degradation of the EED can result in failure of the item to function properly when needed.

BECAUSE OF THESE HAZARDS, USE OF CB RADIOS, CAR TELEPHONES, AND CELLULAR TELEPHONES ARE PROHIBITED IN THE RESTRICTED AREA (AREA BEYOND POST 2).

17. Vehicle and construction equipment inspections include the appropriate factors listed below for safe use and conditions.
 - a. Steering mechanism; must be free of defects or excessive play.
 - b. Horns and warning devices must be operative.
 - c. Windshield wipers must be provided and operative.
 - d. Windshield and other window glass must be free of defects. Windshield must be free of defects. Windshield must be provided on standard equipped vehicle.

- e. Rearview mirrors; must be provided and free of defects.
 - f. Lights; all standard lights must be provided, operative, and free of defects - including lens coverings.
 - g. Exhaust systems must be provided, free of defects, and properly supported.
 - h. Fuel systems must not indicate evidence of defects.
 - i. Brakes; operative without drag, including serviceable emergency brakes.
 - j. Tires; must have ample tread and be free of defects.
 - k. Electrical wiring must not have exposed surfaces or be loosely supported.
 - l. Body conditions; must be well maintained, no loose or jagged edges, excessive grease or oil on engine, and all standard features provided and operable.
 - m. Where applicable, inspection will include other such items as gauges, thermometers, controls, relief valves, piping, mechanical locks, limit switches, connectors, and other safety related devices associated to vehicles and equipment admitted to the Activity.
18. Contract trailers will be equipped with plexiglass windows when spotted within the quantity distance arcs of explosive-operating areas.
19. Additional requirements may be designated on the Work Permit based upon contract scope and IHDIV-NSWC area involved.

 Manager, OSH & Explosives
 Safety Inspection Branch

 Date

 Firm Principal

 Contract #

 Date

1.5 RESTRICTIONS ON OPERATIONS

1.5.1 Restrictions Upon Interrupting Utility Services

The clause of the Basic Contract entitled "Schedules for Construction Contract"; the paragraph entitled "Order of Work"; and the following apply:

- a. Ensure that new utility lines are complete, except for the connections, before interrupting existing service.
- b. Interruption to Water, Sanitary Sewer, Storm Sewer, Telephone Service, Electrical Service, Air Conditioning, Heating, Fire Alarm, and Compressed Air: These shall be considered utility cutovers pursuant to paragraph entitled "Work Outside Regular Hours." This limit includes time for deactivation and reactivation.
- c. All requests for utility outages shall be made in writing to the Contracting Officer.

1.5.2 Restrictions Upon Interrupting Station Operations

Reference is made to the paragraph entitled "Order of Work." The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operating systems. Identify on the project schedule each factor which constitutes a potential interruption of operations.

Notify the Contracting Officer in writing 15 calendar days prior to a necessary shut-down or interruption.

1.5.3 Outages

Outages of utilities shall be obtained during other than normal working hours, except such outages which are more advantageous to the Government shall be obtained during normal working hours.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

01450N

QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 1077	(1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM D 3666	(2000) Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D 3740	(1999; Rev C.) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2000; Rev. A) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-01 Preconstruction Submittals

Quality Control (QC) Plan

Submit a QC Plan within 30 calendar days prior to mobilization.

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Deliver the following to the Contracting Officer:

- a. Combined Contractor Production Report/Contractor Quality Control Report (1 sheet): Original and 1 copy, by 10:00 AM the next working day after each day that work is performed.
- b. Testing Plan and Log, 1 copy, at the end of each month.
- c. Monthly Summary Report of Field Tests: Original and 1 copy attached to the Contractor Quality Control Report at the end of each month.
- d. Rework Items List: 1 copy, by the last working day of the month.

- e. QC Certifications: As required by the paragraph entitled "QC Certifications."

1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Manager, a QC Plan, QC meetings, three phases of control, submittal review, submittal approval except for submittals designed for Contracting Officer approval, testing, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program shall cover construction operations on-site and off-site and shall be keyed to the proposed construction sequence.

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program. The QC Manager is required to conduct the QC meetings, perform the three phases of control, perform submittal review, perform submittal approval except for submittals designed for Contracting Officer approval, ensure testing is performed and QC certifications and documentation required in this Contract. In addition to managing and implementing the QC program, the QC Manager may perform the duties of project superintendent.

1.5.1.2 Qualifications

An individual with a minimum of 3 years experience as a foreman, superintendent, inspector, QC Manager, project manager or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract.

1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Requirements

Provide, for approval by the Contracting Officer, a QC Plan that covers both on-site and off-site work and includes the following:

- a. A table of contents listing the major sections identified with tabs in the following order:

I.	QC ORGANIZATION
II.	NAMES AND QUALIFICATIONS
III.	DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL
IV.	OUTSIDE ORGANIZATIONS
V.	APPOINTMENT LETTERS
VI.	SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER
VII.	TESTING LABORATORY INFORMATION
VIII.	TESTING PLAN AND LOG
IX.	PROCEDURES TO COMPLETE REWORK ITEMS
X.	DOCUMENTATION PROCEDURES
XI.	LIST OF DEFINABLE FEATURES
XII.	PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL
XIII.	PERSONNEL MATRIX

XIV. PROCEDURES FOR COMPLETION INSPECTION

- b. A chart showing the QC organizational structure.
- c. Names and qualifications, in resume format, for each person in the QC organization.
- d. Duties, responsibilities and authorities of each person in the QC organization.
- e. A listing of outside organizations such as, testing laboratories, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
- f. A letter signed by an officer of the firm appointing the QC Manager and stating that he/she is responsible for implementing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager to implement and manage the three phases of quality control, and their authority to stop work which is not in compliance with the contract, and their authority to direct the removal and replacement of non-conforming work.
- g. Procedures for reviewing, approving and managing submittals. Provide the names of the persons authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section C of the Basic Contract.
- h. Testing laboratory information required by the paragraphs entitled "Accreditation Requirements" or "Construction Materials Testing Laboratory Requirements", as applicable.
- i. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
- j. Procedures to identify, record, track and complete rework items.
- k. Documentation procedures, including proposed report formats.
- l. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements. As a minimum, if approved by the Contracting Officer, consider each division of the specifications as a definable feature of work. However, at times, there may be more than one definable feature of work in each division of the specifications.
- m. Procedures for performing the Three Phases of Control. The Preparatory and Initial Phases and meetings shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential problems for each definable feature of work.
- n. A personnel matrix showing for each section of the specification who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document the testing.

1.6.2 Preliminary Work Authorized Prior to Approval

The only work that is authorized to proceed prior to the approval of the QC Plan is mobilization and surveying.

1.6.3 Approval

Approval of the QC Plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary to ensure the specified quality of work. The Contracting Officer reserves the right to interview the QC Manager at any time in order to verify his/her submitted qualifications.

1.6.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed change, a minimum of seven calendar days prior to a proposed change. Proposed changes must be approved by the Contracting Officer.

1.7 QC MEETINGS

After the start of construction, the QC Manager shall conduct QC meetings once every two weeks at the work site with the project superintendent and foreman responsible for the upcoming work. The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. The QC Manager shall notify the Contracting Officer at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

- a. Review the minutes of the previous meeting;
- b. Review the schedule and the status of work:
 - (1) Work or testing accomplished since last meeting
 - (2) Rework items identified since last meeting
 - (3) Rework items completed since last meeting;
- c. Review the status of submittals:
 - (1) Submittals reviewed and approved since last meeting
 - (2) Submittals required in the near future;
- d. Review the work to be accomplished in the next 2 weeks and documentation required. Schedule the three phases of control and testing:
 - (1) Establish completion dates for rework items
 - (2) Preparatory phases required
 - (3) Initial phases required
 - (4) Follow-up phases required
 - (5) Testing required

- (6) Status of off-site work or testing
- (7) Documentation required
- e. Resolve QC and production problems;
- f. Address items that may require revising the QC plan:
 - (1) Changes in procedures.

1.8 THREE PHASES OF CONTROL

The QC Manager shall perform the three phases of control to ensure that work complies with Contract requirements. The three phases of control shall adequately cover both on-site and off-site work and shall include the following for each definable feature of work: A definable feature of work is a task which is separate and distinct from other tasks and requiring separate control requirements.

1.8.1 Preparatory Phase

Notify the Contracting Officer at least 2 work days in advance of each preparatory phase. Conduct the preparatory phase with the superintendent, and the foreman responsible for the definable feature of work. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report. Perform the following prior to beginning work on each definable feature of work:

- a. Review each paragraph of the applicable specification sections;
- b. Review the Contract drawings;
- c. 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;
- d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- e. Examine the work area to ensure that the required preliminary work has been completed;
- f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- g. Discuss construction methods;
- h. Review the Health and Safety Plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

1.8.2 Initial Phase

Notify the Contracting Officer at least 2 work days in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, conduct the initial phase with the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies

with Contract requirements. Document the results of the initial phase in the daily Contractor Quality Control Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:

- a. Establish the quality of workmanship required;
- b. Resolve conflicts;
- c. Ensure that testing is performed, and
- d. Review the Health and Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met.

1.8.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and document in the daily Contractor Quality Control Report:

- a. Ensure the work is in compliance with Contract requirements;
- b. Maintain the quality of workmanship required;
- c. Ensure that testing is performed and
- d. Ensure that rework items are being corrected.

1.8.4 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.9 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section C of the Basic Contract.

1.10 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.10.1 Accreditation Requirements

Construction materials testing laboratories performing work for Navy construction contracts will be required to submit the following:

- a. A copy of the Certificate of Accreditation and Scope of Accreditation by an acceptable laboratory accreditation authority.

Construction materials testing laboratories performing work for Navy construction contracts must be accredited by one of the laboratory accreditation authorities. The laboratory's scope of accreditation must include the ASTM standards listed in the paragraph titled "Construction Materials Testing Laboratory Requirements" as appropriate to the testing field. The policy applies to the specific laboratory performing the actual

testing, not just the "Corporate Office".

1.10.2 Construction Materials Testing Laboratory Requirements

Provide an independent construction materials testing laboratory accredited by an acceptable laboratory accreditation authority to perform sampling and tests required by this Contract. Testing laboratories that have obtained accreditation by an acceptable laboratory accreditation authority listed in the paragraph entitled "Laboratory Accreditation Authorities" submit to the Contracting Officer, a copy of the Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the Contract. For testing laboratories that have not yet obtained accreditation by an acceptable laboratory accreditation authority listed in the paragraph entitled "Laboratory Accreditation Authorities" submit an acknowledgment letter from one of the laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process has started, and submit to the Contracting Officer for approval, certified statements, signed by an official of the testing laboratory attesting that the proposed laboratory, meets or conforms to the ASTM standards listed below as appropriate to the testing field.

- a. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E 329.
- b. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C 1077.
- c. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of ASTM D 3666.
- d. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D 3740.
- e. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA.
- f. Sampling and testing shall be under the technical direction of a Registered Professional Engineer (P.E.) with at least 5 years of experience in construction materials handling.

1.10.3 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities are the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology, the American Association of State Highway and Transportation Officials (AASHTO) program, ICBO Evaluation Service, Inc. (ICBO ES), and the American Association for Laboratory Accreditation (A2LA) program and the Washington Association of Building Officials (WABO) (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) (Approval authority by WACEL is limited to projects within the Chesapeake Division and Public Works Center Washington geographical area).

Furnish to the Contracting Officer, a copy of the Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the Contract.

1.10.4 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.10.5 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.11 QC CERTIFICATIONS

1.11.1 Contractor Quality Control Report Certification

Each Contractor Quality Control Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the Contract drawings and specifications to the best of my knowledge, except as noted in this report."

1.11.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.

1.11.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract."

1.12 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.12.1 Contractor Production Report

Reports are required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed and dated by the project superintendent and shall contain

the following information:

- a. Date of report, report number, name of contractor, Contract number, title and location of Contract and superintendent present.
- b. Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.
- c. Identify work performed by corresponding Schedule Activity No., PC#, Modification No., etc.
- d. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, hours worked by trade, daily total work hours on work site this date (including hours on continuation sheets), and total work hours from start of construction.
- e. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:
 - (1) Was a job safety meeting held this date? (If YES, attach a copy of the meeting minutes.)
 - (2) Were there any lost time accidents this date? (If YES, attach a copy of the completed OSHA report.)
 - (3) Was crane/manlift/trenching/scaffold/hv electrical/high work/hazmat work done? (If YES, attach a statement or checklist showing inspection performed.)
 - (4) Was hazardous material/waste released into the environment? (If YES, attach a description of incident and proposed action.)
- f. Identify Schedule Activity No. related to safety action and list safety actions taken today and safety inspections conducted.
- g. Identify Schedule Activity No., Submittal # and list equipment/material received each day that is incorporated into the job.
- h. Identify Schedule Activity No., Owner and list construction and plant equipment on the work site including the number of hours used.
- i. Include a "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site. For each remark given, identify the Schedule Activity No. that is associated with the remark.

1.12.2 Contractor Quality Control Report

Reports are required for each day that work is performed and for every seven consecutive calendar days of no-work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with

the construction schedule. Contractor Quality Control Reports are to be prepared, signed and dated by the QC Manager and shall contain the following information:

- a. Date of report, report number, Contract Number, and Contract Title.
- b. Indicate if Preparatory Phase work was performed today (Yes/No checkboxes).
- c. If Preparatory Phase work was performed today (including on-site and off-site work), identify its Schedule Activity No. and Definable Feature of Work. The Index # is a cross reference to the Preparatory Phase Checklist. An example of the Index # is: 0025-P01, where "0025" is the Contractor Quality Control Report Number, "P" indicates Preparatory Phase, and "01" is the Preparatory Phase Checklist number(s) for this date. Each entry in this section must be accompanied with a corresponding Preparatory Phase Checklist.
- d. Indicate if Initial Phase work was performed today (Yes/No checkboxes).
- e. If Initial Phase work was performed today (including on-site and off-site work), identify its Schedule Activity No. and Definable Feature of Work. The Index # is a cross reference to the Initial Phase Checklist. An example of the Index # is: 0025-I01, where "0025" is the Contractor Quality Control Report Number, "I" indicates Initial Phase, and "01" is the Initial Phase Checklist number(s) for this date. Each entry in this section must be accompanied with a corresponding Initial Phase Checklist.
- f. Results of the Follow-up Phase inspections held today (including on-site and off-site work), including Schedule Activity No., the location of the definable feature of work, Specification Sections, etc. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing has been performed and include a list of who performed the tests.
- g. List the rework items identified, but not corrected by close of business; along with its associated Schedule Activity Number.
- h. List the rework items corrected from the rework items list along with the corrective action taken and its associated Schedule Activity Number.
- i. Include a "remarks" section in this report which will contain pertinent information including directions received, quality control problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgement that as-built drawings have been updated, corrective direction given by the QC Organization and corrective action taken by the Contractor. For each remark given, identify the Schedule Activity No. that is associated with the remark.
- j. Contractor Quality Control Report certification, signature and date.

1.12.3 Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.

1.12.4 Rework Items List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor Quality Control Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

1.12.5 As-Built Drawings

The QC Manager is required to ensure the as-built drawings, required by the Basic Contract, are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PC No., Modification No., Request for Information No., etc.). The QC Manager shall initial each deviation and each revision. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.12.6 Report Forms

The following forms, are acceptable for providing the information required by the paragraph entitled "Documentation." While use of these specific formats are not required, any other format used shall contain the same information:

- a. Combined Contractor Production Report and Contractor Quality Control Report (1 sheet) w/ separate continuation sheet(s).
- b. Testing Plan and Log.
- c. Rework Items List.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

RESPONSIBILITIES/AUTHORITY OF THE QC MANAGER

1. Appointing letter to the QC manager shall detail his/her authority and responsibility to act for the contractor and outline his/her duties, responsibilities and authority. He/she shall have no job-related responsibilities other than QC unless specifically permitted in the specification.
2. He/she shall be on the site at all times during progress of the work, with complete authority to take any action necessary to ensure conformance with the contract requirements. In the event of his/her absence, approved backup shall be on the site.
3. Authority to immediately stop any segment of work which does not comply with the contract plans and specifications and direct the removal and replacement of any defective work.
4. Conduct daily inspection of work performed for compliance with plans and specifications.
5. Certify daily that all materials and equipment delivered/installed in the work comply with contract plans and specifications. Certify daily that all work performed on the construction site and off the construction site conforms to plans and specifications. Report any deficiencies and remedial action planned and taken.
6. Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization, including subcontractors.
7. Assure QC staff is adequate to meet its responsibilities.
8. Maintain a copy of the ROICC approved QC Plan on file at the jobsite complete with up-to-date approved revisions/filled-in log of submittals. Maintain at the jobsite an up-to-date QC Submittal Register (provided in the specification) showing the status of all submittals required by the contract.
9. Maintain at the jobsite a testing plan showing status of all tests required by the contracts. Ensure that all tests required are performed and report the results of same. Indicate whether test results show the item tested conforms to contract requirements or not.
10. Authority to remove any individual from the site who fails to perform his/her work in a skillful and workmanlike manner or his/her work does not comply with the contract plans and specifications.
11. QC manager does not have authority to deviate from plans and specifications without prior approval, in writing, from the ROICC.
12. Ensure that the contractor's Quality Control Organization is adequately staffed with qualified personnel to perform all the detailed inspections and testing specified in the plans and specifications.
13. Maintain at the jobsite the up-to-date QC Rework Items List.

ATTACHMENT A

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

CONTRACT NO Enter Cnt# Here	DEFINABLE FEATURE OF WORK Enter DFOw Here	SPEC SECTION Enter Spec Section # Here	DATE Enter Date (DD/MM/YY)
		SCHEDULE ACT NO. Enter Sched Act ID Here	INDEX # Enter Index# Here

PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>	
	NAME	POSITION

SUBMITTALS	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____
	ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF NO, WHAT ITEMS ARE MISSING? _____
	CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.) COMMENTS: _____

MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF NO, WHAT ACTION IS TAKEN? _____

SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS. _____

	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. _____

	CLARIFY ANY DIFFERENCES. _____

PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.
	IF NOT, WHAT ACTION IS TAKEN? _____

TESTING	IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. _____

	WHEN REQUIRED? _____

	WHERE REQUIRED? _____

	REVIEW TESTING PLAN. _____

HAS TEST FACILITIES BEEN APPROVED? _____	

SAFETY	ACTIVITY HAZARD ANALYSIS APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>
	REVIEW APPLICABLE PORTION OF EM 385-1-1. _____

MEETING COMMENTS	NAVY/ROICC COMMENTS DURING MEETING.

OTHER ITEMS OR REMARKS	OTHER ITEMS OR REMARKS:

QC MANAGER _____ DATE _____	

INITIAL PHASE CHECKLIST

CONTRACT NO Enter Cnt# Here	DEFINABLE FEATURE OF WORK Enter DFOW Here	SPEC SECTION Enter Spec Section # Here	DATE Enter Date (DD/MMM/YY)
		SCHEDULE ACT NO. Enter Sched Act ID Here	INDEX # Enter Index# Here

PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>	
	NAME	POSITION
		COMPANY/GOVERNMENT

PROCEDURE COMPLIANCE	IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS. COMMENTS: _____ _____ _____
-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------

PRELIMINARY WORK	ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN? _____ _____ _____
-------------------------	---------------------------------------------------------------------------------------------------------------

WORKMANSHIP	ESTABLISH LEVEL OF WORKMANSHIP. WHERE IS WORK LOCATED? _____ IS SAMPLE PANEL REQUIRED? YES <input type="checkbox"/> NO <input type="checkbox"/> WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? YES <input type="checkbox"/> NO <input type="checkbox"/> (IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE) _____ _____
--------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

RESOLUTION	RESOLVE ANY DIFFERENCES. COMMENTS: _____ _____ _____
-------------------	---------------------------------------------------------------

CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS COMMENTS: _____ _____ _____
---------------------	-----------------------------------------------------------------------------------------------------

OTHER	OTHER ITEMS OR REMARKS _____ _____
--------------	----------------------------------------------

GC MANAGER _____ DATE _____

GOVERNMENT QUALITY ASSURANCE (QA) REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE Enter Date (DD/MMM/YY)

CONTRACT NO.
Enter Cnt# Here

TITLE AND LOCATION
Enter Title and Location of Construction Contract Here

REPORT NO Enter Report # Here

Status	WORKING?	YES	NO	IF NO, WHY NOT: _____
		<input type="checkbox"/>	<input type="checkbox"/>	
WEATHER CONDITIONS: _____				

Check Points		YES	NO	REMARKS:
	SUPERINTENDENT ON SITE	<input type="checkbox"/>	<input type="checkbox"/>	
	QC MANAGER ON SITE	<input type="checkbox"/>	<input type="checkbox"/>	
	QC REPORTS CURRENT	<input type="checkbox"/>	<input type="checkbox"/>	
	AS-BUILTS CURRENT	<input type="checkbox"/>	<input type="checkbox"/>	
	SUBMITTALS APPROVED FOR ONGOING WORK	<input type="checkbox"/>	<input type="checkbox"/>	
	DEFICIENCY LIST REVIEWED	<input type="checkbox"/>	<input type="checkbox"/>	

WORK OBSERVED/DEFICIENCIES NOTED/SAFETY ISSUES DISCUSSED/QA TESTS AND RESULTS:

Schedule Activity No	DESCRIBE OBSERVATIONS

MEETING/CONFERENCE NOTES (INCLUDING PARTICIPANTS):

Schedule Activity No.	NOTES

INSTRUCTIONS GIVEN OR RECEIVED/CONTROVERSIES PENDING:

Schedule Activity No.	INSTRUCTIONS/CONTROVERSIES

_____ QA REPRESENTATIVE	_____ DATE	_____ SUPV INITIALS	_____ DATE
----------------------------	---------------	------------------------	---------------

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE Enter (DD/MMM/YY)
REPORT NO Enter Rpt # Here

PHASE CONTRACT NO Enter Cnt# Here CONTRACT TITLE Enter Title and Location of Construction Contract Here

PREPARATORY	WAS PREPARATORY PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.		
	Schedule Activity No.	Definable Feature of Work	Index #

INITIAL	WAS INITIAL PHASE WORK PERFORMED TODAY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.		
	Schedule Activity No.	Definable Feature of Work	Index #

FOLLOW-UP	WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	WORK COMPLIES WITH SAFETY REQUIREMENTS? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Schedule Activity No.	Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)		REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)	
Schedule Activity No.	Description	Schedule Activity No.	Description

REMARKS (Also Explain Any Follow-Up Phase Checklist Item From Above That Was Answered "NO"), Manuf. Rep On-Site, etc.	
Schedule Activity No.	Description

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

AUTHORIZED QC MANAGER AT SITE _____ DATE _____

GOVERNMENT QUALITY ASSURANCE REPORT		DATE _____
QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT		
Schedule Activity No.	Description	

GOVERNMENT QUALITY ASSURANCE MANAGER _____ DATE _____

SECTION 01525
SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Related Sections

- a. Section 01115, "General Paragraphs (Remedial Action Contracts)"
- b. Section 01140N, "Work Restrictions"
- c. Section 01575N, "Temporary Environmental Controls"
- d. Section 02223, "Transportation and Disposal of Contaminated Material"
- e. Section 02315, "Excavation and Fill"
- f. Section 02525, "Monitoring Wells"

1.1.2 Basic Contract

Provide safety requirements in accordance with Section C of the Basic Contract.

1.2 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANSI A10.14 | (1991) Construction and Demolition Operations - Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use |
| ANSI Z359.1 | (1992) Safety Requirements for Personal Fall Arrest Systems |

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

- | | |
|-----------------|---------------------------------------------------|
| 29 CFR 1910.94 | Ventilation |
| 29 CFR 1910.120 | Hazardous Waste Operations and Emergency Response |
| 29 CFR 1926.65 | Hazardous Waste Operations and Emergency Response |

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EM 385-1-1	(1996) Safety and Health Requirements Manual
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
NFPA 70	(1999) National Electric Code
NFPA 241	(1996) Safeguarding Construction, Alteration, and Demolition Operations

1.3 DEFINITIONS

- a. Certified Industrial Hygienist. An industrial hygienist is an individual who is certified by the American Board of Industrial Hygiene.
- b. Certified Safety Professional. A safety manager, safety specialist, or safety engineer that has passed the CSP exam administered by the Board of Certified Safety Professionals.
- c. Confined Space. A space which by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy, engulfment or any other recognized safety or health hazard. Confined spaces include, but are not limited to storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.
- d. Multi-employer work site (MEWS). The Contractor is the "controlling authority" for all work site safety and health of the subcontractors.
- e. Recordable Occupational Injuries or Illness. An occupational injury or illnesses which result in serious injuries, lost workday cases, non-fatal cases or significant mishaps.
- f. Serious Injuries and Fatalities. Regardless of the time between the injury and death or the length of the illness; hospitalization of three or more employees; or property damage in excess of \$200,000.
- g. Lost Workday Cases. Injuries, other than fatalities, that results in lost workdays.
- h. Non-Fatal Cases. Cases without lost workdays which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve property damage in excess of \$10,000 but less than \$200,000 or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses which are reported to the employer but are not classified as fatalities or lost workday cases.
- i. Health and Safety Plan (HASP). The HASP is the Navy equivalent Army term of SHP or SSHP used in COE EM 385-1-1. "USACE" property and equipment specified in COE EM 385-1-1 should be interpreted as Government property and equipment.
- j. Safety Officer. The superintendent or other qualified or competent person who is responsible for the on-site safety required for the project. The Contractor quality control person cannot be the safety officer, even though the QC person has safety inspection

responsibilities as part of the QC duties.

- k. Significant Contractor Mishap. A Contractor mishap which involves falls of 4 feet or more, electrical mishaps, confined space mishaps, diving mishaps, equipment mishaps, and fire mishaps which results in a lost time injury, or property damage of \$10,000 or more, but less than \$200,000; or when fire department or emergency medical treatment (EMT) assistance is required.
- l. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment provided by a physician or registered personnel.
- m. First Aid. A one-time treatment, and follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.
- n. Lost Workdays. The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so that is, could not perform all or part of his normal assignment during all or any part of the workday or shift; because of the occupational injury or illness.

1.4 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract. Submittals shall be part of the Work Plan.

SD-07 Certificates

Accident Prevention Plan (APP)

Activity Hazard Analysis (AHA)

Health and Safety Plan (HASP)

1.4.1 Accident Prevention Plan (APP)

Submit at least 15 calendar days prior to start of work at the job site, follow Appendix A of COE EM 385-1-1, make APP site specific, Notice To Proceed will be given after Government finds the APP acceptable.

1.4.2 Activity Hazard Analysis (AHA)

Submit the AHA for the preparatory phase as a part of the APP. Submit subsequent AHA for each major phase of work at least 15 calendar days prior to the start of that phase. Format subsequent AHA as amendments to the APP.

1.4.3 Health and Safety Plan (HASP)

Allow 30 calendar days for review by Naval Environmental Health Center for health hazard review and Naval Facilities Engineering Command, Engineering Field Division (EFD) or Engineering Field Activity (EDA) construction safety manager. The Contracting Officer will act on the HASP only after 30 day NEHC and EFD/EFA safety manager reviews.

SD-11 Closeout Submittals

Daily Confined Space Entry Permit

Submit one copy of each permit attached to each Daily Production Report.

Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

a. Qualifications of Safety Officer:

(1) Ability to manage the on-site contractor safety program through appropriate management controls,

(2) Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.

(3) Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.

- b. Qualifications of Qualified Person, Confined Space Entry. The qualified person shall be capable (by education and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

1.5.2 Qualifications of Qualified Person, Confined Space Entry

The qualified person shall be capable (by education and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

1.5.3 Meetings

1.5.3.1 Preconstruction Conference

The Safety Officer shall attend the preconstruction conference required by Section 01115, "General Paragraphs (Remedial Action Contracts)" and the Basic Contract.

1.5.3.2 Meeting on Work Procedures

Meet with Contracting Officer to discuss work procedures and safety precautions required by the HASP. Ensure the participation of the Contractor's superintendent, the Contractor Quality Control person, and the CSP or CIM.

1.5.3.3 Weekly Safety Meetings

Hold weekly. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the QC Contractor Quality Control daily report.

1.5.4 IHDIV-NSWC, Indian Head Special Safety Requirements

The work at IHDIV-NSWC, is within a restricted area and is potentially hazardous due to danger from explosives. Safety shall be given particular emphasis. Contract Clause "FAR 52.236-13, Accident Prevention, Alternate I" is applicable.

Extraordinary safety regulations for the restricted area include the following:

- a. Liquid petroleum gas and explosives are prohibited.
- b. Specific routes to the jobsites will be designated. Do not deviate from these routes or leave the jobsite area to enter other areas of the station without permission from the Contracting Officer.
- c. Matches and lighters are prohibited in the restricted area. Give matches and lighters to the security personnel at the gate prior to entering the area.
- d. Obey all roadblocks, signs, and gates at entrances to the restricted area. Obtain a clearance in Building 307 to enter the restricted area.
- e. Do not operate mobile or fixed transmitters of radio frequency in the restricted area identified by road signs.
- f. Do not smoke in the restricted area, except at locations designated by the Contracting Officer. Existing road signs identify "No Smoking" areas.

1.5.5 Station Permits

In accordance with Section 01115, "General Paragraphs (Remedial Action Contracts)."

1.5.6 Burning Permit

A burning permit is required for every project that requires the use of open flames or welding to complete the work. Burning Permits are required for the housing and non-restricted areas of the station.

1.5.7 Forms

Submit OSHA Form 101 or 200 or other forms that contain the same information for each recordable occupational injury or illness (first aid cases not recordable), lost time accident or property damage \$1,000 or more resulting from jobsite accidents within 6 days of an accident. Notify Contracting Officer immediately by telephone of fatalities, major accidents resulting in five or more disabling injuries, or property damage/material losses over \$100,000 for each accident.

1.6 ACCIDENT PREVENTION PLAN (APP)

Prepare the APP in accordance with the required and advisory provisions of

COE EM 385-1-1 including Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan," and as modified herein. Include the associated AHA and other specific plans, programs and procedures listed on Pages A-3 and A-4 of COE EM 385-1-1, some of which are called out below.

1.6.1 Contents of the Accident Prevention Plan

- a. Name and safety related qualifications of safety officer (including training and any certifications).
- b. Qualifications of competent and of qualified persons.
- c. Identify of the individual who will complete exposure data (hours worked); accident investigations, reports and logs; and immediate notification of accidents to include subcontractors.
- d. Emergency response plan. Conform to COE EM 385-1-1, paragraph 01.E and include a map denoting the route to the nearest emergency care facility with emergency telephone numbers. Contractor may be required to demonstrate emergency response.
- e. Confined Space Entry Plan. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)
- f. Hazardous Material Use. Provisions to deal with hazardous materials, pursuant to the Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data" and the following:
 - (1) Inventory of hazardous materials to be introduced to the site with estimated quantities.
 - (2) Plan for protecting personnel and property during the transport, storage and use of the materials.
 - (3) Emergency procedures for spill response and disposal, including a site map with approximate quantities on site at any given time. The site map will be attached to the inventory, showing where the hazardous substances are stored.
 - (4) Material Safety Data Sheets for inventoried materials not required in other section of this specification.
 - (5) Labeling system to identify contents on all containers on-site.
 - (6) Plan for communicating high health hazards to employees and adjacent occupants.
- g. Hazardous Energy Control Plan. For hazardous energy sources, comply with COE EM 385-1-1, paragraph 12.A.07.
- h. Alcohol and Drug Abuse Plan
 - (1) Describe plan for random checks and testing with

pre-employment screening in accordance with Contract Clause "DFARS 252.223-7004, Drug-Free Work Force."

(2) Description of the on-site prevention program.

- i. Fall Protection Plan. The plan shall be site specific and protect all workers above 6 feet.
- j. Excavation Plan. The safety and health aspects prepared in accordance with Section 02315, "Excavation and Fill."

1.7 ACTIVITY HAZARD ANALYSIS (AHA)

Prepare for each phase of the work. As a minimum, define activity being performed, sequence of work, specific hazards anticipated, control measures to eliminate or reduce each hazard to acceptable levels, training requirements for all involved, and the competent person in charge of that phase of work. For work with fall hazards, identify the appropriate fall arrest systems. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include excavation safeguarding requirements. The appropriate AHA shall be reviewed and attendance documented by Contractor at the preparatory, initial, and follow-up phases of Quality Control inspection.

1.8 HEALTH AND SAFETY PLAN (HASP)

Prepare in accordance with Section 01115, "General Paragraphs (Remedial Action Contracts)." Also prepare as required by 29 CFR 1910.120 and COE EM 385-1-1.

1.8.1 Qualified Personnel

Retain a Certified Industrial Hygienist (CIH) or a Certified Safety Professional (CSP) to prepare the HASP, conduct activity hazard analyses, and prepare detailed plan for demolition, removal, and disposal of materials. Retain the CIH or CSP for duration of contract.

1.8.2 Contents

In addition to the requirements of COE EM 385-1-1, Table 28-1, the HASP must include:

- a. Location, size, and details of control areas.
- b. Location and details of decontamination systems.
- c. Interface of trades involved in the construction.
- d. Sequencing of work.
- e. Disposal plan.
- f. Sampling protocols.
- g. Testing labs.
- h. Protective equipment.

- i. Pollution control.
- j. Evidence of compliance with 29 CFR 1910.120 and 29 CFR 1926.65.
- k. Training and certifications of CIH, CSP or other competent persons.

1.9 DRUG AND ALCOHOL PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employees either use illegal drugs or consume alcohol during work hours. Ensure no employees are under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine or saliva specimens and test the injured employee for potential drug or alcohol influence. A copy of the test shall be made available to the Contracting Officer upon request.

1.10 FALL HAZARD PREVENTION PROGRAM

1.10.1 Training

Institute a fall protection program. As part of the Fall Protection Program, Contractor shall provide training for each employee who might be exposed to fall hazards.

1.11 DUTIES OF THE SAFETY OFFICER

- a. Ensure construction hazards are identified and corrected.
- b. Maintain applicable safety reference material on the job site.
- c. Maintain a log of safety inspections performed.
- d. Attend the pre-construction conference required by Section 01115, "General Paragraphs (Remedial Action Contracts)."

1.12 DISPLAY OF SAFETY INFORMATION

Display the following information in clear view of the on-site construction personnel:

- a. Map denoting the route to the nearest emergency care facility with emergency telephone numbers.
- b. AHA
- c. Confined space entry permit.
- d. Sign with number of hours worked since last lost workday accident.

1.13 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturers' manuals.

1.14 HIGH HAZARD WORK AND LONG DURATION

Work under this contract is potentially hazardous. Pursuant to contract clause "FAR 52.236-13, Accident Prevention, Alternate I," submit in writing

additional proposals for effecting accident prevention under hazardous conditions. Meet in conference with Contracting Officer to discuss and develop mutual understanding relative to the administration of the overall safety program.

1.15 EMERGENCY MEDICAL TREATMENT

Contractors shall arrange for their own emergency medical treatment. Government has no responsibility to provide. However, if emergency medical care is rendered by Navy medical services, charges may be billed to Contractor at prevailing rates established in BUMED Instruction 6320.4 series. Reimbursement shall be made by Contractor to Naval Regional Medical Center Collection Agency upon receipt of monthly statement.

1.16 SITE CONDITIONS

1.16.1 Noise

Provide continual noise monitoring during all site activities. Notify the Contracting Officer immediately of noises that are above OSHA standards. Provide hearing protection to all Contractor site personnel and to all Government site visitors.

1.17 REPORTS

1.17.1 Reporting Reports

For OSHA recordable accidents, the Contractor shall conduct a suitable investigation, complete the Navy Contractor Significant Incident Report (CSIR) form and provide to the Contracting Officer within 5 calendar days of the accident.

1.17.2 Notification

Notify Contracting Officer, within 4 hours, of any accident meeting the definition of OSHA recordable occupational injury or illness. Information shall include Contractor name; contract title; type of contract; name of activity, installation or location where mishap occurred; date and time of mishap; names of personnel injured; extent of property damage, if any; and brief description of mishap (to include type of construction equipment used, PPE used, etc.). In addition to OSHA reporting requirements, initial notification shall be made of any accident involving significant mishaps.

1.17.3 Monthly Exposure Report

Monthly exposure reporting, to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor.

1.17.4 OSHA Citations and Violations

Provide the Contracting Officer with a copy of each OSHA citation, OSHA report and Contractor response. Correct violations and citations promptly and provide written corrective actions to the Contracting Officer.

PART 2 PRODUCTS

2.1 FALL PROTECTION ANCHORAGE

Fall protection anchorages, used by contractors to protect their people, will be left in place and so identified for continued customer use.

2.2 CONFINED SPACE SIGNAGE

Provide permanent signs integral to or securely attached to access covers for new confined spaces. Signs wording: "DANGER--PERMIT REQUIRED CONFINED SPACE - DO NOT ENTER -" on bold letters a minimum of one inch in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" and shall be red and readable from 5 feet.

PART 3 EXECUTION

3.1 CONSTRUCTION

Comply with COE EM 385-1-1, NFPA 241, the APP, the AHA and other related submittals and activity fire and safety regulations.

3.1.1 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. Exceptions to the use of any of the above excluded materials may be considered by Contracting Officer upon written request by Contractor.

3.1.2 Unforeseen Hazardous Material

If hazardous material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to Contract Clauses "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages a minimum of 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Once approved and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the ROICC and the Station Utilities Department to review the scope of work and the lock out/tag out procedures for worker protection.

3.3 PERSONNEL PROTECTION

3.3.1 Hazardous Noise

Provide hazardous noise signs, and hearing protection, where ever equipment and work procedures produce sound-pressure levels greater than 85 dBA steady state of 140 dBA impulse, regardless of the duration of the exposure.

3.3.2 Fall Protection

Enforce use of the fall protection device named for each activity in the AHA all times when an employee is on a surface 6 feet or more above lower levels. Personal fall arrest systems are required when working from an articulating or extendible boom, scissor lifts, swing stages, or suspended platform. Fall protection must comply with ANSI A10.14.

3.3.2.1 Personal Fall Arrest Device

Equipment, subsystems, and components shall meet ANSI Z359.1, Personal Fall Arrest Systems. Only a full-body harness with a shock absorbing lanyard is an acceptable personal fall arrest device. Body belts may only be used as positioning devices only such as for steel reinforcing assembly. Body belts are not authorized as a personal fall arrest device. Harnesses must have upper middle back "D" rings for proper body suspension during a fall. Lanyard must be fitted with a double locking snap hook attachment. Webbing, straps, and ropes must be of synthetic fiber or wire rope.

3.3.2.2 Safety Nets

Safety nets shall be provided in unguarded workplaces over water, machinery, dangerous operations, or more than 25 feet above surface.

3.3.3 Use of Material Handling Equipment

- a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Crane supported work platforms shall only be used in extreme conditions if the Contractor proves that using any other access to the work location would provide a greater hazard to the workers.
- b. Christmas-tree lifting (multiple rigged materials) is not allowed.

3.3.4 Excavations

The competent person for excavation shall be on site when work is being performed n excavation, and shall inspect excavations prior to entry by workers. Individual must evaluate for all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

3.3.5 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cable intended to be cut must be positively identified and de-energized prior to performing each cut. Perform all high voltage cutting remotely. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personnel protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with

leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. Insulating blankets, hearing protection, and switching suits may be required, depending on the specific job and as delineated in the Contractor AHA.

3.3.6 Work in Manholes

Contractor shall provide mechanical ventilation for all work accomplished in manholes, unless other hazards are present like friable asbestos.

3.3.7 Work in Confined Spaces

Comply with the requirements in Section 06.I of COE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

- a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.05 of COE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
- b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained.
- c. Ensure the use of rescue and retrieval devices in confined spaces greater than 5 feet in depth. Conform to Sections 06.I.09, 06.I.10 and 06.I.11 of COE EM 385-1-1.
- d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.
- e. Include training information for employees who will be involved as entrant attendants for the work. Conform to Section 06.I.06 of COE EM 385-1-1.
- f. Entry Permit. Use ENIFORM 5044-R or other form with the same minimum information for the Daily Confined Space Entry Permit, completed by the qualified person. Post the permit in a conspicuous place close to the confined space entrance.

3.3.8 Crystalline Silica

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with OSHA regulations, such as 29 CFR 1910.94, and COE EM 385-1-1, (Appendix C). The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

3.4 ACCIDENT SCENE PRESERVATION

For serious accidents, ensure the accident site is secured and evidence is protected remaining undisturbed until released by the Contracting Officer.

3.5 FIELD QUALITY CONTROL

3.5.1 Inspections

Include safety inspection as a part of the daily Quality Control Inspections required by Section 01450N, "Quality Control."

-- End of Section --

SECTION 01575N

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 REFERENCES

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

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1200	Hazard Communication
40 CFR 112	Oil Pollution Prevention
40 CFR 173	Procedures Governing the Rescission of State Primary Enforcement Responsibility for Pesticide Use Violations
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 260	Hazardous Waste Management Systems: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administrated Permit Programs: The Hazardous Waste Permit Program
40 CFR 271	Requirements for Authorization of State Hazardous Waste Programs
40 CFR 272	Approved State Hazardous Waste Management

Programs

- 40 CFR 273 Universal Waste Management
- 40 CFR 279 Used Oil Regulations
- 40 CFR 280 Owners and Operators of Underground Storage Tanks
- 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 355 Emergency Planning and Notification
- 40 CFR 372-SUBPART D EPA Toxic Chemical Release Reporting Regulations
- 40 CFR 716 Health and Safety Data Reporting
- 40 CFR 761 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
- 49 CFR 173 Shipments and Packagings
- 49 CFR 178 Packagings

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- EPA SW-846 (1996) Evaluating Solid Waste (Physical/Chemical Methods)

STATE OF MARYLAND CODE OF MARYLAND REGULATIONS (COMAR)

- COMAR 26.13 Department of the Environment, Disposal of Controlled Hazardous Substances

INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER

- IHDIVNSWC 5090.2D Hazardous Waste Management Plan

1.2 DEFINITIONS

1.2.1 Sediment

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

1.2.2 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material (except hazardous waste as defined in paragraph entitled "Hazardous Waste" or hazardous debris as defined in paragraph entitled "Hazardous Debris"), including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Material not regulated as solid waste are: nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges;

regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

- a. Green waste: The vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.
- b. Surplus soil: Existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included.
- c. Inert construction and demolition debris: Broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments.
- d. Wood: Dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.
- e. Scrap metal: Scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe and wire that are recovered or collected and disposed as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.
- f. Paint cans: Metal cans that are empty of paints, solvents, thinners and adhesives. If permitted by the paint can label, a thin dry film may remain in the can.
- g. Recyclables: Materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable. Metal meeting the definition of lead contaminated or lead based paint contaminated may not be included as recyclable if sold to a scrap metal company. Paint cans may not be included as recyclable if sold to a scrap metal company.

1.2.3 Debris

Non-hazardous solid material generated during the construction, demolition, or renovation of a structure which exceeds 2.5 inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders). A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.4 Hazardous Debris

As defined in paragraph entitled "Debris" of this section, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) per 40 CFR 261 or COMAR 26.13; or debris that exhibits a characteristic of hazardous waste per 40 CFR 261 or COMAR 26.13.

1.2.5 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.2.6 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.7 Hazardous Waste

Hazardous waste as defined in 40 CFR 261, COMAR 26.13 or as defined by applicable State and local regulations.

1.2.8 Oily Waste

Petroleum products and bituminous materials.

1.2.9 Regulated Waste

Those solid waste that have specific additional Federal, state, or local controls for handling, storage, or disposal.

1.2.10 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of the Clean Air Act and includes the following chemicals:

chlorofluorocarbon-11 (CFC-11)	chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-12 (CFC-12)	chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-13 (CFC-13)	chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-111 (CFC-111)	chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-112 (CFC-112)	chlorofluorocarbon-217 (CFC-217)
chlorofluorocarbon-113 (CFC-113)	halon-1211
chlorofluorocarbon-114 (CFC-114)	halon-1301
chlorofluorocarbon-115 (CFC-115)	halon-2402
chlorofluorocarbon-211 (CFC-211)	carbon tetrachloride
chlorofluorocarbon-212 (CFC-212)	methyl chloroform

1.2.11 Hazardous Materials

Any material that is regulated as a hazardous material in accordance with 49 CFR 173 or COMAR 26.13, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261 or COMAR 26.13. Throughout this specification, hazardous material includes hazardous chemicals.

1.3 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-01 Preconstruction Submittals

Environmental Protection Plan

Sediment and Erosion Control Plan

SD-06 Test Reports

Laboratory analysis

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable subitems listed below.

Solid waste disposal permit

Waste determination documentation

Disposal documentation for hazardous and regulated waste

Contractor 40 CFR employee training records

Regulatory notification

Erosion and sediment control inspection reports

Solid waste disposal report

Contractor Hazardous Material Inventory Log

1.4 CONTRACTOR PREPARED SEDIMENT AND EROSION CONTROL PLAN

The Contractor shall prepare a sediment and erosion control plan for this project. The plan shall include as a minimum:

- (1) An F size graphic plan of the construction site with the location and description of all sediment and erosion control measures proposed.
- (2) The sequence of construction to be followed.
- (3) Graphic details of all sediment and erosion control measures to be used in this project.
- (4) An approval sign-off block.

The approval sign-off block shall contain the following:

Contractors Sediment and Erosion Control Point of Contact:

Date	Printed Name	Signature

IHDIV-NSWC Sediment and Erosion Control Point of Contact:

Signatures below indicates plan approval:

Date	Printed Name	Signature

1.4.1 Contractor Prepared Sediment and Erosion Control Plan

Submit one copy of the proposed Sediment and Erosion Control Plan for approval by the Contracting Officer prior to performing any earth disturbing activities.

1.4.2 Approved Sediment and Erosion Control Plan

Submit three copies of the approved Sediment and Erosion Control Plan to the Contracting Officer prior to performing any earth disturbing activities.

The Contractor shall strictly follow the Sediment and Erosion Control Plan and maintain all measures used during construction.

1.4.3 Modification to Approved Sediment and Erosion Control Plan

The Contractor may propose modifications to the Sediment and Erosion Control Plan at any time. The Contractor shall submit all modifications to the ROICC and to MDE for approval. No modification to the sediment and erosion control plan will be allowed until these changes have been approved by the ROICC and MDE and three copies of the approved modifications have been submitted to the Contracting Officer. The Contractor shall also submit one copy of the proposed modification when the modification are submitted to MDE.

1.5 LABORATORY ANALYSIS

Submit a copy of a laboratory analysis of solid waste and debris with the potential of becoming classified as a hazardous waste (i.e., abrasive/sand blasting debris, etc.). Waste stream determinations are required at the point of generation and must sufficiently document whether the waste will be a solid waste, hazardous waste, or Resource Conservation and Recovery Act (RCRA) exempt waste. Determinations must use EPA approved methods and provide written rationale for whether the waste is classified as hazardous or non-hazardous. The Contractor shall bear the cost of the waste stream determinations, and the Contracting Officer reserves the right to request waste stream determinations on questionable waste streams.

1.6 REPORTS

1.6.1 Solid Waste Disposal Permit

Submit one copy of a State and local permit or license showing such agencies' approval of the disposal plan before transporting wastes off Government property.

1.6.2 Waste Determination Documentation

The Contractor shall complete a Waste Determination form (provided at the pre-construction conference) for all Contractor derived wastes to be generated. The waste determination must be based upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data, or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate). All support documentation must be attached to the Waste Determination form. As a minimum, a Waste Determination form must be provided for the following wastes (this listing is not all inclusive): oil and latex based painting and caulking products, solvents, adhesives,

aerosols, petroleum products, and all containers of the original materials.

1.6.3 Disposal Documentation for Hazardous and Regulated Waste

Submit a copy of the applicable EPA and State permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities.

1.6.4 Contractor 40 CFR Employee Training Records

Prepare and maintain employee training records throughout the term of the contract meeting applicable 40 CFR requirements. The Contractor shall ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with Federal, State and local regulatory requirements for RCRA Large Quantity Generator. The Contractor shall provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description shall include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these training records to the Contracting Officer at the conclusion of the project, unless otherwise directed.

1.6.5 Regulatory Notification

The Contractor is responsible for all regulatory notification requirements in accordance with Federal, State and local regulations. The Contractor shall forward copies to the Contracting Officer prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all inclusive): demolition, renovation, NPDES defined site work, remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.6.6 Erosion and Sediment Control Inspection Reports

Submit "Erosion and Sediment Control Inspection Reports" (form provided at the pre-construction conference) to the Contracting Officer once every seven calendar days and within 24 hours of a storm event that produces 0.5 inch or more of rain.

1.6.7 Solid Waste Disposal Report

Monthly the Contractor shall submit a solid waste disposal report to the Contracting Officer. For each waste, the report shall state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste. The Contractor shall include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, the Contractor may submit a statement indicating the disposal location for the solid waste which is signed by an officer of the Contractor firm authorized to legally obligate or bind the firm. The sales documentation or Contractor certification shall include the receiver's tax identification number and business, EPA or State registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained by the Contractor for his own use, the Contractor shall submit on the solid waste disposal report the information previously described in this paragraph. Prices paid or received shall not be reported to the Contracting Officer

unless required by other provisions or specifications of this Contract or public law.

1.7 CLASS I ODS PROHIBITION

Class I ODS as defined and identified herein shall not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition shall be considered to prevail over any other provision, specification, drawing, or referenced documents.

1.8 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Environmental Brief: Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the activity; types and quantities of wastes/wastewater that may be generated during the contract.

1.8.1 Facility Hazardous Waste Generator Status

IHDIV-NSWC is designated as a Large Quantity Generator. All work conducted within the boundaries of IHDI-NSWC must meet the regulatory requirements of this generator designation. The Contractor shall comply with all provisions of Federal, State and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of all construction derived wastes.

1.8.2 Licenses and Permits

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause.

For permits obtained by the Contracting Officer, whether or not required by the permit, the Contractor is responsible to perform quality control inspections of the work in progress, and to submit notifications and certifications to the applicable regulatory agency, via the Contracting Officer, that the work conforms to the contract and permit requirements. The inspections and certifications shall be provided through the services of a Professional Engineer, registered in the State where the work is being performed. As a part of the Quality Control Plan, which is required to be submitted for approval in accordance with Section 01450N, "Quality Control", provide a subitem containing the name, P.E. registration number, address, and telephone number of the professional engineer(s) who will be performing the inspections and certifications for each permit listed above.

1.8.3 Contractor Liabilities for Environmental Protection

The Contractor is advised that this project and IHDI-NSWC are subject to Federal, State, and local regulatory agency inspections to review

compliance with environmental laws and regulations. The Contractor shall fully cooperate with any representative from any Federal, State or local regulatory agency who may visit the job site and shall provide immediate notification to the Contracting Officer, who shall accompany them on any subsequent site inspections. The Contractor shall complete, maintain, and make available to the Contracting Officer, station, or regulatory agency personnel all documentation relating to environmental compliance under applicable Federal, State and local laws and regulations. The Contractor shall immediately notify the Contracting Officer if a Notice of Violation (NOV), Notice of Deficiency (NOD), or similar regulatory notice is issued to the Contractor.

The Contractor shall be responsible for all damages to persons or property resulting from Contractor fault or negligence as well as for the payment of any civil fines or penalties which may be assessed by any Federal, State or local regulatory agency as a result of the Contractor's or any subcontractor's violation of any applicable Federal, State or local environmental law or regulation. Should a NOV, Notice of Noncompliance (NON), NOD, or similar regulatory agency notice be issued to the Government as facility owner/operator on account of the actions or inactions of the Contractor or one of its subcontractors in the performance of work under this contract, the Contractor shall fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

1.9 ENVIRONMENTAL PROTECTION PLAN

Five days after the award of contract, the Contractor shall meet with the Contracting Officer to discuss the proposed Environmental Protection Plan and develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, and other measures to be taken. The Environmental Protection Plan shall be submitted in the following format and shall, at a minimum, address the following elements (also refer to paragraph entitled "Protection of Natural Resources" in this section):

- a. Description of the Environmental Protection Plan
 - (1) General overview and purpose
 - (2) General site information
- b. Protection of Natural Resources
 - (1) Land resources
 - (2) Tree protection
 - (3) Replacement of damaged landscape features
 - (4) Temporary construction
 - (5) Stream crossings
 - (6) Fish and wildlife resources
 - (7) Wetland areas
- c. Protection of Historical and Archaeological Resources

- (1) Objectives
- (2) Methods
- d. Stormwater Management and Control
 - (1) Ground cover
 - (2) Erodible soils
 - (3) Temporary measures
 - (a) Mechanical retardation and control of runoff
 - (b) Vegetation and mulch
 - (4) Stormwater Pollution Prevention Plan, Section 01115, "General Paragraphs (Remedial Action Contracts)."
- e. Prevention of Releases to the Environment
 - (1) Procedures to prevent releases to the environment
 - (2) Notifications in the event of a release to the environment
- f. Protection of the Environment from Waste Derived from Contractor Operations
 - (1) Control and disposal of solid and sanitary waste
 - (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item shall consist of the management procedures for all hazardous waste to be generated. The elements of those procedures shall coincide with the Activity Hazardous Waste Management Plan. A copy of the Activity Hazardous Waste Management Plan will be provided by the Contracting Officer. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be generated;
- (b) Sampling/analysis plan;
- (c) Methods of hazardous waste accumulation/storage (i.e., in tanks and/or containers);
- (d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);
- (e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);
- (f) Management procedures for recyclable hazardous materials such

as lead-acid batteries, used oil, and the like;

(g) Used oil management procedures in accordance with 40 CFR 279 and COMAR 26.13;

(h) Pollution prevention\hazardous waste minimization procedures;

(i) Plans for the disposal of hazardous waste by permitted facilities;

(j) Procedures to be employed to ensure all required employee training records are maintained.

1.9.1 Environmental Protection Plan Review

Fourteen days after the environmental protection meeting, submit the proposed Environmental Protection Plan for further discussion, review, and approval. Commencement of work shall not begin until the Environmental Protection Plan has been approved.

1.10 UNFORESEEN HAZARDOUS OR REGULATED MATERIAL

All known hazardous or regulated materials are indicated in the contract documents. If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the Contracting Officer immediately. Intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and nonfriable asbestos. Within 14 calendar days the Contractor shall determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to Contract Clauses "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

1.11 CONTRACTOR HAZARDOUS MATERIAL INVENTORY LOG

Submit the "Contractor Hazardous Material Inventory Log" , which provides information required by (EPCRA Sections 312 and 313) along with corresponding MSDS to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Documentation for any spills/releases, environmental reports or off-site transfers may be requested by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified. Conform to the national permitting requirements of the Clean Water Act.

3.1.1 Land Resources

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

3.1.1.1 Protection of Trees

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed.

3.1.1.2 Replacement

Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement.

3.1.2 Water Resources

3.1.2.1 Stream Crossings

The Contracting Officer's approval is required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Contracting Officer's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition as indicated or as specified.

3.1.2.2 Oily and Hazardous Substances

Prevent oil or hazardous substances from entering the ground, drainage areas, or navigable waters. In accordance with 40 CFR 112, surround all temporary fuel oil or petroleum storage tanks with a temporary berm or containment of sufficient size and strength to contain the contents of the tanks, plus 10 percent freeboard for precipitation. The berm shall be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

3.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.1.4 Temporary Construction

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

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Upon discovery, notify the Contracting Officer. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources.

3.3 EROSION AND SEDIMENT CONTROL MEASURES

3.3.1 Burnoff

Burnoff of the ground cover is not permitted.

3.3.2 Borrow Pit Areas

Manage and control borrow pit areas to prevent sediment from entering nearby streams or lakes. Restore areas, including those outside the borrow pit, disturbed by borrow and haul operations. Restoration includes grading, replacement of topsoil, and establishment of a permanent vegetative cover. Uniformly grade side slopes of borrow pit to not more than a slope of 1 vertical to 2 horizontal. Uniformly grade the bottom of the borrow pits to provide a flat bottom and drain by outfall ditches or other suitable means. Stockpile topsoil remove during the borrow pit operation, and use as part of restoring the borrow pit area.

3.3.3 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.3.4 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

3.3.4.1 Mechanical Retardation and Control of Runoff

Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and straw bales to retard and divert runoff to protected drainage courses.

3.3.4.2 Vegetation and Mulch

Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

- a. Seeding: The seeding operation shall be as specified in Section 02951, "Mitigated Wetlands Area, Shrubs, Plants, and Grass."

3.4 CONTROL AND DISPOSAL OF SOLID WASTES

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Recycling is encouraged and can be coordinated with the Contracting Officer and the activity recycling coordinator. Remove all solid waste (including non-hazardous debris) from Government property and dispose off-site at an approved landfill. Solid waste disposal off-site must comply with most stringent local, State, and Federal requirements including 40 CFR 243, 40 CFR 258, and COMAR 26.13.

3.5 CONTROL AND DISPOSAL OF HAZARDOUS WASTES

3.5.1 Hazardous Waste/Debris Management

The Contractor shall identify all construction activities which will generate hazardous waste/debris. The Contractor must provide a documented waste determination for all resultant waste streams. Hazardous waste/debris shall be identified, labeled, handled, stored, and disposed in accordance with all Federal, State, and local regulations including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, COMAR 26.13, and IHDIVNSWC 5090.2D. Hazardous waste shall also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Protection Plan. Store hazardous wastes in approved containers in accordance with 49 CFR 173, 49 CFR 178, and COMAR 26.13. Hazardous waste generated within the confines of Government facilities shall be identified as being generated by the Government. The Contractor shall dispose of all hazardous waste unless the Contractor cannot accommodate disposal. If the Contractor cannot accommodate disposal the Government may dispose of hazardous waste subject to ROICC approval. Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by the Property Disposal Office. No hazardous waste shall be brought onto Government property. Provide to the Contracting Officer a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D or COMAR 26.13. For hazardous wastes spills, verbally notify the Contracting Officer immediately.

3.5.1.1 Hazardous Waste Storage/Satellite Accumulation/90 Day Storage Areas

If the work requires the temporary storage/collection of hazardous wastes, the Contractor shall request the establishment of a less than 90 Day Hazardous Waste Storage Area, or a Satellite Accumulation Area at the point of generation. The Contractor must submit a request in writing to the Contracting Officer providing the following information in advance of generating the hazardous waste:

<u>Contract Number</u>	_____	<u>Contractor</u>	_____
<u>Haz/Waste POC</u>	_____	<u>Telephone Number</u>	_____
<u>Type of Waste</u>	_____	<u>Source of Waste</u>	_____
<u>Emergency POC</u>	_____	<u>Telephone Number</u>	_____
<u>Location of the Site:</u>	_____		

(Attach Site Plan to the Request)

Attach a waste determination form. Allow ten working days for processing this request.

3.5.1.2 Sampling and Analysis of HW

a. Sampling

The Contractor shall sample waste in accordance with EPA SW-846. Each sampled drum or container shall be clearly marked with the Contractor's identification number and cross referenced to the chemical analysis performed.

b. Analysis

The Contractor shall follow the analytical procedure and methods in accordance with 40 CFR 261 and COMAR 26.13. The Contractor shall provide all analytical results and reports performed to the Contracting Officer

c. Analysis Type

Identification of waste hazardous material/hazardous waste shall be accomplished by analyzing for the following properties as a minimum: ignitability, corrosivity, reactivity, total chlorides, BTU value, PCBs, TCLP for heavy metals, and cyanide.

3.5.1.3 Hazardous Waste Disposal

Control of stored waste, packaging, sampling, analysis, and disposal shall be determined by the details in the Basic Contract. The requirements for jobs in the following paragraphs shall be used as the guidelines for disposal of any hazardous waste generated.

(a) Responsibilities for Contractor's Disposal

Any generation of WHM/HW requiring Contractor disposal of solid waste or liquid.

- a. The Contractor agrees to provide all service necessary for the final treatment/disposal of the hazardous material/waste in accordance with all local, State and Federal laws and regulations, and the terms and conditions of the Basic Contract within sixty (60) days after the materials have been generated. These services shall include all necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal, and/or transportation, including manifesting or completing waste profile sheets, equipment, and the compilation of all documentation is required).
- b. Contain all waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 272, 40 CFR 273, 40 CFR 279, 40 CFR 280, 40 CFR 761, and COMAR 26.13.
- c. Control and turn in all hazardous waste requiring disposal in accordance with paragraph entitled "Contractor Disposal Turn-In Requirements" and as follows:

1. On-site Disposal

All hazardous waste must be turned into the Government (Property Disposal Office, Code 112) by 1530 hours each day. If the hazardous waste cannot be turned into the Government at the end of each shift (by 1530) then the Contractor must establish accumulation sites, assign site managers, and notify Code 044 of the type 1 location of the sites and the name of site manager. Prior to turning in hazardous waste to the Government Property Disposal Office, Code 112 the Contractor/Contracting Officer must:

(a) Provide a DD 1348-1 Form, 3 copies of a profile sheet, and three copies of a laboratory analysis to the Government (Property Disposal Office, Code 112) prior to the initial turn in of hazardous wastes.

(b) Provide a DD 1348-1 Form for each additional lot of hazardous waste turned into the Government (Property Disposal Office, Code 112).

2. Off-Site Disposal

(a) All Contractor credentials (i.e., disposal company's permit to operate, hazardous waste transporter certificate, etc.) must be reviewed by Codes 112 and 044.

(b) The Contractor must also establish hazardous waste accumulation sites, assign site managers, and notify Code 044 of the type/location of the sites and the name of site managers.

(c) All off-site shipments of hazardous wastes must be coordinated through the Property Disposal Office, Code 112. All manifests shall be signed by the Property Disposal Office.

(d) Contract requirements for off-site disposal of wastes must include the following:

1) The amount of time that the Contractor has to dispose of the waste should not be longer than six months; all hazardous waste stored in less than 90 Day Hazardous Waste Storage Areas must be removed in less than 90 days of generation.

2) Payment must be withheld until the Contractor provides a disposal certification to the Government as proof that the waste was properly disposed.

- d. Obtaining a representative sample of the material generated for each job done to provide waste stream determination.
- e. Analyzing for each sample taken and providing analytical results to the Contracting Officer. Provide two copies of the results.
- f. Determine the DOT proper shipping names for all waste (each container requiring disposal) and shall demonstrate how this determination is developed and supported by the sampling and analysis requirements contained herein to the Contracting Officer for Code 044 review.

Government Responsibilities

To review all documentation submitted by the Contractor for accuracy.
Provide guidance to the Contractor in reference to environmental compliance.

Interim Waste Generation Site for Contractor Disposal of WHM/HW

The Contractor shall request approval of the Government for an area suitable for packaging WHM/HW requiring disposal. The Contractor shall comply with the requirements of the Maryland Department of Waste Management Regulations. The area will be barricaded and a sign identifying as follows:

Signage- "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

With additional custody sign indicating:

- (1) Site # 12
- (2) Controlled by Resident Officer in Charge of Construction
- (3) Call Ms. Cathy Gardner at (301) 744-4112

Barricade Type: Yellow and black three (3) inch plastic tape. Corner barricades shall be provided by the Government.

Contractor Disposal Turn-In Requirements

For any waste hazardous materials or hazardous waste generated which requires the Contractor to dispose of, the following conditions must be complied with:

- a. Notify Code 112 dispatcher, at (301) 744-4343 and provide the following information:
 - (1) Your name and company
 - (2) Service/contract number
 - (3) ROICC/Code 09C1 number
 - (4) Telephone number where you can be reached
 - (5) Material requiring disposal
 - (6) Location of material
 - (7) Volume of material in each container
- b. All material must meet the following conditions in order to be acceptable for disposal
 - (1) Drums compatible with waste contents and drums meet DOT requirements for 49 CFR 173 and COMAR 26.13 for transportation of materials or as specified by the Property Disposal Office, Code 112.
 - (2) Drums banded to wooden pallets. No more than three (3) 55 gallon drums to a pallet, or two (2) 85 gallon over packs.
 - (3) Band using 1-1/4 inch minimum band on upper third of drum.
 - (4) Recovery materials label (provided by Code 044) located in

middle of drum, filled out to indicate actual volume of material, name of material manufacturer, other vendor information as available.

(5) Always have three (3) to five (5) inches of empty space above volume of material. This space is called 'outage'.

(b) Responsibilities for Government's Disposal

Any generation of WHM/HW requiring Government disposal of solid waste or liquid.

Contractor's Representative

- a. Contain all waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 271, 40 CFR 272, 40 CFR 273, 40 CFR 279, 40 CFR 280, 40 CFR 716, and COMAR 26.13.
- b. Control and turn-in all hazardous waste requiring disposal in accordance with IHDIIV-NSWC Recovery Material Instruction contained in the paragraph entitled "Government Disposal Turn-In Requirements".
- c. Providing identification of material requiring disposal to permit safe opening, storage and handling by the Government.

Government Responsibilities

- a. Sample material requiring disposal.
- b. Analyzing each sample taken.
- c. Determine the DOT proper shipping names for all waste (each container requiring disposal) and shall demonstrate how this determination is developed and supported by the sampling and analysis requirements.
- d. Accepting and disposing of all WHM/HW properly turned in by the Contractor for disposal.

Acceptance of WHM/HW for Disposal

Upon completion of all above applicable requirements (i.e. sample, analysis, identification, packaging, etc.), the Contractor shall notify the Contracting Officer three (3) working days in advance for review and acceptance by the Environmental Programs Division, Code 112. The Contractor shall correct all discrepancies not conforming to this contract at his expense. Upon acceptance by the Environmental Programs Division, the waste will be removed from the Contractor's work site within three (3) days.

Interim Waste Generation Site for Government Disposal of WHM/HW

The Contractor shall request approval of the Government for an area suitable for packaging WHM/HW requiring disposal. The area will be barricaded and a sign identifying as follows:

Signage- "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

With additional custody sign indicating:

- (1) Site # 12
- (2) Controlled by Resident Officer in Charge of Construction
- (3) Call Ms. Cathy Gardner at (301) 744-4112

Barricade Type: Yellow and black three (3) inch plastic tape. Corner barricades shall be provided by the Government.

Government Disposal Turn-In Requirements

- a. Notify Code 112 dispatcher, at (301) 744-4343 and provide the following information:
 - (1) Your name and company
 - (2) Service/contract number
 - (3) ROICC/Code 09C1 contact number
 - (4) Telephone number where you can be reached
 - (5) Material requiring disposal
 - (6) Location of material
 - (7) Volume of material in each container
- b. All material must meet the following conditions in order to be acceptable for disposal:
 - (1) Drums compatible with waste contents and drums meet DOT requirements for 40 CFR 173 and COMAR 26.13 for transportation of materials.
 - (2) Drums banded to wooden pallets. No more than three (3) 55 gallon drums to pallet, or two (2) 85 gallon over packs.
 - (3) Band using 1-1/4 inch minimum band on upper third of drum.
 - (4) Recovery materials label (provided by Code 106.321) located in middle of drum, filled out to indicate actual volume of material, name of material manufacturer, other vendor information as available.
 - (5) Always have three (3) to five (5) inches of empty space above volume of material. This space is called 'outage'.
 - (6) Code 112 must be notified within 24 hours of filling any drum of material requiring disposal. Date on recovery material label shall be Code 112 notification date.

3.5.2 Pollution Prevention/Hazardous Waste Minimization

The Contractor shall actively pursue minimizing the use of hazardous materials and the generation of hazardous waste while on-base. The Hazardous Waste Management Section of the Environmental Protection Plan shall include the Contractor's procedures for pollution prevention/

hazardous waste minimization. For preparing this part of the plan, the Contractor may consult the activity Environmental Office for suggestions and to obtain a copy of the installation's pollution prevention/hazardous waste minimization plan for reference material. If no written plan exists, the Contractor may obtain information by contacting the Contracting Officer. The Contractor shall describe the types of the hazardous materials expected to be used in the construction when requesting information.

3.5.3 Hazardous Material Control

The Contractor shall include hazardous material control procedures in the Health and Safety Plan. The procedures shall address and ensure the proper handling of hazardous materials, including the appropriate transportation requirements. The Contractor shall submit a MSDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on base. Typical materials requiring MSDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. At the end of the project, the Contractor shall provide the Contracting Officer with the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used. The Contractor shall also ensure that hazardous materials are utilized in a manner that will minimize the amount of hazardous waste that is generated. The Contractor shall ensure that all containers of hazardous materials have NFPA labels or their equivalent. Copies of the MSDS for hazardous materials shall be kept on site at all times and provided to the Contracting Officer at the end of the project. The Contractor shall certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261 or COMAR 26.13.

3.5.4 Petroleum Products

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. All used oil generated on site shall be managed in accordance with 40 CFR 279 and COMAR 26.13. The Contractor shall determine if any used oil generated while on-site exhibits a characteristic of hazardous waste. In addition, used oil containing 1000 parts per million or greater of solvents will be considered a hazardous waste and disposed of at Contractor's expense. Used oil mixed with a hazardous waste will also be considered a hazardous waste.

All hazardous waste will be managed in accordance with the paragraph entitled "Hazardous Waste/Debris Management" and shall be managed in accordance with the approved Environmental Protection Plan.

3.5.5 Releases/Spills of Oil and Hazardous Substances

Take precautions to prevent releases/spills of oil and hazardous substances. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Base or Activity Fire Department (301) 744-4333, the activity's Command Duty Officer, and the Contracting Officer. The Contractor is responsible for verbal and written notifications as required by the 40 CFR 355, COMAR 26.13, State, local regulations and Navy Instructions. A written follow-up report shall be sent to the Contracting Officer within four hours specifying type and amount of material spilled, cleanup action planned or taken to prevent reoccurrence. After initial investigation by its

representatives, the government may require that the spill reporting required by state and federal regulations be done by the Contractor. Spill response shall be in accordance with 40 CFR 300, COMAR 26.13, and applicable State and local regulations. Contain and clean up these spills without cost to the Government. If Government assistance is requested or required, the Contractor shall reimburse the Government for such assistance. Provide copies of the written notification and documentation that a verbal notification was made within 20 days.

The Contractor shall be responsible for all supplemental written reports and corrective actions required by the MDE for spills resulting from Contractor operations of vehicles. Written reports are required by MDE within 10 calendar days of spill clean up.

3.6 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

3.7 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during the designated times.

-- End of Section --

SECTION 02223

TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL

PART 1 GENERAL

1.1 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-07, Certificates

Treatment facility permits

SD-11, Closeout Submittals

Shipment manifests

Delivery certificates

Disposal Site Decontamination Certificates

Work Site Decontamination Certificates

Treatment and Disposal Certificates

1.2 QUALITY ASSURANCE

1.2.1 Certificates

1.2.1.1 Treatment Facility Permits

Verification that the proposed treatment facilities are permitted to accept the contaminated materials specified, prior to the start of excavation.

1.2.2 Closeout Submittals

1.2.2.1 Shipment Manifests

Copies of manifests and other documentation required for shipment of waste materials within 24 hours after removal of waste from the site. All shipment manifests, except for hazardous waste manifests, shall be signed by the ROICC NTR. Hazardous waste manifests shall be signed by the Property Disposal Office. The Contractor shall coordinate with the ROICC NTR to obtain these signatures.

1.2.2.2 Delivery Certificates

Verification that the wastes were actually delivered to the approved treatment facility, within 7 days of shipment.

1.2.2.3 Disposal Site Decontamination Certificates

Verification that all vehicles and containers were decontaminated prior to leaving the disposal site, within 7 days of disposal.

1.2.2.4 Work Site Decontamination Certificates

Verification that all vehicles, equipment, and containers were decontaminated prior to leaving the work site shall be submitted within 24 hours of vehicles, equipment, or containers leaving the work site. Verification that all trucks transporting contaminated materials were properly operating, and were covered, shall be submitted within 24 hours after removal of waste from the site.

1.2.2.5 Treatment and Disposal Certificates

Verification that the wastes were successfully treated and remediated to the levels specified herein.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 MATERIALS AND EQUIPMENT

The Contractor shall furnish all labor, materials, and equipment necessary to transport and dispose of Government and Contractor generated wastes in accordance with applicable federal, state, and local requirements.

3.2 SAMPLING

3.2.1 Sampling of Stored Material

Samples of stored material shall be collected at a frequency as required by the disposal facility. Analyses for contaminated material to be taken to an off-site treatment facility shall conform to local, state, and federal criteria as well as to the requirements of the treatment facility. Documentation of all analyses performed shall be furnished to the ROICC NTR. Additional sampling and analyses to the extent required by the approved off-site treatment, storage or disposal TSD facility shall be the responsibility of the Contractor and shall be subject to approval by the ROICC NTR.

3.2.2 Sampling Liquid

Liquid collected from excavations, storage areas and decontamination facilities shall be sampled at a frequency as required by the disposal facility if disposed off-site. On-site treatment shall be the preferred method if economics prove on-site treatment is more cost effective than off-site disposal. Analyses for contaminated liquid to be taken to an off-site treatment facility shall conform to local, state, and federal criteria as well as to the requirements of the treatment facility. Documentation of all analyses performed shall be furnished to the ROICC NTR. Additional sampling and analysis to the extent required by the approved off-site TSD facility receiving the material shall be the responsibility of the Contractor and shall be subject to approval by the ROICC NTR.

3.3 RECORDS

The Contractor shall originate, use, and maintain the waste shipment records/manifests as required by the Maryland Department of the Environment.

3.4 DECONTAMINATION

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for decontamination of vehicles, equipment, and containers and shall bear all responsibility and cost for any noncompliance. In addition to those requirements, the Contractor shall perform the following.

- a. Visually inspect all vehicles, equipment, and containers leaving the work site for proper decontamination.
- b. Prepare and maintain a written decontamination log.
- c. Decontamination log shall remain on site at all times for inspection purposes.

3.5 TRANSPORTATION

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for transporting petroleum and volatile organic compound contaminated materials through the applicable jurisdictions and shall bear all responsibility and cost for any noncompliance. In addition to those requirements, the Contractor shall perform the following:

- a. Inspect and document all vehicles and containers for proper operation and covering.
- b. Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.
- c. Perform and document decontamination procedures prior to leaving the worksite and again before leaving the disposal site.

3.6 DISPOSAL

All contaminated materials removed from the site shall be disposed in a treatment/disposal facility permitted to accept such materials.

-- End of Section --

SECTION 02224

GEOGRAPHIC INFORMATION SYSTEM (GIS)
GRADE-B POST-CONSTRUCTION LOCATION

PART 1 GENERAL

1.1 REFERENCES

The publication listed below forms a part of this specification to the extent referenced. The publication is referenced to the text by the basic designation only. This publication is provided as Appendix A at the end of this specification section.

INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER

IHDIVNSWC-GIS-DG

Geographic Information System, Drafting
Guidelines

1.2 SYSTEM DESCRIPTION

Provide a survey to locate all new and altered existing surface and subsurface items, including buried utilities, as required by this Contract including all addendums, change orders, and modifications. Using the data from this GIS survey, provide a CADD file and an F-size mylar reproducible and print which shows these new items including buried utilities. The work required by this specification is a separate item required by the basic contract. It can be used to help update the construction AS-BUILTS drawings, but is not to be considered as such.

1.3 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

SD-11 Closeout Submittals

Buried Utility Location Plan

Survey Report

GIS CADD file(s)

F-Size plot of the CADD file(s)

PART 2 PRODUCTS

2.1 BURIED UTILITY LOCATION PLAN

2.1.1 Description

The plan shall indicate the method that the Contractor and his surveyor will use to horizontally and vertically locate all new and altered existing surface and subsurface utilities and lines provided as a result of this contract including all change orders, addendums, and modifications. This shall include, but not be limited to, fresh and river water pipelines, sanitary and storm sewer pipelines, electrical conduits and lines,

grounding rods and cables, telephone lines, cable television and fiber optic lines, various process pipelines, etc. The plan shall be composed on 8 1/2 inch x 11 inch sheets only. No legal sheets are allowed.

2.1.2 Contents

The plan shall contain as a minimum:

- A cover sheet with the contract title and contract number.
- The company name, address, and telephone number of the Contractor and Project Manager as well as a point of contact for this GIS work.
- The company name, address, and telephone number of the firm performing the survey with the names of the personnel performing the survey.
- A full description of the method to be used for locating all new and altered existing surface and subsurface utilities for the GIS survey.
- The typed or neatly printed name and signature of the Contractor's Project Manager and the Registered Land Surveyor who will be stamping the GIS work.

2.2 SURVEY REPORT

2.2.1 Physical Description

The report shall describe the companies and persons involved with the GIS work required by this specification section as well as providing information on what equipment was used to perform the survey. The report shall be compiled such that it is in one bound unit that may be filed in a standard file cabinet. The report shall be composed on 8 1/2 inch x 11 inch sheets only. No legal sheets are allowed.

2.2.2 Contents

The report shall include as a minimum:

- A cover sheet with the contract title and contract number.
- The company name, address, and telephone number of the firm performing the survey with the names of the personnel performing the GIS survey.
- The date(s) that the GIS survey was performed.
- The make and model of the hardware used to perform the survey.
- The method of data collection with the name and version of the data collection software.
- A hard copy of the field data.
- The company name, address, and telephone number of the firm providing the CADD file with the names of persons creating the file.
- A copy of the Buried Utility Location Plan.

2.3 GIS CADD FILE(S)

2.3.1 Drafting Standards

All CADD files shall be prepared in accordance with IHDIVNSWC-GIS-DG DRAFTING GUIDELINES provided as Appendix A at the end of this specification section.

2.3.2 Media

The CADD file(s) shall be submitted on 3 1/2 inch HD diskettes (1.44 MB formatted). The diskettes shall become the property of the government (IHDIV-NSWC) at each submission.

2.3.3 Format

The CADD files shall be provided in the AutoCad (.DWG) R-12 or later version format only. The files shall be read and utilized without conversion or reprocessing with the exception of archiving.

2.3.4 Archiving

The CADD files may be archived for convenience and for space limitations. The files shall be archived using PKZIP software, and shall be able to be unarchived using PKUNZIP. No other means of archival is allowed. A copy of the same version of PKZIP and PKUNZIP used to zip the files shall be included with the zipped files.

2.3.5 Scale

The CADD files shall all be done at FULL scale. The scale is 1.0 (1'-0" = 1'-0").

2.3.6 Orientation

Each CADD file shall be oriented such that all items are located at their true SPCS coordinates. The coordinates shall be in the U.S. Foot measurement using Northing and Easting Coordinates consistent with the State Plane Coordinate System (SPCS) for the State of Maryland (NAD 83). The files shall be oriented such that North is at the top of the screen.

2.3.7 Vector Graphics

The CADD files shall be in vector form only. The files shall be created using vector entities. The use of scanned or digitized files is not allowed. The use of files that have been vectorized from hand drawn, scanned, or digitized drawings is not allowed.

2.3.8 Plot Files

The plot file shall be provided on a 3 1/2 inch HD diskette for each F-Size plot, and shall be identical to the plot of each CADD files submitted.

2.3.9 Multiple Sites

If the project has multiple sites, a separate CADD files shall be made for each site.

2.3.10 Drawing Border and Title Block

The border and title block will be provided by the government on a 3 1/2 inch diskette.

2.4 F-SIZE PLOT

2.4.1 Description

The Contractor shall provide one mylar reproducible hard copy F-Size plot and four (4) blueprint copies of all new and altered existing surface and subsurface items as a result of this project including all addendums, change orders, and modifications. The plot shall be oriented such that North is at the top of the sheet. All copies required by submittal shall be made from the mylar reproducible from the same submission. The border and title block will be provided by the government on a 3 1/2 inch diskette.

2.4.2 Items Required on the Plot

The following items shall be included on the plan in addition to the GIS plan:

- The border and title block as provided by the government.
- The contract number and title.
- The date the CADD file was plotted.
- The scale of the plot and a graphic scale of the scale used to plot the drawing.
- A North arrow.
- A legend of items indicated on the GIS plan.
- The control points used for the survey and their Northing and Easting coordinates and elevations (each point shall be located at its true SPCS location).
- The name and address of the Contractor's firm.
- The name and address of the firm performing the post-construction survey.
- The name and address of the firm producing the GIS CADD file.
- The name and signature of the person preparing the CADD file and plot.
- The stamp and signature of the Registered Land Surveyor (physical imprint on the mylar reproducible only).

2.4.3 Multiple Sites

If the project has multiple sites, a separate F-size sheet shall be made for each site.

PART 3 EXECUTION

3.1 BURIED UTILITY LOCATION PLAN

3.1.1 Procedure

The Buried Utility Location Plan shall be prepared by the Contractor with input from the Contractor's surveyor. The Contractor shall prepare and submit the Buried Utility Location Plan prior to performing any construction work.

3.2 GIS SURVEY

3.2.1 Description

A survey shall be performed by the Contractor to horizontally and vertically locate all new and altered existing surface and subsurface items installed as a result of this contract. The Contractor shall locate all items required by all disciplines of the contract and as required by all change orders, addendums, and modifications. This includes all new and altered underground utilities including, but not limited to, fresh and river water pipelines, sanitary and storm sewer pipelines, electrical conduits and lines, grounding rods and cables, telephone lines, cable television and fiber optic lines, and various process pipelines, etc.

3.2.2 Procedure

The survey shall be performed with a total station. The survey shall initiate at any primary or secondary combined (horizontal and vertical) control point near the construction site and backside one other primary or secondary combined control point in order to provide the correct coordinates, elevations, and orientation. Available control points in the area will be indicated to the surveyor prior to the survey. Should additional turning points be required to complete the survey, a set-up on any other secondary combined control point may be used, or single turning points may be set from these primary or secondary control points. Any number of single turning points, that have been established from a primary or secondary combined control point, may be used to complete the survey. Should it be necessary to set additional turning points due to inaccessible areas, an open and traverse and level run shall be performed that extends from one existing primary or secondary control point to another with a minimum error of closure of 1/5000. Documentation of the open-end traverse and level run shall be included in the survey report.

3.2.3 Horizontal Location Standards

3.2.3.1 Surface and Subsurface Items

Horizontally locate all new and altered existing surface and subsurface items to 0.10 foot of their true SPCS coordinates.

3.2.4 Typical Horizontal Items

The survey shall include, but not be limited to:

3.2.4.1 Corners and Edges

Buildings, pads, dikes, tanks, structures, pavements, roads, parking areas, walks, woodlines, piers, walls, ponds, marshes, rivers, exposed portions of footings. Buildings shall be located at the corners of the building, not the corners of rooflines. Items indicated with edges such as woodlines,

roads, ponds, and shorelines, shall be surveyed such that they provide a reasonable degree of accuracy, to meet the intent of this specification. Woodlines shall be surveyed at the tree-dripline. When shorelines subject to tidal action are required to be surveyed, the shoreline shall be indicated at the Mean High Water (MHW) elevation of 1.42 feet.

3.2.4.2 Lines and Centerlines

Utility lines and pipelines, ditches, fences, overhead transmission lines, steam and air lines, cable trays.

3.2.4.3 Point Entities

Identify the following using symbols: valves, hydrants, poles, ground test pockets, stanchions, signs, trees.

3.2.5 Vertical Location Standards

The survey shall include, but not be limited to:

3.2.5.1 Elevated Items

The elevation of platform decks, top of masts, top of roofs, top of exhaust stacks. The elevation of overhead transmission lines, steam and air lines, and cable trays is not required.

3.2.5.2 Surface Items

The Contractor shall indicate the elevation of all new and altered existing surface and subsurface items to 0.10 foot of their true elevation as determined from the IHDIV-NSWC vertical control. Indicate the top and invert elevations of all manholes, catch basin, headwalls, finished floor(s) of buildings, top of slabs, top of curbs, invert of dikes, etc. Indicate the elevation of the top of buried lines at a maximum of 50 feet intervals. Indicate the elevations at all connections to existing utilities, thrust blocks, reducers, changes in direction both horizontally and vertically and terminations.

3.2.5.3 Subsurface Items

The Contractor shall indicate the elevation of all new and altered existing surface and subsurface items to 0.50 feet of their true elevation as determined from the IHDIV-NSWC vertical control.

3.2.6 Topography

The survey shall be performed such that the contours can be indicated in one foot increments with no more than one half contour error at any location. Indicate high and low points with spot elevations.

3.2.7 Submerged Items

The bottom of the new ponds shall be surveyed near the conclusion of the project such that they provide adequate topographic contours at the bottom of the pond. Simply indicating the design contours and elevations is not acceptable.

3.2.8 Utility Material and Sizes

The line size and material type of all new and altered existing subsurface piped utilities shall be indicated on the CADD file and on the F-size plot according to the IHDIVNSWC-GIS-DG DRAFTING GUIDELINES.

3.3 GIS CADD FILE

At the completion of the survey the CADD file(s) for each site shall be created. The survey points shall be input into the file at their true SPCS coordinates and all items shall be drawn in at their true SPCS horizontal IHDIVNSWC-GIS-DG DRAFTING GUIDELINES.

3.4 F-SIZE PLOT

Upon completion of the CADD file, a mylar reproducible F-size plot shall be made to show the contents of each site. The file shall be plotted at full scale 1"=1" (scale = 1.0). Each site may be shown at any of the following scales: 1" = 10', 20', 30', 40', 50', 100', 200', 300', 400', 1000', 2000'.

The plot shall be made such that the GIS plan occupies as much of the page as possible. If extensive GIS plans are required, the use of match lines may be used while maintaining true SPCS coordinates.

3.5 SUBMISSIONS

3.5.1 Buried Utility Location Plan

The Contractor shall prepare and submit four (4) copies of the Buried Utility Location Plan prior to performing any construction work. The plan shall not be considered as an acceptable means of location until approved by the Contracting Officer.

3.5.2 CADD Files and F-Size Plot

3.5.2.1 First Submission

Prepare and submit four (4) copies of the CADD files and F-size plots. Only one mylar reproducible is required per submission. The Contractor shall make the required submission within four weeks after the completion of the post-construction survey.

3.5.2.2 Government Review

The Government shall have two (2) weeks to perform a review of the GIS submissions for compliance with this specification and the IHDIVNSWC-GIS-DG DRAFTING GUIDELINES. At the end of two weeks the Contractor shall receive a set of comments detailing the modifications required to be made to the GIS submittals.

3.5.2.3 Government Accuracy Testing

The Government may elect to perform tests to check the accuracy of the post-construction location plan. If the Contractor's plan does not produce results within the indicated accuracy requirements, the Contractor shall perform another survey, correct all errors, and/or make all necessary changes to reflect the true locations of the individual items at no cost to the Government.

3.5.2.4 Following Submissions

The Contractor shall address all comments indicated by the government. The review process indicated above shall continue until all GIS, Grade-B Post Construction Location submittals are approved by the government. Only when the government approves the GIS submittals shall authorization be made for final payment of the construction contract, notwithstanding other items required by the construction contract.

-- End of Section --

APPENDIX A

INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER
GEOGRAPHIC INFORMATION SYSTEM/DRAFTING GUIDELINES

**ORIGINAL**

INDIAN HEAD DIVISION NAVAL SURFACE WARFARE CENTER

ENGINEERING DESIGN DIVISION GEOGRAPHIC INFORMATION SYSTEM / DRAFTING GUIDELINES

REVISION 4-3-97 SUPERSEDES ALL PREVIOUS REVISION

NOTE TO USER : THESE BASIC CADD DRAFTING CRITERIA WERE CREATED TO ELIMINATE THE NEED FOR MULTIPLE REVIEWS DUE TO NON COMPLIANT SUBMISSIONS. THE INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER (IHD, NSWC) IS ALSO DEDICATED TO IMPLEMENTATION OF THE TRI-SERVICE CADD STANDARDS THAT ARE BEING DEVELOPED AT THIS TIME.

THESE STANDARDS WILL BE REVIEWED AND MODIFIED AS DEEMED NECESSARY, BY PIV ENGINEERING DESIGN DIV. (IHD, NSWC). ALL DRAFTING AND SPECIFICATION PREPARATION SHALL BE IN ACCORDANCE WITH MIL-HANDBOOK "MIL-HDBK-1006/1" ITEMS LISTED IN THIS ENCLOSURE SHALL SUPERSEDE CADD REQUIREMENTS

1. DRAWINGS WILL BE SPOT CHECKED TO ENSURE COMPLIANCE BY CODE 092 PERSONNEL AT SUBMISSION INTERVALS.
2. ALL DRAWINGS SHALL BE DONE IN CADD FORMAT (.DWG) OR (.DGN) FILES
3. ALL DRAWINGS SHALL BE DONE AT FULL SCALE I.E. 1=1, 1.0 .
4. NEW WORK SHALL STAND OUT FROM EXIST BY LINE WEIGHT AS WELL AS BY DESCRIPTION, LINE TYPES SHALL MATCH EXISTING WHERE APPLICABLE.
5. PLOTTED SIZE OF TEXT SHALL BE MIN. OF 1/8 INCH HIGH
6. ALL DRAWINGS , INCLUDING DETAILS SHOULD BE DRAFTED AND PLOTTED AT 1=1.
7. SUBMIT CADD FILES IN DIGITAL FORMAT ON HD DISKETTES AND PLOTS FOR ALL DESIGNS DURING NORMAL REVIEW PROCESS.
8. USE (IHD, NSWC) TITLE SHEETS WHICH ARE AVAILABLE IN (.DWG) OR (.DGN) FORMAT
9. USE C2 TERMINOLOGY RATHER THAN SHEET 2 OF 17

ALL SITE PLANS

1. ALL SITE PLANS SHALL MAINTAIN SPCS, NAD83, USFOOT, ZONE 1900 COORDINATES AS PROVIDED ON ORIGINAL TOPO AND PLANIMETRIC FILES, NOTE: IMPROPER MANIPULATION OF ORIGIN WILL DESTROY ORIGINAL COORDINATES.
2. SITE PLANS SHALL BE DONE BY COMBINING GIS FILES WITH NEW AND EXIST UTILITY FILES; SEE ENCLOSURE (1) LAYER FORMAT .
3. MULTIPLE/ INTERDISCIPLINE SITE PLANS MAY BE USED FOR EASE OF DRAFTING BUT MUST BE COMBINED TO FORM A SINGLE FILE FOR GIS PURPOSES.
4. SITE PLANS SHALL BE PLOTTED TO SCALE USING STANDARD CIVIL ENGINEERING SCALES 1"=10', 20', 30', 40', 50', 60', 100', 200', AND 400'
5. GIS PLANIMETRIC, TOPO, REAL ESTATE AND STORM WATER CADD FILES ARE AVAILABLE AND MAY BE USED FOR STORM WATER WAVIER/DESIGN PURPOSES ONLY. IF PLANIMETRIC FILES ARE USED FOR DESIGN PURPOSES THERE ACCURACY SHALL BE VERIFIED BY SURVEY OR FIELD TAPE. (I.E. APPROXIMATELY TO TRUE LOCATION + OR - 15" ,ROOF OVER HANGS WERE USED FOR BUILDING CORNERS.) IF TOPO IS NEEDED FOR DESIGN PURPOSES, A SURVEY SHOULD BE DONE.
6. ALL ITEMS THAT ARE FOUND TO BE INCORRECTLY SHOWN ON GIS PLANIMETRIC OR TOPO FILES SHALL HAVE THIER LOCATION VERIFIED I.E. SURVEYED OR FIELD TAPED, AND SHALL BE NOTED ON THE EXISTING UTILITY FILE WHERE DESCREPCENCIES ARE FOUND.
7. GIS FILES SHALL BE CLEANED UP WHEN USED, I.E. DELETE ROOF ELEVATIONS, STORM DRAIN IDENTIFIERS, CHANGE SIZE OF TEXT TO MATCH PLOT SCALE ETC.

SITE PLANS GIS GRADE A

1. DESIGN DRAWINGS MUST SHOW TEMPORARY CONSTRUCTION BASE LINE THAT IS PART OF TRAVERSE. INDICATE COORDINATES AND ELEVATION.
2. LOCATE ALL BUILDING CORNERS AND STRUCTURES.
3. UTILITIES AND MINOR PLANIMETRIC FEATURES DO NOT NEED TO BE LOCATED DURING THE DESIGN PHASE.
4. PROVIDE NOTE ON DRAWINGS THAT CONSTRUCTION CONTRACTOR MUST LOCATE ALL NEW AND EXISTING WORK WITHIN INDICATED GIS LIMITS; SEE (IHD, NSWC) GUIDE SPEC. SECTION 02223.
5. INDICATE LIMITS OF GIS GRADE A ACCURACY ON DRAWINGS FOR POST CONSTRUCTION SURVEY.

SITE PLANS GRADE B

1. DESIGN DRAWINGS MUST SHOW TEMPORARY CONSTRUCTION BASE LINE AND INDICATE COORDINATES AND ELEVATIONS. BASE LINE MAY BE TAKEN FROM EXISTING PLANIMETRIC FEATURES IDENTIFIED BY "A & E GEOGRAPHIC INFORMATION SYSTEM GUIDELINES". ELEVATIONS MAY BE TAKEN FROM BUILDING PLANT ACCOUNT DATA OR REAL ESTATE FILE.
2. LOCATE (BY DIMENSIONS) ALL NEW BLDGS, STRUCTURE CORNERS AND ANY ITEMS THAT APPEAR IN THE NEW PLANIMETRIC AND UTILITY FILE.
3. PROVIDE NOTE ON DRAWINGS THAT CONSTRUCTION CONTRACTOR MUST LOCATE ALL NEW WORK. SEE (IHD, NSWC) GUIDE SPEC SECTION 02224.
4. AFTER RECEIVING SITE PLAN CONSTRUCTION AS BUILT FROM PROJECT ENGINEER, REDRAW SITE PLAN TO REFLECT PROPER COORDINATES FOR NEW AND EXISTING UTILITY FILES.
5. IF CODE 092 PERSONNEL FIND INCORRECT ITEMS ON PLANIMETRIC OR OTHER ORIGINAL GIS FILES THE ITEM SHOULD BE CORRECTED IN THE EXISTING PLANIMETRIC LAYER OF THE EXISTING UTILITY. IF THESE CORRECTIONS INFLUENCE A&E DESIGNS PRESENTLY UNDER CONTRACT 092 EIC WILL BE NOTIFIED.

FLOOR PLANS AND SECTIONS

1. BUILDING FLOOR PLANS SHOULD BE CONSISTENT BETWEEN ENGINEERING DISCIPLINES AND THE FLOOR PLAN SHALL BE ORIENTED SUCH THAT THE MAIN ENTRANCE IS LOCATED AT THE BOTTOM OF THE SHEET.
2. IF SYMBOLS ARE USED TO REFERENCE NOTES FOR WORK TO BE DONE; THEY SHOULD BE SHOWN ON THE SAME SHEET AS THEY ARE USED.

DETAILS.

1. NEW DETAILS SHALL MEET TRI-SERVICE CADD/GIS TECHNOLOGY CENTERS "GENERIC CADD DETAILS LIBRARY" FORMAT. (SEE ENCLOSURE (2)).
2. NEW DETAILS; IF LARGER THAN 7.36" BY 7.48" SHALL BE IN MULTIPLES OF THIS SIZE.
3. NEW PW STANDARDS SHALL MEET THE REQUIREMENTS OF 1 AND 2 ABOVE.
4. OLD PW STANDARDS SHALL BE RE DRAWN TO MEET THE REQUIREMENTS OF 1 AND 2 ABOVE. CODE 092 PERSONNEL MAY USE PW STANDARDS IN PRESENT FORMAT.
5. AFTER ACCEPTANCE OF FINAL DESIGN, A CADD FILE OF ALL NEW AND CONVERTED PW STANDARDS SHALL BE GIVEN TO CODE 0921 OR 092

DEMOLITION

ALL DEMOLITION WORK SHALL BE IDENTIFIED BY CROSS HATCHING OF THE ITEM TO BE DEMOLISHED, A DEMOLITION LAYER SHALL ALSO BE ADDED TO THE NEW UTILITY FILE.

ABANDONMENT

**ALL ABANDONED WORK SHALL BE IDENTIFIED BY PLACING THE ITEM TO BE
ABANDONED ON A ABANDONED LAYER IN THE EXISTING UTILITY FILE,
(ABANDONED ---FW---, ETC)**

END OF GUIDELINES --- SEE FILE SYSTEM ATTACHED (2 SHEETS

NEW UTILITY FILE

NEWUTIL

11/2/94

Description	Layer #	Line Style	style	thickness	color	COMMENTS
AIR	1	—A—	0	4	5	
ELEC PRIMARY LINE	2	—EPL—	0	4	4	
ELEC SECONDARY LINE	3	—ESL—	0	4	5	
FIRE LOOP LINE	4	—FA—	0	4	7	
FRESH WATER	5	—FW—	0	4	3	
FUEL SUPPLY	6	—FS—	0	4	2	oil tanks /piping
GROUNDING	7	—G—	0	4	2	
HYDROGRAPHY	8		0	4	4	sww structures, erosion control
INDUSTRIAL PROCESS	9		0	4	10	process piping tanks
INDUSTRIAL WASTE	10	—IW—	0	4	2	
LAN LINE	11	—LAN—	0	4	8	
OTHER BURIED ITEMS	12		0	4	7	other buried items not listed
PAD MOUNTED XFMR	13		0	4	3	
PLANIMETERIC FEATURES	14		0	4	7	new items shown on gis planimetric file
POLE INCL GUY	15		0	4	1	
POLE MOUNTED XFMR	16		0	4	1	pole mounted transformers
REAL ESTATE/SURVEY	17		0	4	2	control points , data collector
RIVER WATER	18	—RW—	0	4	1	
SANITARY SEWER	19	—S—	0	4	4	
SOILS	20		0	4	1	soil borings
STEAM	21	—ST—	0	4	6	
STORM SEWER	22	—SW—	0	4	5	
TELEPHONE LINE	23	—T—	0	4	6	
TEXT CIVIL	24		0	2	3	general text
TEXT ELEC.	25		0	2	3	
TEXT MECH.	26		0	2	3	
TOPOGRAPHY	27		0	4	6	contours, spot elev.
PRIMARY	28	—UGP—	3	4	4	
UG. SECONDARY	29	—UGS—	3	4	5	

EXISTING UTILITY FILE

EXSTUTIL

description	layer #	Line Style	style	thickness	color	COMMENTS
JR	1	—A—	0	2	5	
LEC PRIMARY LINE	2	—EPL—	0	2	4	
LEC SECONDARY LINE	3	—ESL—	0	2	5	
IRE LOOP LINE	4	—FA—	0	2	7	
FRESH WATER	5	—FW—	0	2	3	
FUEL SUPPLY	6	—FS—	0	2	2	oil tanks /piping
GROUNDING	7	—G—	0	2	2	
HYDROGRAPHY	8		0	2	4	sww structures, erosion control
INDUSTRIAL PROCESS	9		0	2	10	process piping tanks
INDUSTRIAL WASTE	10	—IW—	0	2	2	
LAN LINE	11	—LAN—	0	2	8	
OTHER BURIED ITEMS	12		0	2	7	other buried items not listed
PAD MOUNTED XFMR	13		0	2	3	
PLANIMETRIC FEATURES	14		0	2	7	new location items on gis planimetric files
POLE INCL GUY	15		0	2	1	
POLE MOUNTED XFMR	16		0	2	1	pole mounted transformers
REAL ESTATE/SURVEY	17		0	2	2	control points , data collector
RIVER WATER	18	—RW—	0	2	1	
SANITARY SEWER	19	—S—	0	2	4	
SOILS	20		0	2	1	soil borings
STEAM	21	—ST—	0	2	6	
STORM SEWER	22	—SW—	0	2	5	
TELEPHONE LINE	23	—T—	0	2	6	
TEXT CIVIL	24		0	2	3	
TEXT ELEC.	25		0	2	3	
TEXT MECH.	26		0	2	3	
TOPOGRAPHY	27		0	2	6	contours, spot elev, -
JG PRIMARY	28	—UGP—	3	2	4	
JG. SECONDARY	29	—UGS—	3	2	5	

2 Generic Details Library

Library Creation

"Evolution" is the best description of the process for incorporating the suggested format for creating generic details. Agencies currently developing detail libraries are encouraged to begin incorporating the format into their daily design efforts, not to attempt a complete revamping of their existing detail libraries. As project-specific details are created, they should be included into the agencies' detail library and submitted to the TSTC for inclusion into the DoD-wide master set. By no means should the Generic Details Library ever be considered a completed product. It is only the beginning of what should be a daily routine of adding and revising details for all design disciplines within the Tri-Services.

As more agencies begin developing details in the suggested format, the TSTC will formally request that details be submitted for inclusion into the master set. Once the TSTC has compiled the details, the appropriate Field Working Group will meet to review the submitted details for proper format and applicability prior to field distribution.

Detail Integrity

Although a liability disclaimer covering all the details is included as part of the Generic Details Library, each detail submitted

for inclusion into the library should be reviewed by the submitting agency for integrity and compliance with current design criteria. It will be extremely helpful to the TSTC and the Field Working Groups if each detail is properly reviewed prior to submitting it for placement into the Library.

Creating a Detail

Step 1

When developing a detail, draw the detail at full size (1 in. = 1 in.) first. After the detail is graphically complete, but prior to placing text, dimensions, patterning, leader lines, and terminators, the detail should be scaled to the appropriate final size, such as 3 in. = 1 ft - 0 in. (Figure 1). Table 1 lists the common scales, the type of detail to be drawn for each scale, and the factor by which details drawn at full size should be scaled.

Step 2

After scaling, any hatching or patterning should be placed on the detail (Figure 2). This method ensures that the hatching and patterning for all details, regardless of their scale, will be consistent. (Note for MicroStation users: When dimensioning a scaled detail be sure to set "scale dimension"

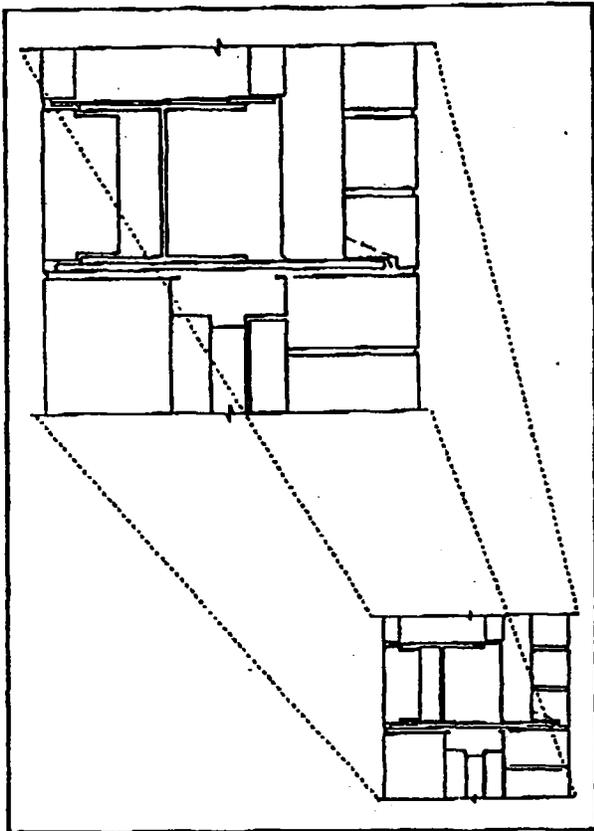


Figure 1. Step 1: draw the detail at full size, then scale per Table 1

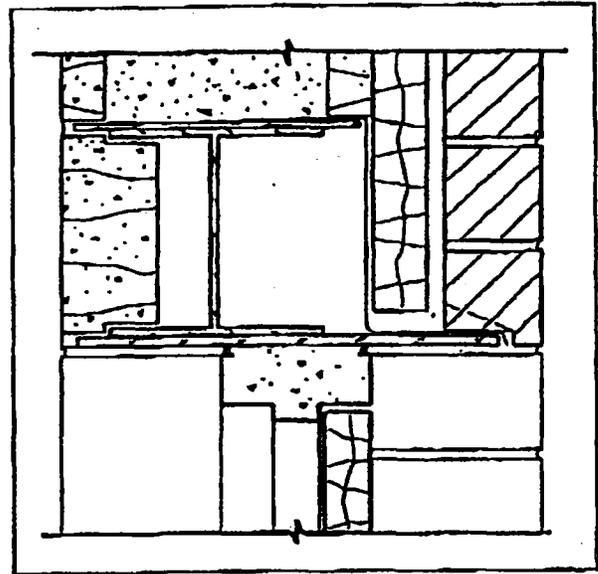


Figure 2. Step 2: add any hatching and patterning to detail

to ensure that the detail will dimension correctly.)

Step 3

To help ensure a consistent visual clarity to the details, the AAFWG has provided the

Table 1 Scaling Factors		
Detail Type	Common Scales for Details	Factor by Which a Full-Size Detail Should be Scaled
Details	6 in. = 1 ft - 0 in.	6.00
Details	3 in. = 1 ft - 0 in.	3.00
Details	1-1/2 in. = 1 ft - 0 in.	1.50
Details	1 in. = 1 ft - 0 in.	1.00 12.00
Wall Sections	3/4 in. = 1 ft - 0 in.	0.75
Wall Types	1/2 in. = 1 ft - 0 in.	0.50
Large-Scale Plans	1/4 in. = 1 ft - 0 in.	0.25
Floor/Ceiling Plans	1/8 in. = 1 ft - 0 in.	0.125
Composite/Roof Plans	1/16 in. = 1 ft - 0 in.	0.0625

standard detail layout (provided as a cell or block) shown in Figure 3. To utilize the layout form when creating a detail, the designer should place the layout form over the detail at the active scale "as = 1." Once properly positioned and placed over the detail, add the text, leaders, line terminators, and title to the detail as noted on the layout form. Level/layer assignments are listed in Table 2.

Step 4

Once the detail is complete, delete the layout cell/block (Figure 4). The completed detail will then conform to the AAFWG's standard detail size of 187 mm (7.36 in.) by 190 mm (7.48 in.). It is understood that not all details will fit into this typical detail layout (at the scale intended), but this format should be used to the extent possible. For those exceptions, the use of multiple 187-mm by 190-mm grids is encouraged.

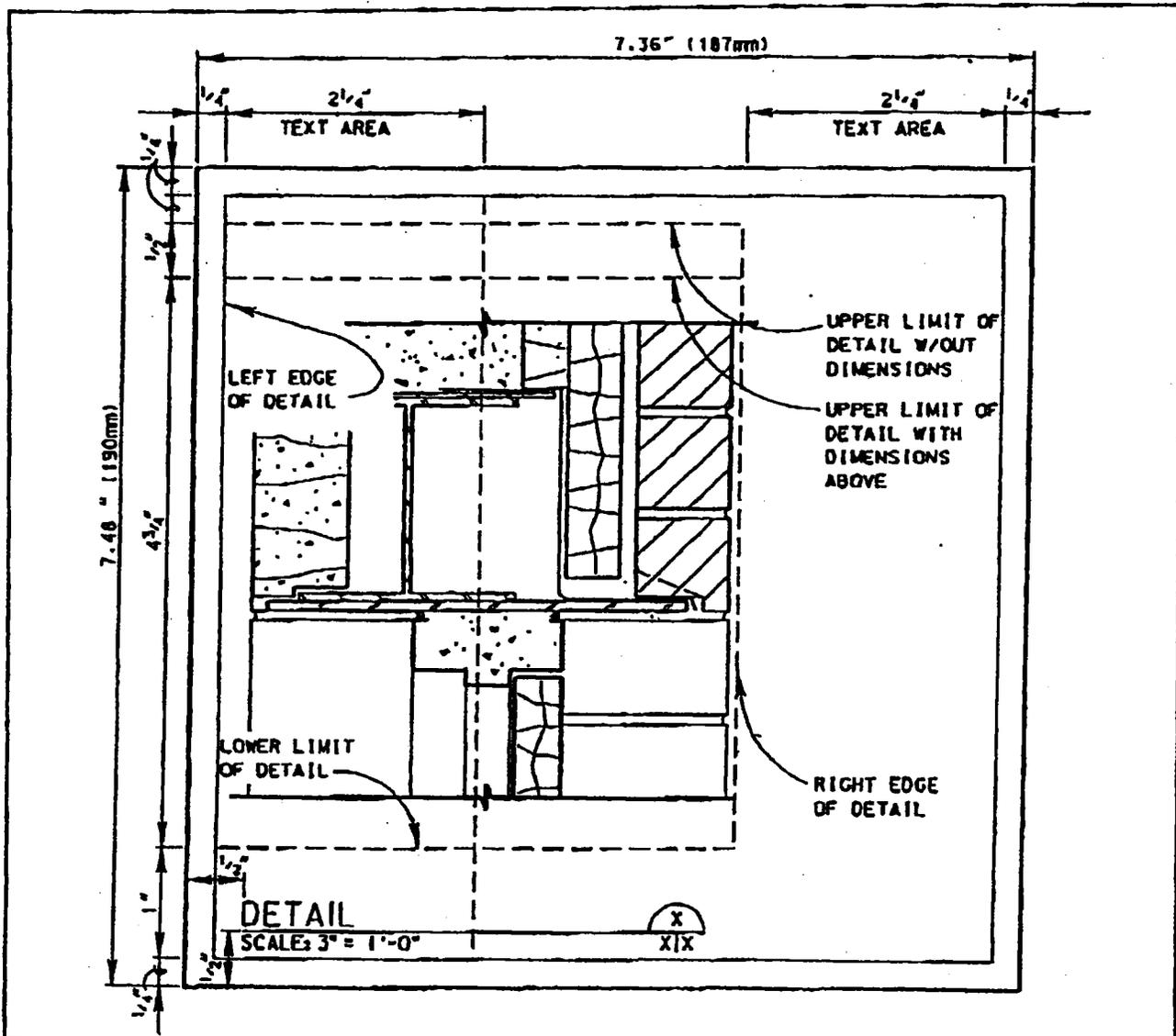


Figure 3. Step 3: position the layout.cel/dwg over the detail and add text, dimensions, leader lines, titles, and line terminators

Level/Layer	Description
A-DETL-TEXT	Notes, Text, & Dimension Text
A-DETL-SYMB	Symbols, Bubbles, etc.
A-DETL-DIMS	Dimension Linework
A-DETL-NPLT	Sheet Grid
A-DETL-LW10	Detail Linework
A-DETL-LW25	Detail Linework
A-DETL-LW35	Detail Linework
A-DETL-LW50	Detail Linework
A-DETL-LW70	Detail Linework
A-DETL-PATT	Pattern/Hatch

Standard Graphics/Terminology

All graphics and detail terminology should be represented in a consistent manner for detail uniformity and graphic quality. Graphic symbology conventions (including line styles and patterning) used in creating generic details should conform to the material representations as shown in the Architectural Engineering Instructions (AEI) manual *Design Criteria* and/or Engineer Manual EM 1110-1-1807.

Abbreviations

Abbreviations for words or phrases frequently used on the details should be as noted in Appendix A. When possible, abbreviations should be kept to a minimum. Other abbreviations, particularly discipline-unique abbreviations, may be used but must not conflict with those in Appendix A.

Levels/layers

Level/layer separation of the various graphic elements within a detail is necessary to ensure the easy manipulation of details by subsequent users. All details should adhere to the layer assignments in Table 2.

Line widths/weights

The primary purpose of line widths/weights is to provide a drawing with visual depth and clarity or, in some CADD systems, to determine plotted line widths. To accommodate both MicroStation and AutoCAD and to ensure easy translations between systems, line widths (weights) will be determined as specified in the next section, "Color."

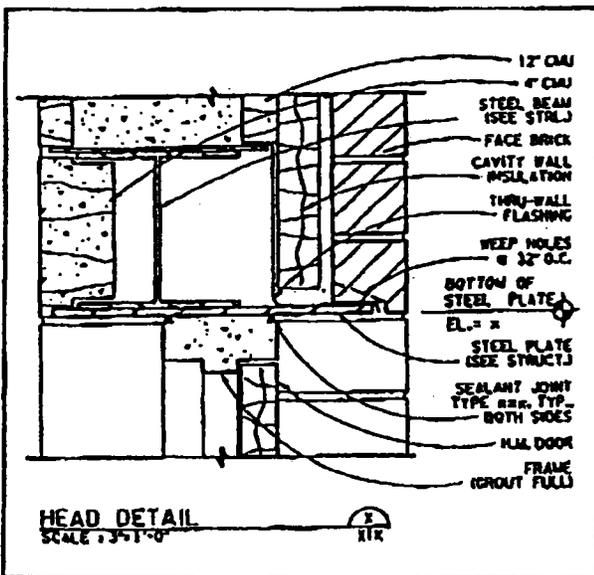


Figure 4. Step 4: remove layout.cel/block to complete

Color

Although final drawings are most often plotted in black and white, colors are prescribed for details to aid the designer in drawing and/or manipulating the details on a computer monitor. To accommodate CADD systems where line color dictates plotted line widths, colors should adhere to Table 3.

Text

The text style for generic details shall be Intergraph's Font 1 as supplied with MicroStation. For AutoCAD users, the "Romans" text style should be used to ensure easy translation between systems. Text for detail notes should be placed at a height of 1-1/2 in. Detail titles should be placed at 2-1/2 in.

Detail naming

For the master set of details, the Construction Specification Institute/Construction Specifications Canada (CSI/CSC) UniFormat-based naming system has been developed. The format for naming individual detail drawing files should follow the eight-character format shown in Figure 5.

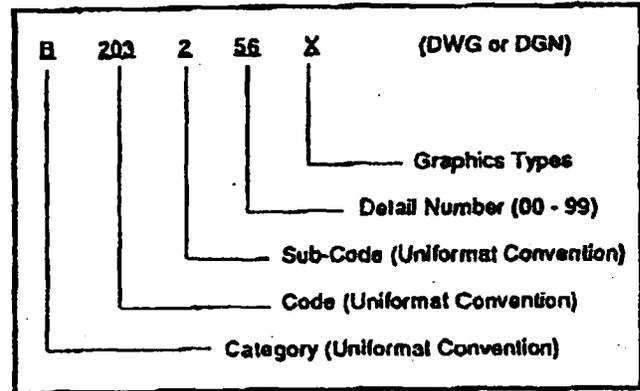


Figure 5. Naming convention. Note: A full listing of Uniformat categories and codes is outlined in Section 5, Index of Details

**Table 3
Color/Line Width Guidelines**

Layer Name	Color	AutoCAD Color #	MicroStation Color #	Line/Pen Width
A-DETL-LW10	Cyan	4	7	0.10 mm/0.004 in.
A-DETL-LW25	White	7	0 -	0.25 mm/0.010 in.
A-DETL-LW35	Yellow	2	4	0.35 mm/0.014 in.
A-DETL-LW50	Magenta	6	5	0.50 mm/0.020 in.
A-DETL-LW70	Blue	5	1	0.70 mm/0.028 in.
A-DETL-TEXT	Green	3	2	0.35 mm/0.014 in.
A-DETL-SYMB	Yellow	2	4	0.35 mm/0.014 in.
A-DETL-DIMS	Cyan	4	7	0.10 mm/0.004 in.
A-DETL-NPLT	Red	1	3	0.10 mm/0.004 in.
A-DETL-PATT	Cyan	4	7	0.10 mm/0.004 in.

SECTION 02315

EXCAVATION AND FILL

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136	(1996; Rev. A) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 698	(1991) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600 kN-m/m))
ASTM D 1140	(1997) Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1996) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	(1996) Evaluating Solid Waste (Physical/Chemical Methods)
EPA 600/4-79-020	(1983) Methods for the Chemical Analysis of Water and Wastes

MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE)

MDE SESC	(1994) Standards and Specifications for Soil Erosion and Sediment Control
----------	---------------------------------------------------------------------------

MARYLAND STATE HIGHWAY ADMINISTRATION (MD SHA)

MD SHA CM	(1993) Construction and Materials
-----------	-----------------------------------

1.2 DEFINITIONS

1.2.1 Regulatory Requirements

Provide work and materials in accordance with applicable requirements of MD SHA CM. Divisions and sections mentioned herein refer to those specifications. Paragraphs in MD SHA CM entitled "Measurement and Payment," shall not apply.

1.2.2 Modification of Reference

Where term "Engineer" is used in MD SHA CM it shall be construed to mean ROICC NTR. Where term "Administration" is used, it shall mean Government.

1.2.3 Waste Removal

Soil, sediment and waste located in the indicated areas may contain ("be impacted with") landscaping waste, fill material, rubble, paint, varnishes, and other chemical waste. The Government has requested the removal of the impacted soil and sediment, including all waste, as indicated for placement beneath the soil cover. Excavated impacted soil, sediment and waste are to be dewatered on-site, when required, for subsequent placement beneath the soil cover. Large items of waste and debris shall be disposed off-site at an approved disposal facility.

1.2.4 Cohesive Materials

Materials ASTM D 2487 classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

1.2.5 Cohesionless Materials

Materials ASTM D 2487 classified as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero.

1.3 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-06 Test Reports

Borrow Site Testing

Common Fill Test

Select Fill Test

Density tests

SD-07 Certificates

Excavation and handling work plan

Dewatering work plan

1.3.1 Excavation and Handling Work Plan

Provide within 15 calendar days of issuance of the delivery order, and before procurement, fabrication, or mobilization. No work at the site, with the exception of site inspections, clearing and grubbing, and surveys, shall be performed until this Work Plan is approved. Allow 15 calendar days in the schedule for the Government's review. At a minimum, the Work Plan shall include the following elements as specified in Section 01115, "General Paragraphs (Remedial Action Contracts)."

- a. Schedule of activities.
- b. Method of excavation and equipment to be used.
- c. Method of compaction and equipment to be used.
- d. Excavation dewatering plan.
- e. Dewatering of excavated impacted soil for placement beneath the soil cover.
- f. Storage methods and locations for liquid and solid contaminated material.
- g. Decontamination procedures.
- h. Spill contingency plan.

1.4 DELIVERY, STORAGE, AND HANDLING

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

1.5 CRITERIA FOR PROPOSAL

Base proposals on the following criteria:

- a. Surface elevations are as indicated.
- b. Pipes or other artificial obstructions, except those indicated, will not be encountered.
- c. Ground water elevations indicated by the boring logs and groundwater monitoring well installation logs were those existing at the time subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction. Logs are located in Appendix A of the Basis of Design Report. Drawing elevations reference National Geodetic Vertical Datum, 1929 (NGVD1929).
- d. Blasting will not be permitted. Remove material in an approved manner.

1.6 REQUIREMENTS FOR OFF SITE SOIL

Soil and aggregate brought in from off-site shall be tested for full TCLP including ignitability, corrosivity and reactivity and shall contain less than 100 parts per million (ppm) of total petroleum hydrocarbons (TPH) and less than 10 ppm of the sum of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) and shall not fail the TCLP test. TPH concentrations shall be determined by using EPA 600/4-79-020 Method 418.1. BTEX concentrations shall be determined by using EPA SW-846 Method 5030/8020. TCLP shall be performed in accordance with EPA SW-846 Method 1311. Provide Borrow Site Testing for TPH, BTEX and TCLP from a composite sample of material from the borrow site, with at least one test from each borrow site. Material shall not be brought on site until tests have been approved by the ROICC NTR.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unbound particles, and frozen, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

2.1.1 Common Fill Material

Off-site borrow. ASTM D 2487, classification GW, GP, GM, GC, SW, SP, SM, SC with a maximum ASTM D 4318 liquid limit of 35, maximum ASTM D 4318 plasticity index of 12, and a maximum of 25 percent by weight passing ASTM D 1140, No. 200 sieve.

2.1.2 Topsoil

Provide as specified in Section 02951, "Mitigated Wetlands Area, Shrubs, Plants, and Grass."

2.1.3 Select Fill

ASTM D 2487, classification SM, SC or ML with a maximum particle size of 3 inches.

2.2 BORROW

Obtain borrow materials required in excess of those furnished from excavations from sources outside of Government property.

2.3 BURIED WARNING AND IDENTIFICATION TAPE

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

Warning Tape Color Codes

Yellow:	Electric
Orange:	Telephone and Other Communications
Blue:	Water Systems
Green:	Sewer Systems

2.3.1 Warning Tape for Metallic Piping

Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.

2.3.2 Detectable Warning Tape for Non-Metallic Piping

Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.4 DETECTION WIRE FOR NON-METALLIC PIPING

Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 Clearing and Grubbing

Unless indicated otherwise, remove trees, stumps, logs, shrubs, and brush within the area of construction. Remove stumps entirely. Grub out matted roots and roots over 2 inches in diameter to at least 18 inches below existing surface unless otherwise indicated. Chip and dispose of grubbed materials in uniform layer thoroughly mixed with existing cover soil and waste during regrading activity prior to placement of soil cover.

3.1.2 Proof Rolling

Proof rolling shall be done on an exposed subgrade free of surface water (wet conditions resulting from rainfall) which would promote degradation of an otherwise acceptable subgrade. Proof roll the landfill surface after clearing and grubbing and prior to placement of consolidation material with a 40,000 pound (minimum) track type tractor with a minimum ground contact pressure of 8 psi. Operate the equipment in a systematic manner to ensure 150 percent coverage is provided over all areas, and at speeds between 2 1/2 to 3 1/2 miles per hour. Notify the ROICC NTR a minimum of 3 days prior to proof rolling. Proof rolling shall be performed in the presence of the ROICC NTR. Rutting or pumping material for road subgrade shall be undercut as directed by the ROICC NTR and replaced with common fill.

3.2 PROTECTION

3.2.1 Drainage and Dewatering

Provide for the collection, treatment, and disposal when required of surface and subsurface water encountered during construction. Submit a dewatering work plan. On-site treatment, when required, shall be the preferred method if economics prove on-site treatment is more cost effective than off-site disposal.

3.2.1.1 Drainage

So that construction operations progress successfully, completely drain construction site during periods of construction to keep soil materials sufficiently dry. The Contractor shall establish/construct storm drainage features at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to

maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

3.2.1.2 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval by the ROICC NTR, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in-situ material. While the excavation is open, the water level shall be maintained continuously, at least one foot below the working level or to the depth required to provide a safe excavation, stable working surface, and stable sideslopes. Perform all dewatering and activities in accordance with MDE SESC.

Operate dewatering system continuously until construction work below existing water levels is complete. All water shall be containerized and tested to determine proper disposal requirements, when required.

3.2.2 Underground Utilities

Location of the existing utilities indicated is approximate. The Contractor shall physically verify the location and elevation of the existing utilities indicated prior to starting construction. The Contractor shall contact the ROICC NTR to arrange for location of base utilities. The Contractor shall scan the construction site with electromagnetic and sonic equipment and mark the surface of the ground where existing underground utilities are discovered.

3.2.3 Machinery and Equipment

Movement of construction machinery and equipment over pipes during construction shall be at the Contractor's risk. Repair, or remove and provide new pipe for existing or newly installed pipe that has been displaced or damaged.

3.3 EXCAVATION

Excavate to contours, elevation, and dimensions indicated. Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Refill with common fill and compact to 95 percent of ASTM D 698 maximum density unless indicated otherwise. Unless specified otherwise, refill excavations cut below indicated depth with common fill and compact to 95 percent of ASTM D 698 maximum density unless indicated otherwise.

3.4 FILLING AND BACKFILLING

Fill and backfill to contours, elevations, and dimensions indicated.

Compact each lift before placing overlaying lift.

3.4.1 Common Fill Placement

Provide for general site as indicated. Place in 6 inch loose lifts. Compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.4.2 Select Fill Placement

Place in 8 inch loose lifts. Compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.5 BURIED WARNING AND IDENTIFICATION TAPE

Provide buried utility lines with utility identification tape. Bury tape 12 inches below finished grade.

3.6 BURIED DETECTION WIRE

Bury detection wire directly above non-metallic piping at a distance not to exceed 12 inches above the top of pipe. The wire shall extend continuously and unbroken, from manhole to manhole. The ends of the wire shall terminate inside the manholes at each end of the pipe, with a minimum of 3 feet of wire, coiled, remaining accessible in each manhole. The wire shall remain insulated over its entire length. The wire shall enter manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, the wire shall terminate in the valve pit at the pump station end of the pipe.

3.7 SAMPLING

Sampling and analysis of stored material and liquid in accordance with Section 02223, "Transportation and Disposal of Contaminated Material."

3.8 COMPACTION

Expressed as a percentage of maximum density. Determine in-place density of existing subgrade; if required density exists, no compaction or proof-rolling of existing subgrade will be required.

3.8.1 General Site

Compact underneath areas designated for vegetation to 85 percent of ASTM D 698 unless indicated otherwise.

3.8.2 Common Fill

Compact common fill to 95 percent of ASTM D 698 unless otherwise indicated.

3.8.3 Regraded Cover Soil and Waste

Regraded cover soil and waste shall be placed in 8 inch loose lifts or as directed by the ROICC as required to achieve acceptable compaction. Regraded cover soil and waste shall be compacted with a minimum of four

complete passes (400 percent coverage) with ROICC approved compaction equipment. Equipment used for compaction of regraded cover soil and waste shall be a 40,000 lb (minimum) track-type tractor with a minimum ground contact pressure of 8 psi or equipment as appropriate for materials encountered.

3.8.4 Paved Areas

Compact common fill materials to 95 percent of ASTM D 698. Compact pavement materials in accordance with Section 02742, "Pavement With A Bituminous Concrete Surface."

3.9 FINISH OPERATIONS

3.9.1 Grading

Finish grades as indicated within one-tenth of one foot. Grade areas to drain water away from structures. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed by the ROICC NTR.

3.9.2 Seed and Other Types of Vegetation

Provide as specified in Section 02951, "Mitigated Wetlands Area, Shrubs, Plants, and Grass."

3.9.3 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlement that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.10 DISPOSITION OF SURPLUS REGRADED COVER SOIL AND WASTE MATERIAL

Remove and dispose in accordance with Section 02223, "Transportation and Disposal of Contaminated Material."

3.11 FIELD QUALITY CONTROL

3.11.1 Sampling

Take the number and size of samples required to perform the following tests.

3.11.2 Testing

Perform one of each of the following tests for each material used. Provide additional tests for each source change.

3.11.2.1 Common Fill Material Testing

Test common fill in accordance with ASTM D 698 for moisture density relationship, as applicable.

3.11.2.2 Select Fill Material Testing

Test select fill material in accordance with ASTM C 136 for conformance to ASTM D 2487 gradation limits; ASTM D 1140 for material finer than the No. 200 sieve; ASTM D 4318 for liquid limit and for plastic limit, as applicable.

3.11.2.3 Density Tests

Test density in accordance with ASTM D 1556, or ASTM D 2922 and ASTM D 3017.

When ASTM D 2922 and ASTM D 3017 density tests are used, verify density test results by performing an ASTM D 1556 density test at a location already ASTM D 2922 and ASTM D 3017 tested as specified herein. Perform an ASTM D 1556 density test at the start of the job, and for every 10 ASTM D 2922 and ASTM D 3017 density tests thereafter. Test subgrade each lift at randomly selected locations every 2500 square feet of subgrade. Test common fill each lift at randomly selected locations every 2500 square feet and a minimum of 3 tests per lift.

-- End of Section --

SECTION 02525
MONITORING WELLS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1996) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 312/A 312M	(1995; Rev. A) Seamless and Welded Austenitic Stainless Steel Pipes
ASTM C 150	(1997) Portland Cement
ASTM D 1586	(1984; R 1992) Penetration Test and Split-Barrel Sampling of Soils
ASTM D 1587	(1994) Thin-Walled Tube Geotechnical Sampling of Soils
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2488	(1993) Description and Identification of Soils (Visual-Manual Procedure)
ASTM D 4397	(1996) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
ASTM D 5088	(1990) Decontamination of Field Equipment Used at Nonradioactive Waste Sites
ASTM D 5092	(1990; R 1995) Design and Installation of Ground Water Monitoring Wells in Aquifers
ASTM F 480	(1995) Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80
ASTM F 883	(1997) Padlocks

STATE OF MARYLAND CODE OF MARYLAND REGULATION (COMAR)

COMAR 26.04.04	Department of Environment; Regulation of Water Supply, Sewage Disposal, and Solid Waste; Well Construction
----------------	------------------------------------------------------------------------------------------------------------

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 600/4-89-034 (1989) Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells

EPA 600/4-79-020 (1983) Methods for the Chemical Analysis of Water and Wastes

1.2 DESCRIPTION OF WORK

Abandon existing and provide new monitoring wells including drilling, casing, well screen, gravel packing, grouting, development, monitoring device, and incidental related work complete and ready for operation.

1.3 GENERAL REQUIREMENTS

Each system, including equipment, materials, installation, and performance, shall be in accordance with local, State, and Federal regulations, ASTM D 5092, and EPA 600/4-89-034 except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" has been substituted for the word "should" wherever it appears. Reference to the "Project Representative" and the "Owner" shall be interpreted to mean the ROICC NTR. Mark and secure monitoring wells to avoid unauthorized access and tampering.

1.4 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-02 Shop Drawings

Well construction

SD-03 Product Data

Well riser

Well screen

Filter pack

Cement/bentonite grout

Bentonite pellet seal

SD-07 Certificates

Well Drilling/Development Material Handling Plan

Field Sampling and Laboratory Testing Plan

Treatment facility permit

Installation Survey Report

Well Development Report

Well Abandonment Report

Borehole Analysis Report

SD-11 Closeout Submittals

Well Construction Permit

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver materials in an undamaged condition. Unload and store with minimal handling. Store materials in on-site enclosures or under protective coverings. Store plastic piping and jointing materials under cover, out of direct sunlight. Store materials off the ground. Keep insides of pipes and fittings free of dirt and debris. Replace defective or damaged materials with new materials.

1.6 QUALITY ASSURANCE

1.6.1 Required Drawings

Submit well construction drawings showing components and details of well casing, well screen, filter pack, annular seal, and associated items. Drawings shall be prepared by a State certified professional geologist or hydrogeologist, or by a State registered professional civil engineer, hereafter referred to as the Contractor's Professional Consultant (CPC). Drawings shall be sealed.

1.6.2 Well Drilling/Development Material Handling Plan

A material handling plan shall be furnished by the Contractor 15 days prior to initiation of the work that describes phases of dealing with the potentially contaminated soil and groundwater, including the following: a schedule to be employed in the well drilling and development stages, a sequence of operations, the method of drilling and development, material hauling, proposed equipment, handling of the contaminated materials, soil and water testing requirements, and safety precautions and requirements.

1.6.3 Health and Safety Plan (HASP)

Provide in accordance with Section 01115, "General Paragraphs (Remedial Action Contracts)."

1.6.4 Field Sampling and Laboratory Testing Plan

Describe field sampling methods and quality control procedures. Identify laboratory and laboratory methods to be used for contamination testing. Sample reports shall show sample identification for location, date, time, sample method, contamination level, name of individual sampler, identification of laboratory, and quality control procedures.

1.6.5 Treatment Facility Permit

Verification that the proposed treatment facility is permitted to accept the contaminated materials specified, prior to the start of excavation.

1.6.6 Well Development Report

Provide report, containing the following data for each well: project name and location, well designation, date and time of well installation, date

and time of well development, static water level from top of well casing before development and 24 hours after development, field measurements of pH, temperature, and specific conductivity, depth of well from top of casing to bottom of well, screen length, description of development methodology size/capacity of pump or bailer, pumping rate, and recharge rate.

1.6.7 Well Abandonment Report

Submit a completed well abandonment report to the appropriate state agency after abandonment.

1.6.8 Well Construction Permit

Submit a completed permit application and a proposed method of construction to the appropriate state agency prior to construction of the well. Construction of the wells will not be allowed until an approved Well Construction Permit has been submitted to the ROICC NTR.

PART 2 PRODUCTS

2.1 WELL RISER

2.1.1 PVC Piping

ASTM F 480, Type 1, Grade 1, PVC 12454, NSF wc or NSF pw, Schedule 40, with flush threaded joint fittings. Threaded joints shall be wrapped with flouropolymer tape, and provided with nitrile O-ring gaskets.

2.1.2 Well Riser Cap

Provide cap on top of the well riser. Cap shall be a flush threaded cap and of the same material as the well riser.

2.2 WELL SCREEN

Well screens shall be located as indicated. The length of each screen shall be as indicated. Slot size shall be 0.010 inch. Slotted openings shall be distributed uniformly around the circumference of the screen. Open area shall approach the formation's natural porosity.

2.2.1 Stainless Steel Screens

ASTM A 312/A 312M, Type 304, 2-inch ID Schedule 40S, continuous slot construction, wire wound, with flush threaded joint ends.

2.3 PRIMARY FILTER PACK

Provide clean, durable, well-rounded, and washed quartz or granite, with less than 5 percent non-siliceous material. The filter pack shall not contain organic matter or friable materials. The filter pack shall allow free flow of water in the well, and shall prevent the infiltration of aquifer materials. Filter pack shall have 100 percent passing the U.S. Standard Number 20 sieve and 100 percent retained on the U.S. Standard Number 30 sieve.

2.4 ANNULAR SEALANTS

2.4.1 Bentonite Pellet Seal

Provide pelletized sodium montmorillonite in sealed containers from a commercial source, free of impurities. Diameter of pellets shall be less than one fifth the diameter of the borehole annular space to prevent bridging.

2.4.2 Cement/Bentonite Grout

Provide cement/bentonite grout in accordance with ASTM D 5092, typical cement base grout with 4 percent bentonite by weight. Cement shall be in accordance with ASTM C 150. Quick setting admixtures shall not be allowed. Drilling mud or cuttings shall not be used as a sealing material.

2.5 BOTTOM PLUGS

Provide flush threaded solid plug at the bottom of the well. Plug shall be the same material as the well screen to which it is attached. Joints shall be provided with nitrile O-ring gaskets.

2.6 LOCKING WELL CAP

Provide flush threaded, weatherproof, and non-removable locking well cap on the top of the well. Well cap shall be of the same material as the well casing to which it is attached. Well cap shall accommodate padlock. Provide a long shackled padlock in accordance with ASTM F 883. Provide two keys for the padlock, and turn them over to the ROICC NTR. Locks at the site shall be keyed alike.

2.7 WELL HEAD COMPLETIONS

Clearly mark and secure the well to avoid unauthorized access and tampering. Cast the words "MONITORING WELL" on the well head cover. Provide a sign reading, "WELL IS FOR MONITORING AND IS NOT SAFE FOR DRINKING." Provide stamped metal identification tag as follows:

DO NOT DISTURB
ID #: _____ Date: _____
Installed By: _____
Total Depth: _____
Screened Interval: _____
TOC Elevation: _____
Other: _____
For Information, Call: _____

2.7.1 Aboveground Completions

Provide protective outer casing around the well riser extending above grade. The diameter of the protective outer casing shall be a minimum of 4 inches larger than the well riser diameter. The top of the protective outer casing shall extend a minimum of 6 inches above the top of the well riser cap. The protective outer casing shall be set in cement/bentonite grout and the bottom of the protective well casing shall extend to the depth indicated. A 1/4 inch diameter weep hole shall be drilled in the protective outer casing 3 inches above the ground surface. The annular space between the protective outer casing and the well riser shall be filled with pea gravel or coarse sand to just below the level of the cap on the well riser. The locking well cap shall be provided on top of the protective outer casing. Provide 6 inch diameter steel pipe bollards, filled with concrete as indicated to protect the exposed well head.

2.7.1.1 Protective Outer Casing and Bollards

ASTM A 53, Type E or S, Grade B.

2.7.1.2 Well Casing Cap

Provide cap on top of the protective outer casing. Cap shall be flush threaded and of the same material as the protective outer casing. Threaded joints shall be provided with nitrile O-ring gaskets.

2.8 POLYETHYLENE SHEETING

ASTM D 4397.

PART 3 EXECUTION

3.1 GENERAL

Notify the ROICC NTR at least 15 days prior to commencement of work. Locations of wells shall be as indicated. Abandonment of existing and drilling, installation, and development of the proposed monitoring wells shall be supervised, directed, and monitored by the CPC. Drilling, sampling, and well development equipment introduced to the well shall be decontaminated before and after each use in accordance with ASTM D 5088.

3.2 DRILLING

Borehole shall be advanced using conventional 4-1/4 inch ID hollow-stem auger drilling methods. If it is the opinion of the CPC that an alternate drilling method is required, justification for a boring method change shall be submitted to the ROICC NTR, and approval for the change granted prior to drilling. Drill crew shall be experienced and trained in drilling and safety requirements for contaminated sites.

3.2.1 Sampling

Obtain samples in accordance with ASTM D 1586 or ASTM D 1587. Perform standard penetration tests at the following depths: 0.0 to 2.0 feet; 2.0 to 4.0 feet; 4.0 to 6.0 feet; and continuing for the total depth of boring. Each soil sample shall be screened in the field with an organic vapor analyzer/flame ionization device (OVA/FID) capable of detecting vapors to a minimum of one ppm. Log boring in accordance with ASTM D 2487 and ASTM D 2488. Groundwater elevation shall be indicated.

3.2.2 Analysis

The CPC shall review the log data from each borehole and compare the data with the well design requirements. The CPC shall verify the adequacy of the well design, or shall offer a proposed modification to the design based on the geologic and hydrogeologic data obtained from the borehole. This review and analysis shall be conducted for one borehole considered representative of the entire project. The CPC shall submit the borehole boring logs, the analysis of the well design, and any proposed design modifications to the ROICC NTR in a Borehole Analysis Report. Any modifications to the well design approved by the ROICC NTR shall be considered a change to the contract documents and shall be negotiated in accordance with the "CHANGES" clause.

3.2.3 Alignment

Verify that the well is straight by lowering a 10 foot section of 1 inch diameter steel pipe into the well.

3.3 SOIL REMOVED FROM THE BOREHOLE

3.3.1 Temporary Containment of Soil Removed from the Borehole

Soil removed from the borehole shall be placed beneath the soil cover or in a temporary containment area. Provide a temporary containment area near the well site. Cover containment area with 10 mil reinforced polyethylene sheeting. Place soil removed from the boreholes on the impervious barrier and cover with 6 mil reinforced polyethylene sheeting. Provide a straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets with weights to keep the polyethylene sheeting in place. Water runoff shall be diverted from the stockpiled material. As an option, soil may be stockpiled in trucks suitable for transporting contaminated soils as specified herein.

3.3.2 Testing and Disposal Requirements for Stockpiled Soils

In accordance with Section 02223, "Transportation and Disposal of Contaminated Material".

3.4 WELL INSTALLATION

Well installation shall be in accordance with ASTM D 5092 and EPA 600/4-89-034, and as indicated on the well construction drawings submitted by the CPC and approved by the ROICC NTR. Borehole shall be stable and shall be verified straight before beginning installation.

3.4.1 Casings and Screens

Well casings, screens, plugs, and caps shall be decontaminated prior to delivery by the manufacturer and shall be certified clean. Materials shall be delivered, stored, and handled in such manner as to ensure that grease, oil, or other contaminants do not contact any portion of the well screen and casing assembly prior to installation. If directed by the ROICC NTR, the well screen and casing assembly shall be cleaned with high pressure water prior to installation. Personnel shall wear clean cotton or surgical gloves while handling the assembly. If directed by the ROICC NTR, c entrainers shall be used to ensure that the well screen and casing assembly is installed concentrically in the borehole. When the assembly has been installed at the appropriate elevation, it shall be adequately secured to preclude movement during placement of the filter packs and annular seals. The top of the well casing shall be capped during filter pack placement.

3.4.2 Primary Filter Pack

Primary filter pack shall be placed as indicated on the approved well construction drawings to fill the entire annular space between the screen and casing assembly and the outside wall of the borehole. Place the primary filter pack material with a tremie pipe in accordance with EPA 600/4-89-034 and ASTM D 5092. Placement of the primary filter by gravity or free fall methods is not allowed. Control speed of filter placement to prevent bridging and to allow for settlement. Prior to commencement of work, equipment and methods required to place filters shall be approved by

the ROICC NTR.

3.4.3 Bentonite Seal

Bentonite pellets shall be placed through a tremie pipe. Control speed of bentonite pellet placement to prevent bridging. Additional water shall be added to the annular space as directed by the CPC to ensure complete hydration of the bentonite. Bentonite pellets shall cure a minimum of 48 hours before the placement of cement/bentonite grout to ensure complete hydration and expansion of the bentonite pellets.

3.4.4 Cement/Bentonite Grout

Cement/bentonite grout shall be placed in the annular space above the bentonite seal as indicated on the well construction drawings. Grout shall be placed as a slurry through a tremie pipe, and injected under pressure to reduce chance of voids. Grout shall be injected in one continuous operation until full strength grout flows out at the ground surface without evidence of drilling cuttings or fluid. Cement/bentonite grout shall cure a minimum of 48 hours before beginning well development operations.

3.4.5 Well Head Completions

Well head completions shall be as indicated and as specified herein.

3.5 WELL DEVELOPMENT

Well development shall be in accordance with EPA 600/4-89-034 and ASTM D 5092 except as modified herein. Bailing, surging, and pumping/overpumping/backwashing are acceptable development methods. Air surging and jetting are prohibited. Method of development shall be chosen by the CPC and approved by the ROICC NTR. Well development shall not begin until the well installation is complete and accepted by the ROICC NTR. Well development operations shall be conducted continuously until development water flows clear and free of drilling fluids, cuttings, or other materials. At such time representative water samples shall be tested for pH, temperature, and specific conductivity in accordance with EPA 600/4-79-020. Samples shall be taken every 5 minutes. When stabilized readings of these parameters, as accepted by the ROICC NTR, have been achieved for 3 consecutive sets of readings well development operations shall cease.

3.6 WATER FROM WELL DEVELOPMENT OPERATIONS

Water from the well development operations shall be containerized in accordance with State and local regulations and transported and disposed in accordance with Section 02223, "Transportation and Disposal of Contaminated Material."

3.7 INSTALLATION SURVEY

Upon completion of well installation and development and acceptance by the ROICC NTR therefor, the Contractor vertical and horizontal position of each well shall be determined by a registered land surveyor licensed in the State of Maryland. The survey shall document the vertical elevations (NGVD29) of the top of the casing pipe, top of the riser pipe, and the ground surface elevation adjacent to each well. The survey shall also determine the horizontal location of each well based on the NAD83 coordinate system. Survey shall be accurate to the nearest 0.01 foot.

This data shall be submitted with a well location map as the Installation Survey Report.

3.8 CLEANUP

Upon completion of the well construction, remove debris and surplus materials from the jobsite.

3.9 WELL ABANDONMENT

COMAR 26.04.04.

-- End of Section --

SECTION 02742

PAVEMENT WITH A BITUMINOUS CONCRETE SURFACE

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1188	(1996) Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens
ASTM D 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m))
ASTM D 2950	(1997) Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D 4253	(2000) Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D 4254	(2000) Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

FEDERAL SPECIFICATIONS (FS)

FS TT-P-115	(Rev. F) Paint, Traffic (Highway, White and Yellow)
-------------	-----------------------------------------------------

MARYLAND STATE HIGHWAY ADMINISTRATION (MD SHA)

MD SHA CM	(1993) Construction and Materials
-----------	-----------------------------------

1.2 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-06 Test Reports

Subbase material density

Shoulder material density

Subbase Course

Bituminous Concrete Courses Test

SD-07 Certificates

Subbase materials

Tack coat

Bituminous concrete mix

1.3 DESCRIPTION

This section includes a provision for the construction upon a prepared subgrade surface, subbase, bituminous concrete binder (base) course, bituminous concrete wearing (surface) course, and paint striping. Work shall be performed in accordance with the applicable requirements of the MD SHA CM specifications, except that the contractual and payment provisions do not apply. Articles and sections listed herein refer to these specifications. Where the term "Engineer" is used, it will equate to "ROICC NTR"; where the term "Administration" is used, it will equate to the "Federal Government" or "Government."

1.4 DEFINITION OF TERMS

1.4.1 Subgrade

An existing or borrow earth foundation upon which the pavement is constructed.

1.4.2 Subbase

A graded aggregate material having greater stability than the underlying subgrade material, used to reduce the thickness requirements of the bituminous concrete pavement section.

1.4.3 Bituminous Concrete Binder Course

A bituminous concrete layer immediately below the bituminous concrete wearing course. It is referred to as a base course in the specified reference documents.

1.4.4 Bituminous Concrete Wearing Course

The top traffic-bearing layer of pavement. It is referred to as a surface course in the specified reference documents.

1.4.5 Tack Coat

A light application of bituminous material applied to an existing bituminous surface, or the vertical cut surfaces of an existing pavement section to ensure bonding between the surfaces being paved and the new bituminous concrete material.

PART 2 PRODUCTS

2.1 SUBBASE MATERIALS

MD SHA CM Section 901, Table 901A Crusher Run Aggregate CR-6.

2.2 BITUMINOUS CONCRETE BINDER (BASE) COURSE MATERIALS

MD SHA CM Section 901, Table 901C BF or current approved MD SHA CM equivalent subject to approval of the ROICC NTR. MD SHA CM Section 904.

2.3 BITUMINOUS CONCRETE WEARING (SURFACE) COURSE MATERIALS

MD SHA CM Section 901, Table 901C SF or current approved MD SHA CM equivalent subject to approval of the ROICC NTR. MD SHA CM Section 904.

2.4 TACK COAT MATERIALS

MD SHA CM Section 904.05, emulsified asphalt.

2.5 SHOULDER MATERIAL

MD SHA CM Section 901, Table 901A Graded Aggregate.

2.6 STRIPING MATERIALS

FS TT-P-115, Type I or Type II, color to match existing.

2.7 WOVEN GEOTEXTILE

MD SHA CM Section 921.09, Maryland application class ST.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

Size reduce and compact existing pavement section prior to common fill placement to provide adequate layer bonding, drainage, and bearing capacity. Prepare subgrade in accordance with Section 02315, "Excavation and Fill."

3.2 SUBBASE CONSTRUCTION

Construct in accordance with MD SHA CM Section 501.03. Subbase material density shall be compacted to 97 percent of ASTM D 1557 or 70 percent relative density in accordance with ASTM D 4253 and ASTM D 4254.

Place woven geotextile in a loose and unstretched condition. Overlap edges a minimum of 12 inches.

3.3 BITUMINOUS CONCRETE BINDER (BASE) COURSE CONSTRUCTION

MD SHA CM Section 504.

3.4 BITUMINOUS CONCRETE WEARING (SURFACE) COURSE CONSTRUCTION

MD SHA CM Section 504.

3.5 TACK COAT APPLICATION

MD SHA CM Section 504.03.04. Apply to the vertical cut surfaces of the pavement as well as the top of the bituminous concrete binder (base) course.

Clean and fill transverse joints between old and new pavement as directed by the ROICC NTR with tack coat material insuring that it fully penetrates and completely fills the joint. Remove excess tack coat material along the joint. Immediately cover with a light application of clean sand.

3.6 SHOULDER CONSTRUCTION

MD SHA CM Section 601. Shoulder material density shall be compacted to 97 percent of ASTM D 1557.

3.7 STRIPING APPLICATION

Allow the bituminous pavement to cure for at least 21 days before applying paint. Clean the pavement to remove loose sand, stones, dust, oil, grease, water, and other substances that are harmful to paint or adversely affect the adhesion of paint. Do not apply paint if conditions prevent neat, uniform application.

Apply by means of conventional traffic line striping equipment; the striping shall have a wet film thickness of 0.38 inch. Follow the striping paint manufacturer's recommendations.

3.7.1 Protection

Do not permit traffic on the painted areas until the paint is thoroughly dry.

3.8 FIELD TESTING

3.8.1 Subbase Course

3.8.1.1 Smoothness Tests

Correct deviations on the surface in excess of 3/8 inch when tested with a 10 foot straightedge applied parallel with and at right angles to the center line of the paved area by loosening, adding or removing material, reshaping, watering, and compacting. The smoothness requirements specified herein apply only to the top layer when the subbase is constructed in more than one layer.

3.8.1.2 Density Tests

One field test for each 100 square yards of bituminous concrete binder course and wearing course, with a minimum of three tests each course, in accordance with ASTM D 2950. Thin layer nuclear density gauge readings shall be taken on a control strip to determine the number of coverages to obtain optimum density. Optimum density is defined when the average density does not change by more than 1.0 percent between successive coverages.

3.8.1.3 Thickness Tests

Measure the thickness of the subbase at intervals such that there will be a depth measurement for at least each 100 square yards of a complete subbase course, with a minimum of three tests. Make a depth measurement with test holes at least 3 inches in diameter through the subbase course. Where there is a deficiency greater than 1/2 inch, correct by scarifying, adding the mixture of proper gradation, reblading, and recompacting. Where the measured thickness is more than 1/2 inch thicker than indicated, consider it as the indicated thickness plus 1/2 inch for determining the average. The average thickness is the average of the depth measurements; the average thickness shall have a maximum underrun of the thickness indicated of 1/4 inch.

3.8.2 Bituminous Concrete Courses Test

3.8.2.1 Smoothness

Test the compacted surface of the bituminous concrete binder and wearing courses with a straightedge as the work progresses. Apply the straightedge parallel with and at right angles to the centerline after the final rolling. The evenness of the binder course shall have a maximum variance of plus or minus 1/4 inch for every 10 feet. The maximum variance in the wearing course shall be plus or minus 1/8 inch for every 10 feet. Correct any portion of the pavement showing irregularities greater than those specified.

3.8.2.2 Density

This test shall be performed with one ASTM D 1188 laboratory test for the project and one ASTM D 2950 field test for each 100 square yards of bituminous concrete binder and wearing courses, with a minimum of three tests. The minimum field density shall be 96 percent of the density obtained in the laboratory test.

3.8.2.3 Thickness

The maximum allowable deficiency at any point shall be 1/4 inch less than the indicated thickness for any course. The minimum average thickness of the course shall be equal to the indicated thickness. Where the deficiency exceeds the specified tolerances, the Contractor shall correct such area or areas by removing the pavement in question and replacing with new pavement.

-- End of Section --

SECTION 02951

MITIGATED WETLANDS AREA, SHRUBS, PLANTS, AND GRASS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z60.1 (1990) Nursery Stock

U.S. DEPARTMENT OF AGRICULTURE (USDA)

USDA FSA (January 1985) Federal Seed Act Rules and Regulations of the Secretary of Agriculture

USDA SCS List (1982) Soil Conservation Service, National List of Scientific Plant Names, (Volume 1-List of Plant Names), Report Number SCS-TP-159

U.S. DEPARTMENT OF INTERIOR (DOI)

DOI List (1988) National List of Plants Species that Occur in Wetlands: National Summary, Biological Report 88(24), Fish and Wildlife Service

MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE)

MDE SESC (1994) Standards and Specifications for Soil Erosion and Sediment Control

1.2 DEFINITION

1.2.1 Stand of Turf

95 percent ground cover of the established species.

1.2.2 Pesticide

Pesticide means soil fumigants, herbicides, insecticides, and fungicides.

1.2.3 Wetlands Restoration Areas

Refers to all areas designated for establishment of indigenous vegetation as indicated.

1.3 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.

SD-06 Test Reports

Erosion control materials

Topsoil

SD-07 Certificates

Nursery certifications

Indicate names of plants in accordance with the DOI List or USDA SCS List, including type, quality, and size.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery

Arrange for delivery of plant material as close as possible to planting. Small deliveries of only that plant material which can be installed the same day are recommended.

1.4.1.1 Seed Protection

Protect from drying out and from contamination during delivery, on-site storage, and handling.

1.4.1.2 Branched Plant Delivery

Deliver with branches tied and exposed branches covered with material which allows air circulation. Prevent damage to root balls and desiccation of leaves.

1.4.1.3 Fertilizer and Lime Delivery

Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and Federal laws. Fertilizer and lime may be furnished in bulk with a certificate indicating the above information.

1.4.1.4 Plant Labels

Deliver plants with durable waterproof labels in weather-resistant ink. Provide labels stating the correct plant name and size as specified in the list of required plants. Attach to plants, bundles, and containers of plants. Groups of plants may be labeled by tagging one plant. Labels shall be legible for a minimum of 60 days after delivery to the planting site.

1.4.1.5 Pesticide Delivery

Deliver to the site in original unopened containers with legible label indicating EPA registration number and manufacturer's registered uses.

1.4.2 Storage

1.4.2.1 Plant Storage and Protection

Store and protect plants not planted on the day of arrival at the site as follows:

- a. Shade and protect plants in outside storage areas from the wind and direct sunlight until planted.
- b. Heel-in bare root plants.
- c. Protect balled and burlapped plants from freezing or drying out by covering the balls or roots with moist burlap, sawdust, wood chips, shredded bark, peat moss, or other approved material. Provide covering which allows air circulation.
- d. Keep plants in a moist condition until planted by watering with a fine mist spray.

1.4.2.2 Lime, Fertilizer, and Mulch Storage

Store in dry locations away from contaminants.

1.4.2.3 Pesticides and Antidesiccants Storage

Do not store with other landscape materials.

1.4.2.4 Seed, Fertilizer and Lime Storage

Store in cool, dry locations away from contaminants.

1.4.2.5 Topsoil

Prior to stockpiling topsoil, treat growing vegetation with application of appropriate specified non-selective postemergence herbicide. Clear and grub existing vegetation three to four weeks prior to stockpiling topsoil.

1.4.3 Handling

Do not drop or dump materials from vehicles. Avoid damaging plants being moved from nursery or storage area to planting site. Handle balled and burlapped plants carefully to avoid cracking or breaking the earth ball. Do not handle plants by the trunk or stem. Puddle bare-root plants after removal from the heeling-in bed to protect roots from drying out. Remove damaged plants from the site.

1.5 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.5.1 Planting Dates

Planting dates as indicated. Planting outside these time periods may be acceptable depending on specific conditions at the site. However, planting outside these periods shall be conducted only after the approval by the Contracting Officer.

1.5.2 Restrictions

Do not plant when ground is frozen, snow covered, or when air temperature exceeds 95 degrees F.

1.5.3 Seed

Apply seed within twenty four hours after seed bed preparation.

1.6 GUARANTEE

All plants shall be guaranteed for one year beginning on the dates of inspection by the Contracting Officer to commence the plant establishment period.

1.7 SUBSTITUTIONS

Authorization shall be obtained from the Contracting Officer before performing work in variance to these specifications including substitutions of plant material in terms of species, size, or form.

1.8 REQUIREMENTS FOR OFF SITE SOIL

Provide in accordance with Section 02315, "Excavation and Fill."

PART 2 PRODUCTS

2.1 PLANTS

2.1.1 Varieties

Botanical names indicated are listed in DOI List or USDA SCS List. Furnish nursery stock in accordance with ANSI Z60.1, except as otherwise specified or indicated. Each plant or group of planting shall have a "key" number indicated on the nursery certifications of the plant schedule. Furnish plants grown under climatic conditions similar to those in the locality of the project. Spray plants budding into leaf or having soft growth with an antidesiccant before digging. Plants of the same specified size shall be of uniform size and character of growth.

2.1.2 Plant Regulations

ANSI Z60.1, and the following additional requirements.

2.1.2.1 Shape and Condition

Well-branched, well-formed, sound, vigorous, healthy planting stock free from disease, sunscald, windburn, abrasion, and harmful insects or insect eggs and having a healthy, normal, and unbroken root system.

2.1.2.2 Source and Plant Material

All plant material shall be nursery-grown specifically for use in USDA Hardiness Zone 7. Plant material collected from wild settings shall not be used.

2.1.2.3 Plant Material Used in the Wetlands Restoration Areas

As indicated.

2.1.2.4 Size

Minimum sizes shall be those available from the nursery stock, based on the average width or height of the plant for the species as specified in ANSI Z60.1.

2.1.3 Plant Material Standards

All plant material shall meet applicable standards set in ANSI Z60.1.

2.1.3.1 Bareroot Herbaceous Material

Display new roots that are clean and white in coloration, and the plants shall appear healthy with no significant foliage spots, discolorations, wilting, or other evidence of disease or insect damage.

2.1.3.2 Bareroot Trees and Shrubs

Show good form; be sound and vigorous; be free of disease and insect damage, sunscald, windburn, and abrasion; and have a well-developed fibrous root system. Have an abundance of well-developed terminal buds on the leaders and branches, and the stems and branches shall be turgid and have a healthy cambium. Plants shall not be leafed out at the time of delivery.

a. Container Grown Trees and Shrubs

(1) The root system shall be well distributed throughout the container, but not potbound.

b. Balled and Burlapped Trees and Shrubs

(1) Balls shall be firm natural soil meeting the size criteria in ANSI Z60.1. Balls shall be securely tied using burlap or other strong, biodegradable cloth.

2.1.3.3 Rhizomes

Be firm and of normal coloration and size.

2.2 TOPSOIL

Test for USDA classification, organic content, pH, soluble salts, nitrogen, phosphorous, and potassium by a recognized commercial laboratory.

2.2.1 Existing Topsoil

Modify existing soil to conform to the requirements specified in paragraph entitled "Topsoil Composition." Do not use soils from areas where the invasive species Phragmites (*Phragmites australis*) is known to occur.

2.2.2 Off-Site Topsoil

Conform to requirements specified in paragraph entitled "Topsoil Composition." Additional topsoil shall be furnished by the Contractor. Do not use soils from areas where invasive species Phragmites (*Phragmites australis*) is known to occur.

2.2.3 Topsoil Composition

Soil for use in the upper 6 inches of the wetland and site restoration areas shall be of medium texture (loam, sandy loam, loamy sand, silt loam, or silt); contain from 5.0 to 8.0 percent organic matter; have pH between 6.0 and 7.5; and soluble salts less than or equal to 500 ppm.

2.3 pH ADJUSTERS

2.3.1 Lime

As indicated.

2.4 FERTILIZER

Requirements for temporary and permanent seeding as indicated.

2.5 SOIL CONDITIONERS

MDE SESC, Section 21 for permissible soil conditioners or as otherwise specified.

2.6 SURFACE TOPDRESSING

Mulches as indicated.

2.7 SEEDS

2.7.1 Classification

Provide State-certified seed of the latest season's crop delivered in original sealed packages, bearing producer's guaranteed analysis for percentages of mixtures, purity, germination, weed and seed content, and inert material. Label in conformance with USDA FSA and MDE SESC. Wet, moldy, or otherwise damaged seed will be rejected. Field mixes will be acceptable when field mix is performed on site in the presence of the Contracting Officer.

2.7.2 Composition

MDE SESC Section 20 or as otherwise specified.

2.7.3 Seed Mixture

2.7.3.1 Permanent Seed Mixture

As indicated.

2.7.3.2 Temporary Seed Mixture

As indicated.

2.8 PESTICIDES AND FERTILIZERS

All pesticides and fertilizers proposed for use must be approved by the Contracting Officer prior to application.

2.8.1 Pesticide Ingredients

Only use herbicides containing the only active ingredient of glyphosate.

2.9 WATER

Suitable quality for irrigation.

2.10 MULCH

All mulch used shall be approved by the Contracting Officer prior to application and shall comprise shredded woody material free of stones and other foreign material.

2.11 EROSION CONTROL MATERIALS

2.11.1 Matting for Erosion Control

MDE SESC, Section 22. Material shall contain ultraviolet (UV) inhibiting stabilizers to ensure endurance and provide permanent root reinforcement.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Extent of Work

Provide soil preparation, fertilizing, seeding, and topdressing of all newly graded finished earth surfaces, unless indicated otherwise, and at all areas inside or outside the limits of construction that are disturbed by the Contractor's operations.

3.1.2 Soil Preparation

After areas have been brought to finish subgrade elevation, thoroughly till to minimum depth of 6 inches by scarifying, discing, harrowing, or other methods approved by the Contracting Officer. Remove debris and stones larger than one inch in any dimension remaining on surface after tillage. Spread stockpiled topsoil evenly to provide positive drainage. Provide off-site topsoil to meet indicated finish grade. Do not spread topsoil when frozen or excessively wet or dry. Correct irregularities in finished surfaces to eliminate depressions. Protect finished prepared topsoil areas from damage by vehicular or pedestrian traffic.

After areas have been brought to indicated finish grade, incorporate fertilizer, pH adjusters and topsoil conditioners as indicated by discing, harrowing, tilling or other method approved by the Contracting Officer. Remove debris and stones larger than one inch in any dimension remaining on the surface after tillage. Correct irregularities in finish surfaces to eliminate depressions. Protect finished topsoil areas from damage by vehicular or pedestrian traffic.

3.1.2.1 pH Adjuster Application Rates

Apply pH adjuster at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.1.2.2 Soil Conditioner Application Rates

Apply topsoil conditioners at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.1.2.3 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.2 SEEDING

3.2.1 Seed Application Seasons and Conditions

Immediately before seeding, restore topsoil to proper grade and thoroughly moisten topsoil. Do not seed when ground is muddy, frozen, snow covered or in an unsatisfactory condition for seeding. If special conditions exist that may warrant a variance in the above seeding dates or conditions, submit a written request to the Contracting Officer stating the special conditions and proposed variance. Apply seed within twenty four hours after seedbed preparation. Sow seed by approved sowing equipment as indicated.

3.2.2 Seed Application Method

As indicated.

3.2.3 Surface Topdressing

For seeding methods other than hydroseeding, spread straw over seed bed area as indicated. Take precautionary measures to prevent topdressing materials from spilling onto pavements, utilities structures, or planter beds. Wood cellulose fiber mulch shall be utilized in conjunction with hydroseeding.

3.2.4 Rolling

Immediately after seeding, firm entire area except for slopes in excess of 3H to 1V with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with cultipacker-type seeder or by hydroseeding, rolling may be eliminated.

3.2.5 Erosion Control Matting

Install in accordance with MDE SESC Section G22 and the manufacturer's instructions.

3.2.6 Watering

Start watering areas seeded as required by temperature and wind conditions. Apply water for duration and at a rate sufficient to insure topsoil is moist to a depth of 6 inches and topsoil surface is thoroughly wet without run-off. During the germination process, seed is to be kept actively growing and not allowed to dry out.

3.3 PROTECTION OF TURF AREAS

Immediately after turfing, protect area against traffic and other use.

3.4 RESTORATION

Restore to original condition existing turf areas which have been damaged during turf installation operations.

3.5 MAINTENANCE

Maintenance shall begin immediately after planting. Seeded areas shall be protected and maintained until formal acceptance by the Contracting Officer. Maintenance shall consist of watering activities and other necessary operations adequate to insure the survival of the planted materials and seeded areas for the duration of the maintenance period, as

specified in MDE SESC Section 20.

3.6 PREPARATION - WETLANDS RESTORATION AREA

3.6.1 Site Preparation

The areas designated for wetlands restoration shall be free of live herbaceous vegetation prior to planting. Any live herbaceous vegetation on the site at the time of planting shall be killed by a ground application of an herbicide. Killed herbaceous vegetation shall not be physically removed.

3.6.2 Layout

Approved plant material locations and bed outlines on the project site will be staked and flagged before digging plant pits or beds. The Contracting Officer reserves the right to adjust plant material locations to meet field conditions.

3.6.3 Transportation

Provide adequate protection, packaging and handling of all plant materials during their transportation to the site to guard against injury or desiccation. All plants injured and plants with root balls broken during planting operation will be rejected. All plant material is to be planted as soon as possible after its arrival on the site. All bare-root plants shall be planted or heeled-in immediately upon delivery to the site. All other plant material that can not be planted immediately upon delivery shall be covered with moist topsoil, mulch, or other material to provide protection from drying winds and sun. All plants shall be watered as necessary until planted.

3.6.4 Excavation, Topsoiling and Planting

Provide minimum of 6 inches of topsoil over the wetlands restoration areas or as otherwise indicated. Protect existing adjacent vegetation before excavations are made. Measure depth of pits from finished grade. Depth of excavation shall provide proper relation between top of ball and finished grade as specified in paragraph entitled "Handling."

3.6.5 Root Pruning

Cleanly prune any damaged roots from the bare root seedlings.

3.7 PLANTING

3.7.1 Planting Pits

3.7.1.1 Planting Pits for Bare Root Plants

Planting pits shall be excavated to a depth such that the root system will be just below grade, and to a width accommodating the root system in a natural position.

For rhizomes, no pit shall be excavated, but soil shall be loose and friable to depth that the rhizome may be planted and covered with one inch of soil.

3.7.1.2 Planting Pits for Balled and Burlapped and Container Grown Plants

Planting pits shall be excavated, to a depth that the top of the rootball (removed from the container, if container grown) will sit approximately 1 to 2 inches above the surrounding grade, and to a width that will leave approximately 9 additional inches on each side of the rootball.

3.7.1.3 Planting Pits for Peat Pot Stock

Planting pits shall be excavated so that the top of the peat pot shall be between 1 and 2 inches below the topsoil surface.

3.7.2 Setting and Planting

3.7.2.1 Setting Bare Root Plants

Each plant shall be set vertically in its pit such that the uppermost roots are just below grade and that the extended root system does not touch the edge of the pit. All visible damaged roots shall be cleanly pruned above the area of damage prior to setting the plants.

3.7.2.2 Setting Balled and Burlapped and Container Grown Plants

The rootball shall be placed in the center of the pit and backfilled. Tree and shrubs shall not have more than a 10 percent lean following backfilling.

3.7.2.3 Setting Peat Pots

Peat pots shall be set so that the top of the peat pot is between 1 and 2 inches below the topsoil surface.

3.7.3 Backfilling and Tamping

3.7.3.1 Backfilling Bare Root Plants

Backfill shall comprise the soil originally removed from the pit, loose and without clods, but not amended. Backfill shall be loosely added to the pit so as to not crush or compress the roots. Once placed, the backfill shall be gently tamped to pack topsoil around the roots.

Rhizomes shall be gently pressed into loose and friable soil such that the rhizomes are covered by one inch of soil.

3.7.3.2 Backfilling Balled, Container Grown Plants and Peat Pots

Backfill shall be comprised of topsoil originally removed from the pit, loose and without clods, but not amended. Once placed, the backfill shall be gently tamped. Excess backfill shall be loosely raked across the land surface surrounding the pit, but not used to create a saucer to trap rainwater.

3.7.4 Watering

Topsoil around each plant shall be thoroughly watered immediately following planting.

3.7.5 Mulching

After watering, a circular area 30 inches in diameter surrounding each tree shall be mulched to a depth of 2 inches.

3.7.6 Other

Newly graded areas outside of the limits of the wetland restoration areas shall be topsoiled and seeded as indicated.

3.8 MAINTENANCE PERIOD

Maintenance shall begin immediately after planting and shall be provided for either the replicated fresh water marsh or new shrubs and grasses. New planting and seeded areas shall be protected and maintained for a period of ten (10) weeks after formal acceptance by the Contracting Officer. Maintenance shall consist of watering activities and other necessary operations adequate to insure the survival of the planted materials and seeded areas for the duration of the maintenance period. Remove and replace all dead plants.

-- End of Section --