OHM Remediation Services Corp.

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FINAL
WORK PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

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LIST OF ACRONYMS

Acronym	Title
CAD	cartridge actuated device
CD	compact disc
COC	chemical of concern
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
MD SHA	Maryland State Highway Administration
MDE	Maryland Department of the Environment
mg/kg	milligram per kilogram
NTR	Navy Technical Representative
OE	Ordnance and Explosives
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
PBA	Project Business Administrator
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PRG	preliminary remediation goal
QC	quality control
QCP	Quality Control Plan
RAO	remedial action objective
ROICC	Resident Officer in Charge of Construction
Site 41	Site 41 - Scrap Yard
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
TtNUS	Tetra Tech NUS, Inc.

1.0 INTRODUCTION

OHM Remediation Services Corporation (OHM) was contracted by the Navy for the remedial action at Site 41, Scrap Yard, 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, Task Order No. 077 and will be conducted in accordance with the remedial action design prepared by Tetra Tech NUS, Inc. (TtNUS)

1.1 PURPOSE

This Work Plan describes in detail the tasks to be performed during remedial activities at the Site 41, Scrap Yard (Site 41) 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, submitted, and approved as a separate document. The UXO Support Plan specifically addresses the identification, handling, demilitarization, and disposal of inert ordnance and explosive (OE) items as well as the specific safety precautions and site training required by the site workers.

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 41 is located in the southeastern portion of the IHDIV-NSWC (Figure 1-1). The scrap yard is a fenced-in concrete pad area approximately 750 feet long and 75 to 100 feet wide adjacent to Mattawoman Creek. The area south of the scrap yard is flat and contains a set of formerly used railroad tracks running along the entire length of the pad. Surface water generally runs off toward Mattawoman Creek or ponds in the flat area south of the scrap yard and eventually infiltrates into the subsurface. The area north of the scrap yard is steeply sloped and wooded. Runoff from the north area flows toward the scrap yard and Mattawoman Creek. The concrete pad contains a 3- to 4-foot high vertical concrete wall along the south side of the pad. It is covered with soil and a variety of scrap metal in some places. The scrap yard is actively used to store metal materials and scraps, which are eventually sold to be reused or recycled. Existing conditions of the site are shown on Sheet C-1 of the Design Drawings.

The site has been a scrap yard since at least the 1960's. In 1981, 17 transformers stored at the site were identified as either containing or were contaminated with polychlorinated biphenyls (PCB). The transformers were believed to have leaked and contaminated the soil in the western portion of the site. Additionally, lead batteries that were stored at the site may have leaked lead to the surface soil. Currently, one PCB-free transformer and several batteries are stored in the site but will be removed by base personnel prior to excavation activities.

1.3 GENERAL SCOPE AND OBJECTIVES

The objective of this plan is to present all necessary information to perform the remediation activities at Site 41 in a safe and efficient manner according to the design documents. The selected remedy for Site 41 includes contaminated soil removal, land use controls that restrict the use of land and shallow groundwater, and periodic monitoring. The purpose of the contaminated soil removal is to eliminate the possibility of exposure to human and ecological receptors. The primary remedial action objective (RAO) is to remove soil to reduce concentrations of the COCs to below the preliminary remediation goals (PRG). The secondary RAO is to prevent residential exposure to subsurface soil and groundwater. The remedial action objectives for the TtNUS design are to remove the potential for direct contact between receptors and soil contaminants, and to prevent future residential exposure to soil and groundwater contaminants.

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 OHM 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. The crews will be augmented as necessary to perform the various tasks in an efficient manner.

2.2 MANAGEMENT APPROACH TO CONSTRUCTION

OHM's approach to project management is to place the management at a level close to the client. OHM'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. OHM 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 OHM's overall responsibilities for this project as well as the individual responsibilities of the project team.

2.3.1 OHM Responsibilities

The responsibilities of OHM are:

- Perform the removal activities defined in the Work Plan, design documents, and as required under this task order.
- Prepare and submit to the Navy monthly status reports containing 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 OHM's on-site representative/manager.

- 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 OHM's Project Management Team

The removal action at Site 41 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), UXO Supervisor, 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 OHM 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.
- Responsible 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:

- 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 OHM quality standards.

2.3.4 Site Superintendent

The Site Superintendent is the OHM 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 advising 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 removal 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.
- 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 reviewing 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.
- Approving 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 OHM's staff.
- Assist the Site Superintendent in procurement activities.

2.3.8 Senior UXO Specialist

The Senior UXO Specialist will supervise the demilitarization of inert OE items (UXO Support Plan) and monitor all excavation activities where a potential exists of uncovering OE related items. He will be supported in the field by UXO technicians. 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 remediation of Site 41. These activities include:

- Mobilization and site setup
- Site preparation
- E&S controls installation
- Monitoring well abandonment
- Clearing and grubbing
- Pad soil removal
- Concrete pad cleaning
- Railroad track removal
- Adjacent soil removal
- Backfilling
- Road foundation and pavement
- Site restoration
- Removal of temporary facilities
- Site inspections
- Demobilization
- Closeout report.

Prior to initiating the above activities, the OE items that currently remain at the site will be identified, separated into categories, and demilitarized (inert OE items only). The procedures for this activity are described in the UXO Support Plan previously submitted. The sequencing and duration for each of the activities listed above as well as other related activities, is shown on the project schedule (Figure 3-1).

3.1 MOBILIZATION AND SITE SETUP

OHM 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, including one or two office trailers and a storage trailer, and connecting utilities.

Upon completion of the initial site setup, OHM 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 OHM'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

OHM 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 Works Department. In addition, OHM 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.

3.2.2 Initial Site Survey

OHM will perform a topographic survey of the existing conditions at Site 41 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

OHM 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 Fence Removal

The existing chain-link fence located along the southern end of the scrap yard will be removed to facilitate the remedial action work. This fence is in relatively poor condition and will probably not be able to be used for reinstallation at the end of the project. Therefore the fencing and support posts will be removed and placed in a roll-off container for delivery to a scrap metal recycler.

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/placement areas and haul roads and during placement of material. The water source for the truck will be determined by the 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 Site Superintendent as dictated by changes in site conditions on a continuing basis.

3.2.6 Air Monitoring

OHM 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.

3.3 EROSION AND SEDIMENT CONTROLS

This section describes the various erosion and sediment (E&S) controls that will be used during remediation activities at the site. All controls will comply with the manufacturer's installation specifications and will be installed as directed by the 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 earth moving activities to take place while minimizing any threat to the adjacent waterways. Work covered under this task includes installation of silt fence, a stabilized construction entrance, a decontamination pad, straw bales, a soil barrier, and vegetation. The maintenance of these structures for the duration of the remediation project is included as part of this task.

3.3.1 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 southern extent of the excavation to protect the shoreline of the Mattawoman Creek during excavation activities. It will be installed in accordance with Detail 1 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 will be stockpiled for off-site disposal with the other soil.

3.3.2 Stabilized Construction Entrance

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 the point of vehicular ingress and egress to the work area. The construction entrance will be installed in the location shown on Sheet C-2 and in accordance with Detail 2 on Sheet C-5 of the Design Drawings. The construction entrances will be inspected regularly and 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 site will be permitted.

3.3.3 Decontamination Pads

Decontamination pads will be installed in accordance with Detail 4 on Sheet C-5 of the Design Drawings at locations chosen by OHM and approved by the ROICC and MDE. The pads will be used to decontaminate equipment and metal scrap materials before they leave the site. Water used in the decontamination process will be collected and stored for disposal.

3.3.4 Portable Sediment Tanks

Decontamination and sediment water will be sent through the portable sediment tanks shown with Detail 3 on Sheet C-5 of the Design Drawings. These tanks will allow any solids temporarily suspended in the 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 backfill material. If the water and sediment require off-site treatment and disposal, they will be sent to an appropriate facility.

3.3.6 Straw Bales

Straw bales will be placed on both sides of the access road east of the site at the intersection of the access road and the drainage channel. Straw bales will be installed in accordance with Detail 5 on Sheet C-5 of the Design Drawings. The will intercept the sediment from the runoff from the access road. Sediment collected by the straw bales will be removed and stockpiled for disposal when the sediment reaches half of the original height of the straw bale. The straw bales will remain in place throughout construction and will be removed once permanent vegetation has been established.

3.3.7 Soil Barrier

A temporary soil berm will be installed where needed on the concrete pad to help direct surface runoff for collection. It will direct water to portable sediment tanks, where the sediment will be allowed to settle out. The water will then be contained and characterized for disposal. The soil for the temporary soil barrier will come from an off-site source. The soil berm will be inspected regularly for sediment accumulation or damaged areas where runoff may break through. A vertical concrete wall exists along the pad where the soil barrier is to be installed. If the structural integrity of the wall is good, the wall will act to direct surface runoff. If so, then the soil berm will not be necessary for this area.

3.3.8 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 3.12, Site Restoration.

3.4 MONITORING WELL ABANDONMENT

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

3.5 CLEARING AND GRUBBING

OHM personnel will perform the clearing and grubbing in the support areas and the excavation areas once the E&S controls are installed. Clearing will consist of the removal of aboveground vegetation. Grubbing will consist of the removal of stumps and root systems within the limits of disturbance. All cleared and grubbed material will be chipped and may be used in the topsoil layer or below during backfilling.

3.6 PAD SOIL REMOVAL

Prior to removing and screening contaminated soil located on the pad, the large pieces of metal (excluding OE items) that still remain on the pad will be removed and staged on the pad for processing. The metal pieces that will be removed during this process will be all things that cannot fit inside the front-

end loader or excavator bucket or do not need to be processed through the mechanical screener. The processing of these items will include removing any residual soil from each item, pressure washing or brooming (if necessary), then placing the item into an appropriate roll-off supplied by the Base or staging the item on a clean section of the concrete pad.

Soil on the concrete pad will be removed, screened, and staged for off-site disposal. Prior to any earth moving, a UXO technician will perform a visual search of the area for OE items. Once any visual UXO have been removed, excavation, screening, and staging of the soil will begin. A UXO technician will observe all excavation activities and remove and stockpile the safe-to-move OE items, including the cartridge actuated devices (CAD), for EOD personnel to pick up. Inert OE items will be demilitarized and placed in the appropriate scrap collection container. Specific procedures for the identification, moving, and disposal of OE items are discussed in the UXO Support Plan, submitted separately. It is estimated that 1,350 cubic yards of soil will be removed from the pad. Chemical testing will be performed to determine the transportation and disposal requirements of the soil. Depending on the condition of the pad soil after the scrap metal is removed, the soil may be systematically sampled prior to screening. Otherwise the screened soil will be placed in separate 200- to 300-cubic yard piles then sampled.

3.7 CONCRETE PAD CLEANING

Following the removal of the soil from the concrete pad, the pad will be cleaned. Cleaning will begin with push brooms to remove the residual soil not picked up by the front-end loader bucket. A high-power pressure-washer will then be used to wash the concrete. The water from the cleaning process will be sent to a portable sediment tank, where the solids temporarily suspended in the water will settle out. The water will then be transferred to a holding tank and tested to determine if it requires off-site disposal or if it can be released onto the site. The concrete pad will be pressure washed twice during the cleaning process.

After the concrete pad is pressure washed, wipe and/or chip samples will be taken from the concrete surface to determine the degree of residual PCB contamination. In addition, the concrete will be visually inspected in order to determine its condition. If the pad is sound and residual PCB contamination is present at concentrations exceeding the allowable levels of 10 micrograms per 100 square centimeters for the wipe samples or 2 milligrams pre kilograms (mg/kg) for the chip samples, 2 inches of bituminous concrete pavement (or other approved cover) will be placed over the concrete to eliminate the exposure to the PCB contamination as shown in Detail 5 on Sheet C-8 of the Design Drawings.

3.8 RAILROAD TRACK REMOVAL

The abandoned rail line running along the southern perimeter of the concrete pad will be removed, including the rails, ties, and ballast. Approximately 3,030 linear feet of rail will be removed, cut, decontaminated, and staged for disposal, along with miscellaneous spikes and plates. Additionally, approximately 650 railroad ties will be removed and staged on the concrete pad for disposal. All metal will be decontaminated with a pressure washer and the rails will be cut with hydraulic shears for ease of handling and hauling to a local metal scrap dealer. The water from the decontamination procedures will be handled as stated in Section 3.7.

3.9 ADJACENT SOIL REMOVAL

The soil adjacent to the scrap yard will be excavated for off-site disposal. Initially, the top 6 inches of contaminated soil over the entire remediation area indicated in Figure 3-2 will be excavated

(approximately 880 cubic yards, or 1,490 tons). This excavated material will be mechanically screened for CADs if necessary then staged for off-site disposal. Next, selective excavation of the remaining contaminated soil (hot spots) will take place (an estimated 150 cubic yards, or 250 tons). Because the CADs are only expected on or near to the surface, the soil from the deeper excavations does not require mechanical screening. During the excavation of the hot spots, verification sampling and analysis will be conducted over the previously excavated area. This verification sampling will be conducted by the TtNUS. The procedures to be followed for the verification sampling presented in the Site 41 Verification Sampling Plan. The results of the verification analysis will be used to identify areas requiring additional soil removal. These additional areas (if any) will be identified by TtNUS and after the additional excavation, additional verification samples will be collected and analyzed (if required). The railroad ballasts will be removed to a depth of 12 inches at the same time as the initial soil excavation, but will not require mechanical screening (approximately 370 cubic yards, or 680 tons).

An eight-foot excavation is required at Sample Point 13 as shown on Sheet C-6 of the Design Drawings. The excavation will be conducted by sloping back the sidewalls and the excavation is expected to terminate below the water table and dewatering will be required. This will be accomplished using trash pumps and temporarily containerizing the water until chemical analysis results can determine the appropriate means of disposal.

3.10 BACKFILLING

The areas adjacent to the scrap yard where soil is excavated will be backfilled with clean fill obtained from an off-site borrow source. Common fill will be placed in the area and spread with a dozer in 6- to 9-inch loose lifts. The lifts will be compacted to 85 percent of their maximum dry density. Topsoil will be placed as the top 6 inches of fill. Compaction of the topsoil will be incidental to its placement with no additional compaction required. Both the common fill and topsoil will be obtained from off-site borrow sources. Chemical testing for clean fill parameters will be performed on the common fill and topsoil as described in the QCP (Appendix C) before the materials are brought on site.

3.11 ROAD FOUNDATION AND PAVEMENT

A site access road will be constructed along the southern portion of the site to provide future vehicle access. The entrance to the access road, on the eastern side of the site near Hersey Road, will be paved with bituminous concrete pavement. The area will be prepared using four inches of compacted aggregate subbase placed over woven geotextile. The base and asphalt will then include 6 inches of aggregate base, 2 inches of bituminous concrete binder course, and 1 inch of bituminous concrete wearing course. The remaining portion of the road will be constructed with gravel. It will consist of 8 inches of Maryland State Highway Administration (MD SHA) graded aggregate base over woven geotextile.

3.12 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, replacement of removed fence, installation of new fence and a gate, and the performance of a final site survey, are discussed in detail below.

3.12.1 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 control structures will remain in place while vegetation is being established at the site.

3.12.2 Fence and Gate Installation

The chain link fence that was removed from south of the scrap yard will be replaced with new fence. Additionally, chain link fence will be installed around the remainder of the concrete pad. A double leaf security gate will be installed at the eastern end of the concrete pad. The location of the fence and gate are shown on Sheet C-7 of the Design Drawings, and their details are included on Sheet C-8.

3.12.3 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 new monitoring wells (by others) and warning signs. 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 AutoCAD and GIS formats. Pertinent survey data from the final survey will also be provided electronically in ASCII format.

3.13 REMOVAL OF TEMPORARY FACILITIES

Once the remedial activities are complete, the temporary facilities, including the sanitary facilities and trash dumpsters, will be removed. The electrical and telephone lines will be disconnected from the trailers and the trailers will be removed from the site. Other temporary structures, such as the E&S controls, the containment berm, and the safety delineations will be removed when appropriate. The E&S controls will not be removed until vegetation is established. Because demobilization will have already occurred by that time, a small crew will be re-mobilized to the site to remove the E&S controls.

3.14 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 Manager, 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 OHM has completed correcting any 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 OHM demobilizes from the site. The purpose for this inspection will be 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 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.

3.15 DEMOBILIZATION

OHM 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.

3.15.1 Decontamination of Equipment

All site equipment that comes in contact with waste or contaminated 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 soil excavation is completed. Once the common 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.

3.15.2 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.

3.13.3 Demobilization of Resources

All equipment will be visually inspected for proper decontamination prior to leaving the site. The remaining purchased 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, OHM will demobilize the remaining work force from the site.

3.14 CLOSEOUT REPORT

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

- 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

OFFICE Pittsburgh, PA

DRAWING NUMBER 831866-A2

REFERENCE:

AAA MAP OF "DELAWARE, DISTRICT OF COLUMBIA, MARYLAND/VIRGINIA", DATED: 1997, APPROXIMATE SCALE: 1"=8.3 MILES.

APPROXIMATE SCALE

0 8.3 16.6 MILES

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

REVISIONS

OHM Remediation Services Corp.

Shaw Environmental & Infrastructure, Inc.

DESIGNED BY	E. Rhodes	3/7/02	CHECKED BY	D.W.Pringle	3/7/02
DRAWN BY	R. Welble	3/7/02	APPROVED BY	D.W.P.	11-27-02

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
WASHINGTON NAVY YARD WASHINGTON, D.C.
NAVAL SURFACE WARFARE CENTER INDIAN HEAD, MARYLAND

REMEDIAL ACTION SITE 41
SCRAP YARD

SITE LOCATION MAP

SCALE: AS SHOWN

SIZE: A

TASK ORDER NO. 0062

CONSTR. CONTRACT NO. N62470-97-D-5000

NAVFAC DRAWING NO.

SHEET I.D.

FIGURE 1-1

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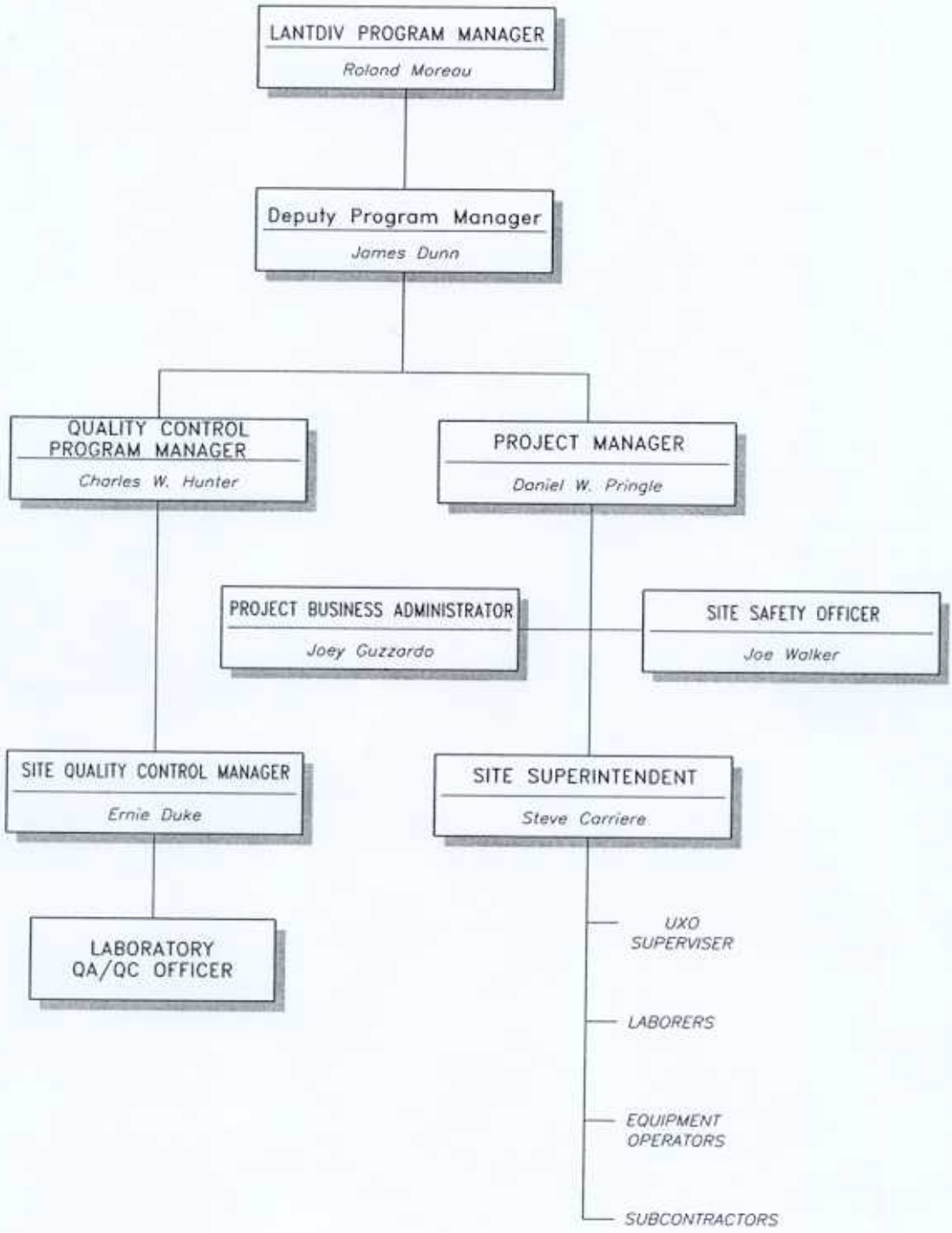
Plotted by: lburnside



OFFICE: Pittsburgh, PA
DRAWING NUMBER: 831866-A1

REVISIONS

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

OHM Remediation Services Corp.
Shaw Environmental & Infrastructure, Inc.

DESIGNED BY	--	--	CHECKED BY D.W.Pringle 1/27/99
DRAWN BY B.B.O'Connor	1/27/99	APPROVED BY	D.W.P. 11-27-02

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 41
SCRAP YARD

ORGANIZATIONAL CHART

SCALE: AS SHOWN
SIZE: A
TASK ORDER NO: 0062
CONSTR. CONTRACT NO: N62470-97-D-5000
NAVFAC DRAWING NO:
SHEET I.D.: FIGURE 2-1

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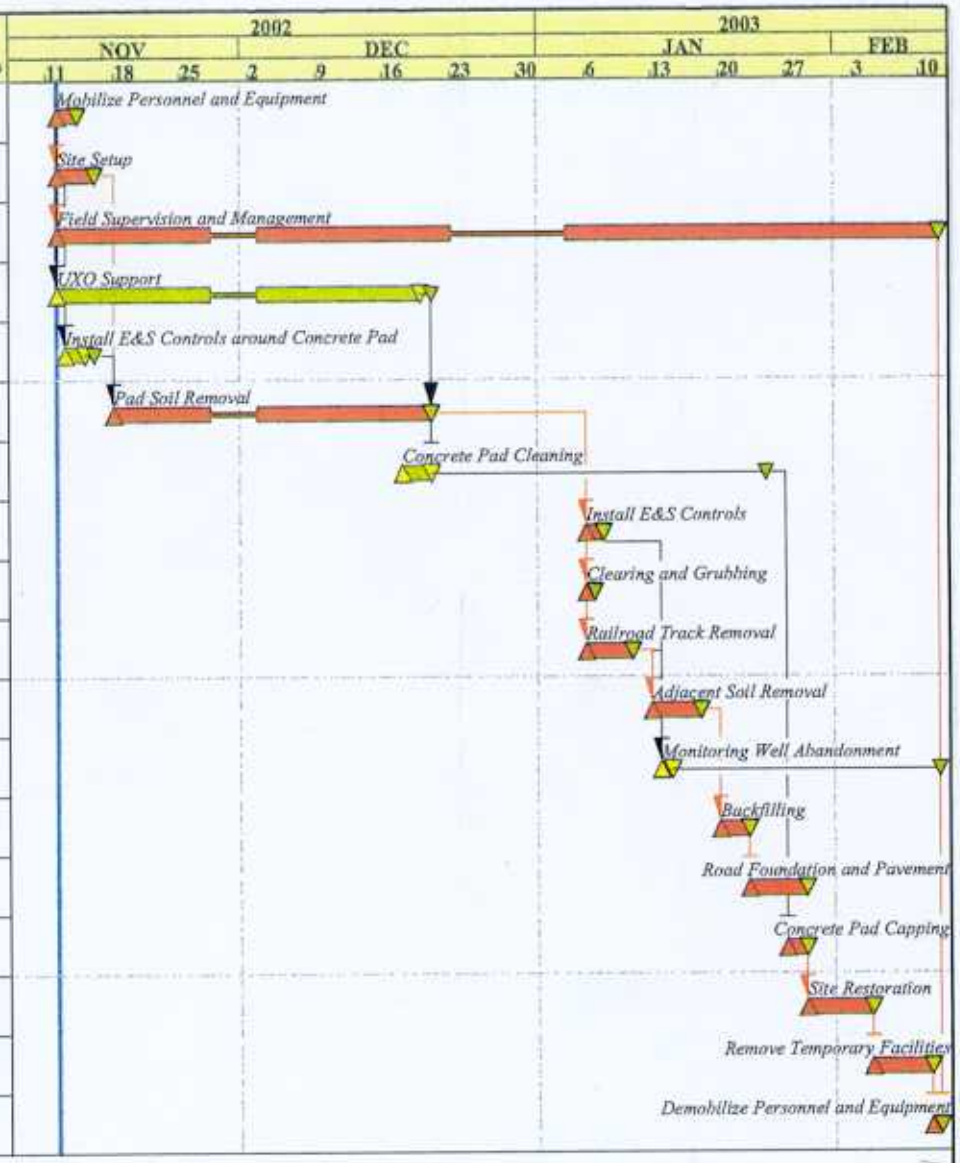
Plot Date/Time: 11/27/02 11:32am Image: .
Plotted by: lburnside Xref: .

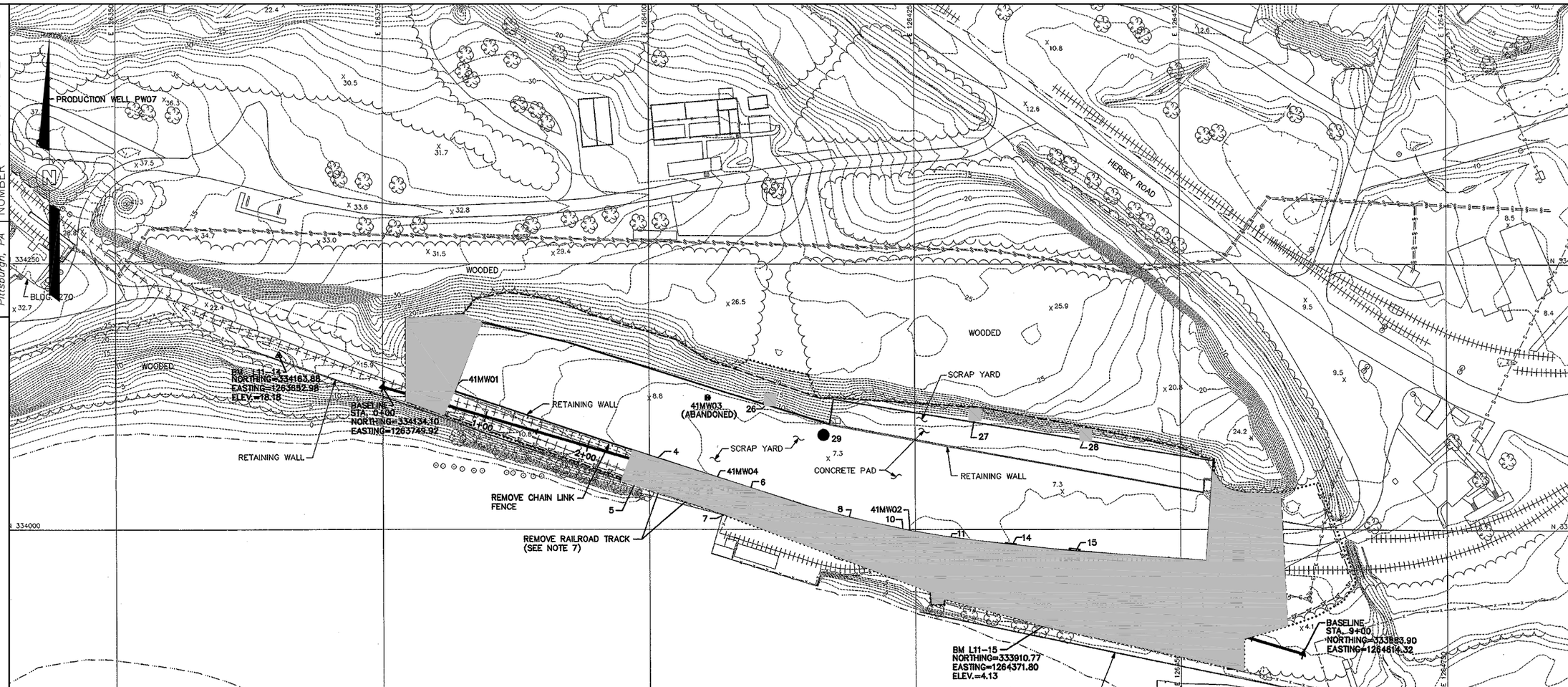
Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Rem Dur	% Comp
1000	Mobilize Personnel and Equipment	2	12NOV02	13NOV02	2	0
1010	Site Setup	4	12NOV02	15NOV02	4	0
1150	Field Supervision and Management	53	12NOV02	11FEB03	53	0
1085	UXO Support	25	12NOV02	19DEC02	25	0
1020	Install E&S Controls around Concrete Pad	2	13NOV02	14NOV02	2	0
1090	Pad Soil Removal	22	18NOV02	20DEC02	22	0
1100	Concrete Pad Cleaning	3	18DEC02	20DEC02	3	0
1021	Install E&S Controls	2	06JAN03	07JAN03	2	0
1040	Clearing and Grubbing	1	06JAN03	06JAN03	1	0
1050	Railroad Track Removal	5	06JAN03	10JAN03	5	0
1060	Adjacent Soil Removal	5	13JAN03	17JAN03	5	0
1030	Monitoring Well Abandonment	1	14JAN03	14JAN03	1	0
1080	Backfilling	3	20JAN03	22JAN03	3	0
1070	Road Foundation and Pavement	4	23JAN03	28JAN03	4	0
1110	Concrete Pad Capping	2	27JAN03	28JAN03	2	0
1120	Site Restoration	5	29JAN03	04FEB03	5	0
1130	Remove Temporary Facilities	4	05FEB03	10FEB03	4	0
1140	Demobilize Personnel and Equipment	1	11FEB03	11FEB03	1	0



Revised Project Schedule
Site 41 - Scrap Yard
Indian Head NSWC

FIGURE 3-1

OLM Remediation Services Corp.



SOIL REMOVAL				
LOCATION ID	SAMPLE ID	NORTHING	EASTING	STOCKPILE
1	S41SS001	334190	1263778	1
2	S41SS002	334157	1263778	1
3	S41SS003	334119	1263798	1
4	S41SS009	334064	1264003	1
5	S41SS010	334052	1263990	1
6	S41SS013	334032	1264093	1
7	S41SS014	334022	1264085	1
8	S41SS017	334005	1264186	1
9	S41SS04	334004	1264174	1
10	S41SS05	333995	1264239	1
11	S41SS022	333985	1264281	1
12	S41SS023	333954	1264273	2
13	41SB02	333937	1264270	1
14	S41SS06	333982	1264339	1
15	S41SS07	333977	1264399	1
16	S41SS027	333971	1264392	2
17	S41SS028	333951	1264388	1
18	S41SS029	333916	1264378	2
19	S41SS033	333953	1264475	1
20	S41SS034	333932	1264457	1
21	S41SS035	333906	1264447	2
22	S41SS037	334022	1264571	1
23	S41SS038	333976	1264554	2
24	S41SS039	333936	1264552	1
25	S41SS040	333874	1264548	1
26	S41SS011	334122	1264114	1
27	S41SS019	334109	1264307	2
28	S41SS024	334090	1264411	1
29	S41SS016	334090	1264164	3

REFERENCE:

TETRA TECH NUS, INC. DRAWING TITLED: 'ADJACENT SOIL EXCAVATION AREA', DATED: 11/16/01, SCALE: 1"=50'.

NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
2. SAMPLE LOCATIONS SHOWN ARE LIMITED TO THOSE SAMPLE LOCATIONS WHERE COCs EXCEED THE PRGs. FOR COMPLETE ANALYTICAL RESULTS REFER TO THE INITIAL ASSESSMENT STUDY (NEESA, MAY 1983), SUPPLEMENTAL PRELIMINARY ASSESSMENT REPORT (NEESA, 1992), FINAL SITE INSPECTION REPORT (E/A&H, MARCH 1994), REMEDIAL INVESTIGATION (RI) REPORT (TtNUS, JULY 1999) AND FEASIBILITY STUDY (FS) REPORT (TtNUS, JANUARY 2001).
3. SAMPLE LOCATION GRID COORDINATES REPRESENT THE CENTER OF 10-FOOT BY 10-FOOT EXCAVATION AREAS. EXCAVATION AREAS SHALL BE ORIENTED NORTH AND SOUTH, UNLESS LOCATED ALONG THE RAILROAD TRACKS. EXCAVATION AREAS LOCATED ALONG THE RAILROAD TRACKS SHALL BE ORIENTED IN THE DIRECTION OF THE RAILROAD TRACKS.
4. LIMITS OF EXCAVATION AREAS INDICATED ARE INITIAL EXCAVATION LIMITS. EXCAVATION LIMITS MAY INCREASE BASED ON RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS. EXCAVATION LIMITS SHALL NOT EXTEND BEYOND THE LIMIT OF REMEDIATION OR BELOW STRUCTURES (E.G., CONCRETE PAD).
5. EXCAVATION DEPTHS INDICATED ARE INITIAL EXCAVATION DEPTHS. EXCAVATION DEPTHS MAY INCREASE BASED ON RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS. EXCAVATION DEPTHS SHALL NOT EXTEND BELOW THE GROUNDWATER TABLE, EXCEPT AT LOCATION ID NO. 13.
6. STOCKPILE 1 ASSUMES DISPOSAL AT A SUBTITLE D LANDFILL, STOCKPILE 2 ASSUMES DISPOSAL AT A SUBTITLE C LANDFILL, AND STOCKPILE 3 ASSUMES TREATMENT AT AN INCINERATION FACILITY OR DISPOSAL AT A SUBTITLE C LANDFILL. STOCKPILE DISPOSITION BASED ON HISTORIC SAMPLE RESULTS (SEE NOTE 2 ABOVE). EXCAVATED SOIL DISPOSITION/STOCKPILE IDENTIFIERS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL DETERMINE THE NUMBER OF STOCKPILES REQUIRED BASED ON WASTE DISPOSAL CHARACTERIZATION RESULTS AND THE REQUIREMENTS OF THE SELECTED TREATMENT AND/OR DISPOSAL FACILITIES, SUBJECT TO APPROVAL BY THE ROICC.
7. REMOVE RAILROAD RAIL, TIES AND BALLAST TO A DEPTH OF 12-INCHES BELOW EXISTING GROUND SURFACE WITHIN LIMITS OF REMEDIATION. CLEAN SOIL FROM RAILS WITHIN A CONTAINED AREA, AND STOCKPILE CLEANED RAILS FOR SALVAGE BY OTHERS. STOCKPILE TIES FOR SUBSEQUENT OFF-SITE DISPOSAL AT AN APPROVED DISPOSAL FACILITY. BALLAST OR SOIL EXCAVATED ABOVE AND BETWEEN TIES SHALL BE STOCKPILED FOR DISPOSAL OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
8. REMOVE SOIL FROM THE SURFACE OF THE CONCRETE PAD AND STOCKPILE AS REQUIRED (SEE NOTE 6 ABOVE). LOCATION IDENTIFIER 29 (SAMPLE LOCATION S41SS0160006) IS A HISTORIC SAMPLE LOCATION WHERE PCB WAS DETECTED OVER 500 PPM.

LEGEND:

REFER TO DRAWING T-2 FOR GENERAL LEGEND.

- 41MW01 — MONITORING WELL (TO BE ABANDONED)
- ++++ — HIDDEN/ REMOVED RAILROAD TRACKS
- 29 — SURFACE SOIL SAMPLE
- 1 — SOIL REMOVAL (6-INCH DEPTH, 10' x 10')
- 19 — SOIL REMOVAL (18-INCH DEPTH, 10' x 10')
- 13 — SOIL REMOVAL (8-FOOT DEPTH, 10' x 10')
- SOIL REMOVAL (6-INCH DEPTH)

0 50 100
SCALE IN FEET

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

REVISIONS

OHM Remediation Services Corp.

Shaw Environmental & Infrastructure, Inc.

DESIGNED BY	R. C.	7-27-02	CHECKED BY D.W.P. 11-27-02
DRAWN BY	R.C.	11-26-02	APPROVED BY D.W.P. 11-27-02

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND — WASHINGTON, D.C.
WASHINGTON NAVY YARD — ATLANTIC DIVISION — INDIAN HEAD, MARYLAND
NAVAL SURFACE WARFARE CENTER
REMEDIAL ACTION SITE 41
SCRAP YARD

ADJACENT SOIL EXCAVATION AREA

SCALE: AS SHOWN
SIZE: D
DELIVERY ORDER NO. 007
CONSTR. CONTRACT NO. N62470-97-D-0077
NAVFAC DRAWING NO. 3456982
SHEET I.D. FIGURE 3-2

DRAWING NUMBER 831866-D2
OFFICE Pittsburgh, PA

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Plot Date/Time: 11/27/02 11:27am
Plotted by: lbumside
Image: .
Xref: C-6

APPENDIX A
EXCAVATION AND MATERIAL HANDLING PLAN

OHM Remediation Services Corp.

EXCAVATION AND MATERIAL HANDLING PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
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Project No. 831866

November 22, 2002

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1	Truck Haul Route

LIST OF ACRONYMS

Acronym	Title
CAD	Cartridge Actuated Device
CFR	Code of Federal Regulations
EMHP	Excavation and Material Handling Plan
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
Site 41	Site 41 - Scrap Yard
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 and handling of soil and sediment removed from the concrete pad and adjacent area of Site 41 - Scrap Yard (Site 41) 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
- 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 September 9, 2002 and to be completed in late November 2002.

1.2 SEQUENCE OF OPERATIONS

Prior to any excavation activities, site preparation activities, including a utility search, erosion and sediment controls installation, and clearing and grubbing will take place. Once those activities are completed, the following activities will be conducted.

- Conduct visual screening of removed debris for any unexploded ordnance (UXO) items using a UXO Specialist.
- Excavate soil from the concrete pad.
- Mechanically screen excavated soil.
- Conduct visual inspection of material separated by the screen for UXO items using a UXO Specialist.
- Load screened material for off-site disposal.
- Excavate abandoned rail line, decontaminate, cut, and stage for off-site disposal.
- Excavate impacted soil adjacent to the concrete pad, with a UXO Specialist visually screening the soil during excavation.
- Mechanically screen the top 6 inches of soil excavated from adjacent to the concrete pad.

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 from each excavation site to the mechanical screener and/or staging area. A front-end loader will be used to excavate the soil on the concrete pad. An excavator will be used to excavate the soil from the area adjacent to the concrete pad. Additional equipment may include, but is not limited to, 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 EXCAVATION

Materials will be excavated from three areas: soil will be excavated from the concrete pad, rail lines, trees, and railroad ballast will be excavated from the southern portion of the site, and soil will be excavated from adjacent to the concrete pad. The locations of the areas are shown on Sheet C-6 of the Design Drawings. Specific details for the excavation activities for these areas are discussed below.

2.1.1 Concrete Pad Soil

A front-end loader will be used to excavate the soil from the concrete pad. As the soil is excavated, a UXO Specialist will visually inspect the soil. 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 than any item may not be safe to move, removal operations will stop and the field crew will be evacuated 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.

After the soil is excavated, it will be mechanically screened for UXO. A second UXO Specialist will be stationed at the screener to inspect the material separated by the screener and remove any UXO. All UXO items will be handled in accordance with the UXO Support Plan and the above paragraph.

2.1.2 Rail Line

The abandoned rail line along the southern edge of the site will be excavated for off-site disposal. Approximately 3,030 linear feet of metal rails will be decontaminated with a pressure washer and cut into manageable pieces, then staged for off-site disposal. Various metal spikes and plates will be decontaminated and staged with the rails for disposal. Additionally, approximately 650 railroad ties and 500 tons of ballast will be removed and staged for off-site disposal. The rails, spikes, and plates will be hauled off-site to a local scrap dealer. The ties and ballast will be sent off-site to an appropriate disposal facility.

2.1.3 Adjacent Soil

Soil adjacent to the concrete pad will be excavated for off-site disposal. Initially, an excavator will be used to remove the top 6 inches of contaminated soil over the entire remediation area (approximately 880 cubic yards). This excavated material will be mechanically screened for cartridge actuated devices (CAD) under the supervision of a UXO Specialist then staged for load out. Next, selective contaminated hot spots will be excavated (approximately 150 additional cubic yards). Because the CADs are not expected to be present below the surface, the soil from the deeper excavations will not be mechanically screened. The railroad ballasts will be removed along with the soil, but will not require mechanical screening (approximately 370 cubic yards).

2.2 POTENTIAL CONSTRUCTION DEWATERING

Most of the excavation will be above the water table and should not require dewatering. However, one area is known to require an 8-foot excavation and will require dewatering since the water table is expected to be within a few feet of the ground surface. A sump will be installed and a trash pump will be used to pump down the water level. The water will be pumped into a portable sediment tank, where the solids will be allowed to settle out. The water will then be containerized and tested to determine the method of disposal.

The wet excavated materials will be dewatered prior to being sent off site for disposal. The wet soil will be spread on the concrete pad and allowed to dry. Water from the soil will be collected and pumped into the portable sediment to tank to allow the sediment to settle out, then the water will be containerized. The water will be tested to determine whether it requires off-site disposal or can be released on the site.

2.3 MATERIAL SEPARATION AND HANDLING

Material will be separated into three possible categories as it is excavated: salvageable material, material for off-site disposal, and UXO. 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 excavated soil and railroad ties and debris. 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. Arrangements will be made as early as feasible for the removal from the site of the materials 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 staging area 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 site. 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 route, shown on Figure 1, to leave the Base. The truck drivers will obey posted speed limits and all other traffic signs. OHM Remediation Services Corporation (OHM) will track the number of truck trips per day to monitor truck traffic. Information regarding safe driving practices and driver personal protective equipment (PPE) is presented in the Site-Specific Health and Safety Plan (SSHASP) included as Appendix D of the Work Plan.

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 HEALTH AND SAFETY

The work will be performed in accordance with OHM'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

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Plot Date/Time: Nov 27, 2002 - 10:43am
Plotted By: lburnside

OFFICE	DRAWING NUMBER
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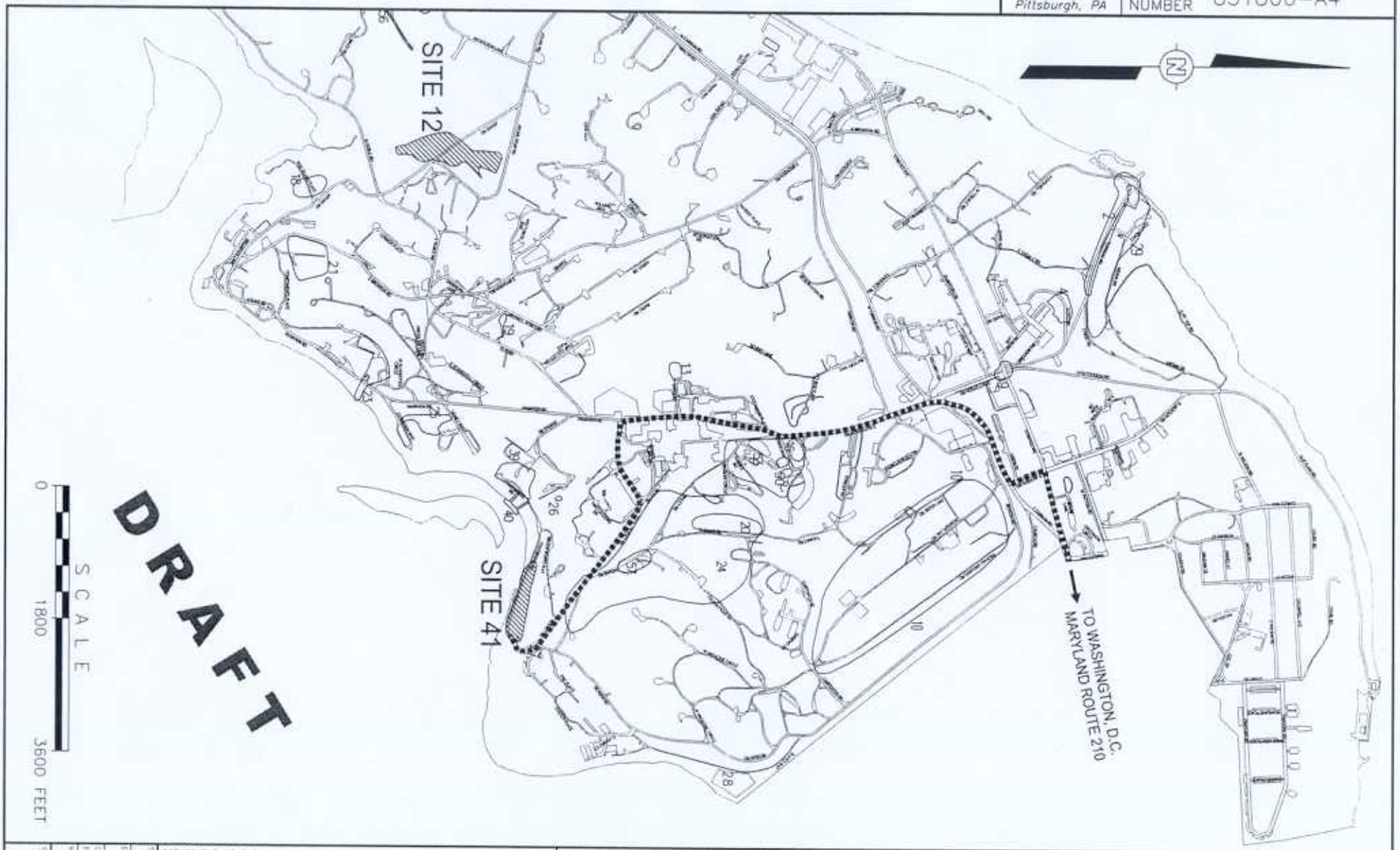

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON NAVY YARD — ATLANTIC DIVISION — WASHINGTON, D.C.
NAVAL SURFACE WARFARE CENTER — INDIAN HEAD, MARYLAND

REMOVAL ACTION
SITE 41 - SCRAP YARD

TRUCK HAULING ROUTE

OHM Remediation Services Corp.
Shaw Environmental & Infrastructure, Inc.

DESIGNED BY			CHECKED BY	D. Pringle	11/27/02
DRAWN BY	A. Smith	11/27/02	APPROVED BY	D.W.P.	11/27/02

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

REVISIONS

SCALE: AS SHOWN
SIZE: A
DRAWN: CHERRY INC.
CO7
CONTR. CONTRACT NO. N62470-97-D-7002
NAVFAC DRAWING NO.
SHEET 10
FIGURE 1

APPENDIX B
ENVIRONMENTAL PROTECTION/POLLUTION PREVENTION PLAN

OHM Remediation Services Corp.

ENVIRONMENTAL PROTECTION/POLLUTION PREVENTION PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

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Project No. 831866

November 22, 2002

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LIST OF ACRONYMS

Acronym	Title
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
COE	Corps of Engineers
COPC	chemical of potential concern
E&S	erosion and sediment
EC	Emergency Coordinator
EP/PP	Environmental Protection/Pollution Prevention
ESCP	Erosion and Sediment Control Plan
FADL	Field Activity Daily Log
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
MCL	Maximum Contaminant Levels
MSDS	Material Safety Data Sheet
Navy	U.S. Navy
NTR	Navy Technical Representative
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PID	photoionization detector
PM	Project Manager
QC	Quality Control
ROICC	Resident Officer in Charge of Construction
Site 41	Site 41- Scrap Yard
SPCCP	Spill Prevention, Control and Countermeasures Plan
SS	Site Superintendent
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
SWPP Plan	Storm Water Pollution Prevention Plan
TCE	trichlorinated biphenyl
TtNUS	Tetra Tech NUS, Inc.

1.0 INTRODUCTION

This Environmental Protection/Pollution Prevention (EP/PP) Plan has been prepared by OHM Remediation Services Corporation (OHM) 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 remediation activities being performed at Site 41 - Scrap Yard (Site 41) 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 01115N, Paragraph 1.3.d. "Environmental Protection Plan;" Section 01575N, Paragraph 1.9, "Environmental Protection Plan;" Section 01115N, 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 remediation activities at Site 41. This plan establishes guidelines that must be followed by OHM during activities at the site and must be used in conjunction with the other Project Plans, Project Specifications, and Design Drawings. OHM will implement this plan in conjunction with the Storm Water Pollution Prevention Plan (SWPP Plan) presented in Tetra Tech NUS, Inc.'s (TtNUS) Final Design Submittal.

1.1 PRECONSTRUCTION SURVEY

OHM 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 REMEDIATION ACTIVITIES

The remediation activities for the site generally consist of the following:

- Installation and maintenance of erosion and sediment controls

- Excavation of contaminated soil from the concrete pad
- Excavation of soil adjacent to the concrete pad
- Backfilling area adjacent to concrete pad
- Cleaning of the concrete pad
- Construction of an access road
- Restoration of the site
- Performance of all work in accordance with applicable federal, state and local regulations.

1.3 PERMITTING REQUIREMENTS

No permits are required for remedial action at Site 41 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 remediation activities. The Navy has contracted OHM to perform the remediation activities. Throughout the duration of the remediation activities, OHM will notify the Navy of any environmental protection incident as soon as possible. For all spills OHM will immediately contact the Fire Protection Division at (301) 744-4333.

2.1.1 The Navy

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

2.1.2 OHM

OHM 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 OHM's organizational structure. OHM is responsible for coordination, training, drills, notification to the Navy, and other aspects of the EP/PP Plan.

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 SS 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 SS. The SS is responsible for assuring that the daily environmental protection is performed.

2.3.3 Site Superintendent

The Site Superintendent (SS) 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 SS 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

Soil chemicals of concern (COC) for human receptors include polynuclear aromatic hydrocarbons (PAH), benzo(a)pyrene and dibenzo(a,h)anthracene, polychlorinated biphenyls (PCB) (Aroclor 1260), and inorganics (arsenic and lead). The soil COCs for ecological receptors are PCBs (Aroclor 1260) and inorganics (arsenic and lead). The only COC for shallow groundwater table based on human health is arsenic. Additional COCs include trichloroethene (TCE) and inorganics, based on federal and state Maximum Contaminant Levels (MCL) for drinking water. There were no unacceptable risks identified for protection of human health from exposure to surface water or sediment. However, surface water chemicals of potential concern (COPC) for ecological risk are Aroclor 1260, cadmium, chromium, copper, lead, mercury, silver, and zinc. Sediment COPC for ecological risk include 1,1-dimethylhydrazine, nitrocellulose, N-nitrodiphenylamine, mercury, nickel, and silver.

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 perform the project activities, OHM will have fuels and oils on site 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.

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 OHM will coordinate transportation and disposal activities. The actual sampling and analysis of contaminated substances for off-site disposal will be coordinated through OHM's field analytical manager and the execution of collecting samples will be the responsibility of the Quality Control (QC) Manager. All procedures will comply with federal and state regulations. In accordance with station regulation, OHM 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, and a copy of the MSDSs will be available on site in the office trailer.

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
- Windsocks
- Various hand tools

This equipment will be made accessible to all on-site workers. Locations of such equipment will be posted at the OHM office trailer. A list of the 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. 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 OHM 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. 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 OHM 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, OHM 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 metal debris that will be excavated for off-site disposal. 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 excavation from running off.

6.3 FUEL STORAGE

Vehicle fuels and oils will be stored within 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 and will occupy 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 and a site-specific SPCCP will not be required.

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.

6.5.1 Power Outages

Power will be from utility service drops and/or OHM-supplied generators. OHM 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 and public.

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 and failure. After such events, all containment devices and structures 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 SS's daily report.

6.6 PROTECTION OF NATURAL RESOURCES

OHM 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 OHM 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 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 dust control will be the responsibility of the SS 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 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.

Silt fence will be utilized along the southern extent of the excavation to protect the Mattawoman Creek during excavation activities and around the decontamination pad.

A stabilized stone construction entrance will be provided at the ingress/egress to the site. 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. 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

OHM 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 OHM's SS 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. OHM will retain calibration records on site.

7.4 HOUSEKEEPING PROGRAM

OHM'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 OHM 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.

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 SS will conduct follow-up training related to a change in operations or any other training deemed necessary by the SSO. OHM 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 OHM 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.

TABLES

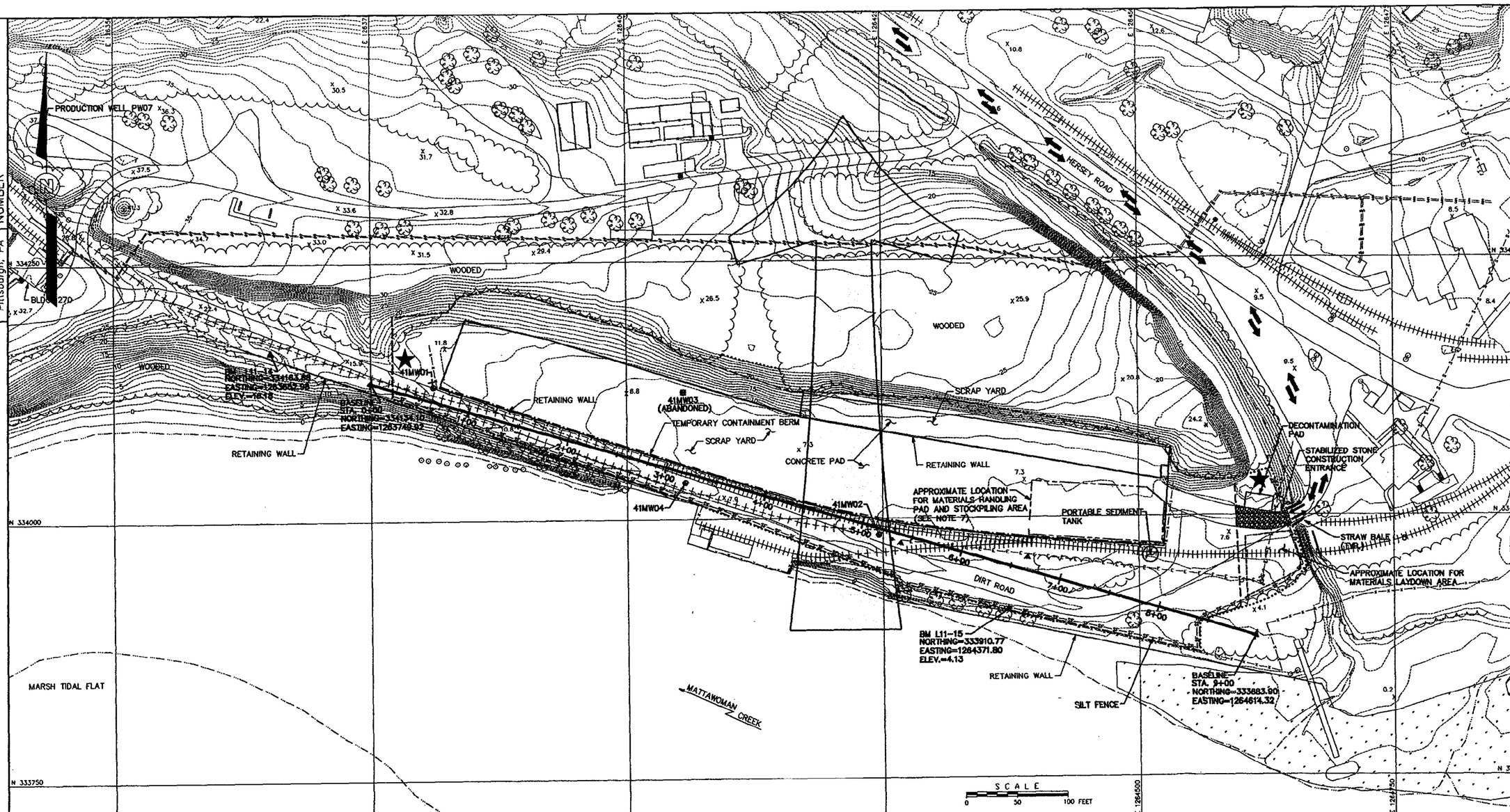
Table 1 Material Inventory				
Material	**Unit**	**Quantity**	**Location**	**Hazard Class**
Impacted Soil	Cubic Yard	(1)	Landfill Area	N/A
Diesel Fuel	Gallons	(1)	Project Trailer Area	Combustible
Gasoline	Gallons	(1)	Project Trailer Area	Flammable
Portland Cement	Pounds	(1)	Project Trailer Area	Corrosive
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		
Excavators (2)		
Dozer		
Water Tank Truck		
Office Trailers (2)		
Storage Trailer		
Articulated Dump Truck		
Truck - Two Ton Stake		
Pickup Trucks (3)		
Vibratory Screen		
Van		
15-Ton Pneumatic Roller		
Bobcat		
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		

Table 2 Equipment List		
Equipment	**Use**	**Location**
Generators - 10 kW, 5kW		
Aerosol Monitor		
Mini-Ram		
Photoionization Detector		
LEL 3 Gas Meter		
Trash Pumps (2) - Diesel - 2-Inch		
Nuclear Density Gauge		
Total Survey System		
Ditchwitch		
Pressure Washer - 2,000 psi		
Note: (1) ABC-rated portable fire		

FIGURES



NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
2. REFER TO DRAWINGS C-3 AND C-4 FOR EROSION AND SEDIMENT CONTROL PLAN NOTES AND REVEGETATION NOTES, RESPECTIVELY.
3. CLEAR BUT DO NOT GRUB WITHIN THE LIMITS OF DISTURBANCE WHERE REQUIRED FOR INSTALLATION OF TEMPORARY FACILITIES, REMOVAL OF RAILROAD RAILS, TIES, AND BALLAST, AND REMOVAL/EXCAVATION OF SOIL UNLESS OTHERWISE INDICATED.
4. DECONTAMINATION PAD, MATERIALS HANDLING PAD(S), CONSTRUCTION LAYDOWN AREA(S), AND STABILIZED STONE CONSTRUCTION ENTRANCE LOCATION TO BE DETERMINED PRIOR TO CONSTRUCTION BY THE CONTRACTOR, SUBJECT TO APPROVAL BY THE ROICC.
5. TEMPORARY SECURITY FENCE SHALL BE INSTALLED ALONG THE SITE PERIMETER AS NECESSARY TO RESTRICT ACCESS DURING THE REMEDIAL ACTION.
6. THE LOCATION OF THE TEMPORARY CONTAINMENT BERMS TO BE DETERMINED UPON REMOVAL OF SOILS FROM THE CONCRETE PAD AND A CONDITION ASSESSMENT OF THE CONCRETE PAD.
7. THE MATERIALS HANDLING PAD AND STOCKPILE AREAS SHALL BE LINED TO PREVENT DISCHARGES TO THE ENVIRONMENT.

LEGEND:

REFER TO T-2 FOR GENERAL LEGEND.

- EXISTING MONITORING WELL (TO BE ABANDONED)
- ABANDONED MONITORING WELL
- HAUL ROUTE
- LIMIT OF DISTURBANCE
- LIMIT OF REMEDIATION
- TEMPORARY CONTAMINMENT BERM
- SILT FENCE
- 10 EXISTING SURFACE ELEVATION CONTOUR
- DELINEATED WETLANDS
- WIND DIRECTION
- MEETING PLACE

REFERENCE:

TETRA TECH NUS, INC. DRAWING TITLED: "EROSION AND SEDIMENT CONTROL PLAN", DATED: 11/16/01, SCALE: 1"=50'.

OFFICE	DRAWING NUMBER
Pittsburgh, PA	831866-D1

REV	DATE	BY	CHK'D	APPR'VD	DESCRIPTION/ISSUE

REVISIONS

OHM Remediation Services Corp.
Shaw Environmental & Infrastructure, Inc.

DESIGNED BY	R.C.	7-17-02	CHECKED BY	D.W.P.	11-22-02
DRAWN BY	R.C.	7-17-02	APPROVED BY	D.W.P.	11-22-02

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.
WASHINGTON NAVY YARD ATLANTIC DIVISION
INDIAN HEAD, MARYLAND
NAVAL SURFACE WARFARE CENTER
REMEDIAL ACTION SITE 41
SCRAP YARD

EMERGENCY EVACUATION PLAN

SCALE: AS SHOWN
SIZE: D
DELIVERY ORDER NO. 007
CONSTR. CONTRACT NO. N62470-97-D-0077
NAVFAC DRAWING NO. 3456978
SHEET I.D.
FIGURE 1

D:\Project\LANTDIV Projects\Indian Head\831866\831866D1.dwg
Plot Date/Time: 11/27/02 11:39am
Plotted by: tburnside
Image: XrefC-2

APPENDIX C
QUALITY CONTROL PLAN

OHM Remediation Services Corp.

QUALITY CONTROL PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
1314 Harwood Street S.E.
Washington Navy Yard, DC 20374-5018

Prepared by:

OHM Remediation Services Corporation
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. 831866

November 22, 2002

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EXHIBITS

LIST OF EXHIBITS

Exhibit	Title
I-1	Quality Control Organizational Chart
II-1	Site QC Manager/Representative Resume
IV-1	Approved Consultant and Subcontractor List
V-1	Site QC Manager/Representative - Letter of Appointment
VI-1	List of Personnel Authorized to Review and Certify Submittals
VI-2	Submittal Register
VIII-1	Testing Plan and Log
XI-1	Quality Control Inspection Plan
XIII-1	Personnel Matrix

LIST OF ACRONYMS

Acronym	Title
CO	Contracting Officer
OHM	OHM Remediation Services Corporation
QC	Quality Control
QCP	Quality Control Plan

STATEMENT OF QC PROGRAM

OHM Remediation Services Corporation (OHM) 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. OHM 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 OHM 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, Exhibit I-1.

II. NAMES AND QUALIFICATIONS

Exhibit 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 OHM 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 Exhibit 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, 1.10.2, and 1.10.3.

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 XIII-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.

XIV. PROCEDURES FOR COMPLETION INSPECTION

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

EXHIBITS

Ernest P. Duke

Professional Qualifications

Mr. Duke has worked as a Quality Control Manager, Project Manager, Field Engineer, and Environmental Geologist since 1973, directing various construction activities and environmental investigations. His experience was gained by working for environmental engineering and construction companies, the Pennsylvania Department of Environmental Resources (PADER), and the coal industry.

Mr. Duke has experience with the quality control and management of remedial and investigative projects controlling objectives, field activities, schedules, budgets, regulatory requirements, health and safety programs. His experience includes investigations and remediation of both commercial and Department of Defense projects, working closely with his clients to develop and execute sound solutions to their environmental problems. Because of his professional achievements, Mr. Duke has been named a Project Management Associate.

Education

B.S., Geology, Indiana University of Pennsylvania, Indiana, Pennsylvania; 1973

Additional training:

8-Hour Hazards and Protection Refresher; 2001

24-Hour Hazardous Chemical Handling; 1994

Hazardous Waste 40-Hour Health and Safety Training, Center for Hazardous Materials Research, Pittsburgh, Pennsylvania; 1988

Continuing education:

Project Management Professional Development, Supervisor of Hazardous Waste Operations, Confined-Space Qualification, IT Corporation; 1991

Mining Engineering Courses, University of Pittsburgh, Greensburg, Pennsylvania; 1980 - 1974

Hydrology Courses, Slippery Rock State College, Slippery Rock, Pennsylvania;

Geologic Field Methods, Miami University of Ohio, conducted in Dubois, Wyoming; 1972

Groundwater Monitoring, Groundwater Geochemistry, Aquifer Testing, National Water Well Association

Sampling of Hazardous Materials and Subsurface Investigations for Remedial Activities, U.S. Environmental Protection Agency

Assessment and Remediation for Halogenated Hydrocarbons, University of Wisconsin

Registrations/Certifications

Registered Professional Geologist: Pennsylvania

USACE Construction Quality Management

Troxler Nuclear Testing Equipment Operation

Experience and Background

1999 - Present

Quality Control Manager, Shaw Environmental & Infrastructure, Inc., Pittsburgh, Pennsylvania

QC Manager for the Navy, Atlantic Division Program (LANTDIV). Specific project experience includes:

Patuxent River Naval Air Station, Patuxent River, Maryland. Performed closure of a 34-acre CERCLA landfill including relocation of and consolidation of waste excavation and testing site borrow material, UXO removal, and construction of the cover system. Civil construction of drainage channels and structures, 48-inch buried drainage pipe, roads, timber stairs, and walkways. Supervised two QC engineering assistants.

Patuxent River Naval Air Station, Patuxent River, Maryland. Project involved cleanup and closure of pesticide contaminated CERCLA site which involved excavation and manifested disposal of contaminated soil, backfilling and regrading the site and construction of the approved cover system.

Patuxent River Naval Air Station, Patuxent River, Maryland. Performed closure of a 5-acre CERCLA site, which was previously used as a drum storage area. The closure involved regrading of the remaining site soils and civil construction of a large contained concrete parking area and stormwater/spill collection structure. This innovative closure changed the property to a reusable facility where fuel trucks used for the air base are now safely stored.

Dahlgren Naval Surface Warfare Center, Dahlgren Virginia. Project involved closure of a 9-acre CERCLA landfill involving waste consolidation, UXO removal, construction of a slurry wall, nontypical construction of a stabilized marsh cap and construction of a geosynthetic cap.

Quality control at the U.S. Postal Service Processing and Distribution Center located in Trenton, New Jersey. Helped develop and assure compliance with approved procedures for the cleanup of anthrax spread throughout the large facility.

1998 - 1999

Project Manager, Site Remediation Services, Inc., East Windsor, Connecticut

Project manager of a $2.9 million state Superfund project for the New York Department of Environmental Conservation. Managed project objectives, costs, schedule, and subcontractors was involved with this project for the excavation, dewatering water treatment, processing, and treatment of soils contaminated with chlorinated solvents. The soil was treated through thermal desorption and, after confirmed clean, was used for backfilling the excavation.

1990 - 1998

QC Manager, Project Manager, Site Supervisor, Field Engineer, and Geologist, IT Corporation, Pittsburgh, Pennsylvania

Worked with all phases of remedial construction and environmental investigations, including earthmoving, landfill construction, decontamination, transportation and disposal, and various environmental investigations. Each phase has involved interpreting drawings and specifications; estimating, preparing, and executing work plans; subcontracting; supervising; and providing management with technical support. Specific responsibilities have included the following:

Dahlgren Naval Surface Warfare Center, Dahlgren, Virginia. QC Manager for the removal, documentation and landfill closure of an ordnance burial area on the secure naval base. The work involved close coordination with Navy EOD personnel for the removal of classified items. The landfill was closed with construction of a synthetic cap.

Project manager of a multiphased CERCLA remedial action involving the construction of a double-lined geosynthetic landfill, excavation, and removal of buried drums, stabilization, and on-site disposal of the waste.

Project manager on a $1.7 million CERCLA removal action for the closure of a landfill containing hazardous waste. The project was completed in three phases as detailed below:

- Phase I included the removal of drums and debris and the assessment of surface and subsurface conditions

- Phase II was the remedial design for the removal of contaminated soils and construction of a landfill cap

- Phase III was the removal and manifested disposal of contaminated soils and construction of an impermeable landfill cap.

Each phase of the project involved managing personnel, subcontractors, equipment, schedules, and budgets. A close working relationship with the client was necessary to develop strategies with focused objectives and preplanned contingencies. Strict cost and schedule tracking was used to complete the project on schedule and under budget.

Response manager for the removal, transportation, and disposal of lead-contaminated waste from six indoor rifle ranges for the West Virginia Army National Guard. Managed and supervised field operations and subcontracted transportation and disposal (T&D) for decontamination of the facilities.

Project manager of a groundwater field investigation on an active RCRA incineration facility. Close client interaction was necessary to complete the investigation within the confines of the active facility.

Project engineer of several major CERCLA remedial action projects. Responsibilities involved interpretation of the project drawings and specifications, technical negotiations with the oversight engineer, technical contact with the subcontractors and vendors, quality assurance/quality control (QA/QC), and supervision of technical work. Field experience included the following:

- Earthmoving activities for the construction of the on-site disposal cell
- Design and construction of the on-site stabilization plant
- Development and utilization of innovative techniques for handling and processing of an erratically tarry waste
- On-site management of a difficult stabilization process implementing allowable modifications to improve efficiency and production
- Subcontracted deployment of the geosynthetic cap
- Installation of a subsurface groundwater collection and drainage system and the cap drainage system

Manager of the field activities on a RCRA Feasibility Investigation (RFI) field activities at a large manufacturing facility assessing site conditions and extent of contamination. The field activities included geophysical and soil-gas surveys, soil borings, groundwater monitoring well installations, soil and water sampling, public meetings, agency negotiations, and report preparation.

Project manager on various smaller projects controlling project objectives, budgets, schedules, cost estimates, and reports. These projects have involved investigations, RCRA closures, RCRA permits, and earthmoving activities.

Site supervisor of field remediation projects involving decontamination, transportation and disposal, RCRA waste management unit closure, and earth moving activities

1985 - 1990

Geologist, Pennsylvania Department of Environmental Resources, Pittsburgh, Pennsylvania

Responsibilities with the Bureau of Waste Management included evaluating and directing assessment and remediation projects; performing inspection and oversight of assessment, construction, and remedial activities; and investigating improper waste management activities. Reviewed projects for technical and regulatory completeness and developed strategies to accomplish the goals of the department. Methods, technologies, and cleanup goals were evaluated and negotiated with corporate personnel and environmental consultants.

Primary responsibilities involved projects at chemical, petrochemical, electroplating, steel manufacturing, active and abandoned facilities, and natural gas pipeline facilities. These sites had a wide array of organic and inorganic contaminants in various geologic settings.
Some specific remediation projects are listed below:

Detailed investigations and remediation of soils and groundwater contaminated with polychlorinated biphenyls (PCB) at natural gas pipeline facilities.

Investigation and removal of soils and vegetation at a remote natural gas pipeline facility contaminated with PCBs and light hydrocarbons.

Removal of soils and concrete from an area contaminated with volatile organics at a major petrochemical facility. The area was remediated for the construction of new manufacturing facilities and the soils stored in a vacuum extraction vault constructed on site.

Remediation of groundwater and soils contaminated with PCBs and waste oils at a large transformer manufacturing plant. A groundwater collection system was installed, and an area of contaminated soils was excavated for disposal.

Excavation and on-site remediation or disposal of large volumes of soil contaminated with solvents, fuels, and antifreeze at a large assembly plant. Approximately 20,000 cubic yards of soil were excavated from five separate areas. Soil was either transported for disposal or remediated on site in an aboveground vacuum extraction system.

Excavation and removed soil contaminated with volatile organics at a resin manufacturing plant, resulting in a significant improvement in groundwater quality.

Responsibilities with the Bureau of Mining and Reclamation included the following:

Permitting coal preparation plants and refuse disposal areas.

Performing safety inspection and environmental compliance monitoring of treatment facilities, monitoring programs and mining and coal processing facilities.

Providing detailed evaluation of geology, hydrogeology, and engineering design of mining operations.

1976 - 1985
Geologist, Coal Mining Industry, Coal Stripping, Inc., Mt. Pleasant, Pennsylvania; Vipond and Vipond, Inc., Hollidaysburg, Pennsylvania; and Pioneer International Coal Company, Pittsburgh, Pennsylvania
Responsibilities with these companies included regulatory and safety compliance management, supervision of mining and drilling operations, and the investigation and

acquisition of coal for mining. Managed the Reserve Acquisition Department responsible for identifying, evaluating, leasing, and permitting coal reserves for mining operations. This involved the supervision of equipment and personnel; design and installation of surface and groundwater monitoring programs; and management of consultants and subcontractors. Independent involvement with attorneys, regulatory agencies, and the public was also involved.

1973 - 1976
Geologist, Gwin, Dobson, and Foreman, Inc., Altoona, Pennsylvania
Involved with pollution abatement projects and mineral reserve investigations. Specific projects included:

> Supervising field activities as chief project geologist of a major coal reserve exploration project in southern Maryland and northwest West Virginia. The project involved supervising 5 field geologists and 3 drilling contractors, using 13 wireline coredrills for a 7-month drilling project.

Working jointly and independently on mine acid pollution abatement projects involving detailed geologic investigations, surface and groundwater monitoring, and design and construction of treatment and abatement projects.

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

EXHIBIT VIII-1

TESTING PLAN AND LOG

CONTRACT NUMBER N62470-97-D-5000			PROJECT TITLE AND LOCATION Site 41, Scrap Yard, 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				
02220N 3.3.1		Debris: Perform TCLP on the waste stream in accordance with 40 CFR 261.							As required by disposal facility			
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			
02315N 1.5		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			
02315N 2.1.1		Common fill material: - ASTM D 2487 - ASTM D 4318 - ASTM D 1140							One per source			
02315N 2.1.2		Topsoil: - pH - organic matter - soluble salts - DOA classification - Nitrogen, phosphorous, and potassium							One per source			
02315N 2.1.3		Select fill material: - ASTM D 2487							One per source			
02315N 3.11.2.1		Common fill material: - ASTM D 698							One per source			

EXHIBIT VIII-1

TESTING PLAN AND LOG

CONTRACT NUMBER N62470-97-D-5000			PROJECT TITLE AND LOCATION Site 41, Scrap Yard, 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				
02315N 3.11.2.2		Select fill material: - ASTM C 136 for conformance to ASTM D 2487 - ASTM D 1140 - ASTM D 4318 - ASTM D 698							One per source			
02315N 3.11.2.3		Subgrade density: - ASTM D 1556 - ASTM D 2922 and ASTM D 3017							Each lift at randomly selected locations every 200 square feet (minimum 1 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 ofthe job, and for every10 ASTM D 2922 and ASTM D 3017 density tests thereafter.
02315N 3.11.2.3		Common fill density: - ASTM D 1556 - 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 ofthe job, and for every10 ASTM D 2922 and ASTM D 3017 density tests thereafter.
02742N 3.2		Subbase course: - ASTM D 1557										
02742N 3.3		Aggregate base course: - ASTM D 1557										

EXHIBIT VIII-1

TESTING PLAN AND LOG

CONTRACT NUMBER N62470-97-D-5000			PROJECT TITLE AND LOCATION Site 41, Scrap Yard, 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				
02742N 3.7.1.1		Subbase and aggregate base courses: - Smoothness Tests							As work progresses			
02742N 3.7.1.2		Subbase and aggregate base courses: - Density Test ASTM D 2922							One test per 100 square yards, with a minimum of three tests each course			
02742N 3.7.1.3		Subbase course: - Thickness Tests							One test per 100 square yards, minimum of 3 tests			
02742N 3.7.2.1		Bituminous: - Concrete Course Smoothness Tests							As work progresses			
02742N 3.7.2.2		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			
02742N 3.7.2.3		Bituminous: - Concrete Course Thickness Tests										

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 • Location of Underground Utilities • Delineation of Work Zones				
Erosion and Sediment Controls • Silt Fence • Stabilized Construction Entrance • Materials Handling Pad • Decontamination Pad • Portable Sediment Tanks • Straw Bales • Vegetation				
Monitoring Well Abandonment				
Clearing and Grubbing				
Pad Soil Removal • Mechanical UXO Screening • Soil Excavation • Staging of Soil for Transportation and Disposal (T&D)				
Concrete Pad Cleaning • Sweeping residual soil from pad • High-pressure washing of pad • Collecting wash water for T&D • Dewatering				
Railroad Track Removal				
Adjacent Soil Excavation • Mechanical UXO Screening • Soil Excavation • Confirmation Sampling and Analysis				
Backfilling				
Road Foundation and Pavement				
Concrete Pad Capping • Placing tack coat • Placing 2-inch asphalt top coat Placing 2-inch asphalt top coat				
Transportation and Disposal				
Restoration • Permanent Seeding • Sign Installation				
Remove Temporary Facilities				

EXHIBIT XIII-1

PERSONNEL MATRIX

SPECIFICATION SECTION:	SUBMITTALS REVIEWED BY:	THREE PHASE PERFORMED BY:	TESTING PERFORMED/REVIEWED BY:
All	Site QC Manager	Site QC Manager	Site QC Manager

APPENDIX D
SITE-SPECIFIC HEALTH AND SAFETY PLAN

OHM Remediation Services Corp.

SITE-SPECIFIC HEALTH AND SAFETY PLAN
REMOVAL ACTION FOR SITE 41 - SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
1314 Harwood Street S.E.
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Reviewed by:

Joseph W Colella for
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Robert G. Brooks
Robert Brooks, CSP
Program Health and Safety Manager

Project No. 831866

November 26, 2002

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LIST OF ACRONYMS

Acronym	Title
^{o}C	degrees Celsius
^{o}F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
CAD	cartridge actuated device
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
DEET	N,N-Diethyl-meta-Toluamide
E&S	erosion and sediment
EMA	Emergency Management Agency
EMS	Emergency Response Services
ERCP	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
MHR	maximum heart rate
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
OHM	OHM Remediation Services Corporation
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
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 41	Site 41 - Scrap Yard
SOP	Standard Operating Procedure
SS	Site Superintendent

Acronym	Title
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
SZ	Support Zone
TCE	trichloroethene
TLV	Threshold Limit Value
TWA	time-weighted average
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 remedial actions at Site 41 (Scrap Yard), Naval Surface Warfare Center (IHDIV-NSWC) at 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 OHM Remediation Services Corporation (OHM) is to provide a safe and healthful work environment for all employees. OHM 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 OHM, it is believed all accidents and injuries are preventable. OHM 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 Program 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 Scrap Yard 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 OHM 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
- OHM Health and Safety Policies and Procedures (HS001 through HS999).

1.4 DISCLAIMER

The following SSHASP has been designed for the methods presently contemplated by OHM 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 OHM. In addition, as the work is performed, conditions different from those anticipated might be encountered and the SSHASP may have

to be modified. Therefore, OHM 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

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 41 is located in the southeastern portion of the IHDIV-NSWC (Figure 2-1). The scrap yard is a fenced-in area approximately 750 feet long and 75 to 100 feet wide adjacent to Mattawoman Creek. The area south of the scrap yard is flat. Surface water generally runs off toward Mattawoman creek or ponds in the flat area south of the scrap yard and infiltrates. The area north of the scrap yard is steeply sloped and wooded. Runoff from the north area flows toward the scrap yard and Mattawoman Creek. A concrete pad covers most of the fenced-in area. It is covered with soil in some places. The scrap yard is actively used to store metal materials and scraps, which are eventually sold to be reused or recycled. Existing conditions of the site are shown on Sheet C-1 of the Design Drawings.

The site has been a scrap yard since at least the 1960's. In 1981, 17 transformers stored at the site were identified as either containing or contaminated with polychlorinated biphenyls (PCB). The transformers were believed to have leaked and contaminated the soil in the western portion of the site. Additionally, lead batteries that were stored at the site may have leaked lead to the surface soil. No transformers or batteries are currently stored in the site, but stains are visible where they were previously located. An abandoned rail line lies along the southern perimeter of the scrap yard. Portions of the rail line have been buried or removed.

The principal site tasks include the following:

- Mobilization and site setup
- Site preparation
- E&S controls installation
- Monitoring well abandonment
- Clearing and grubbing
- Pad soil removal
- Concrete pad cleaning
- Screening of cartridge actuated devices (CADs)
- Torch cutting of UXO
- Railroad track removal
- Adjacent soil removal
- Backfilling
- Road foundation and pavement
- Site restoration
- Remove temporary facilities
- Site inspection
- Demobilization

.

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.

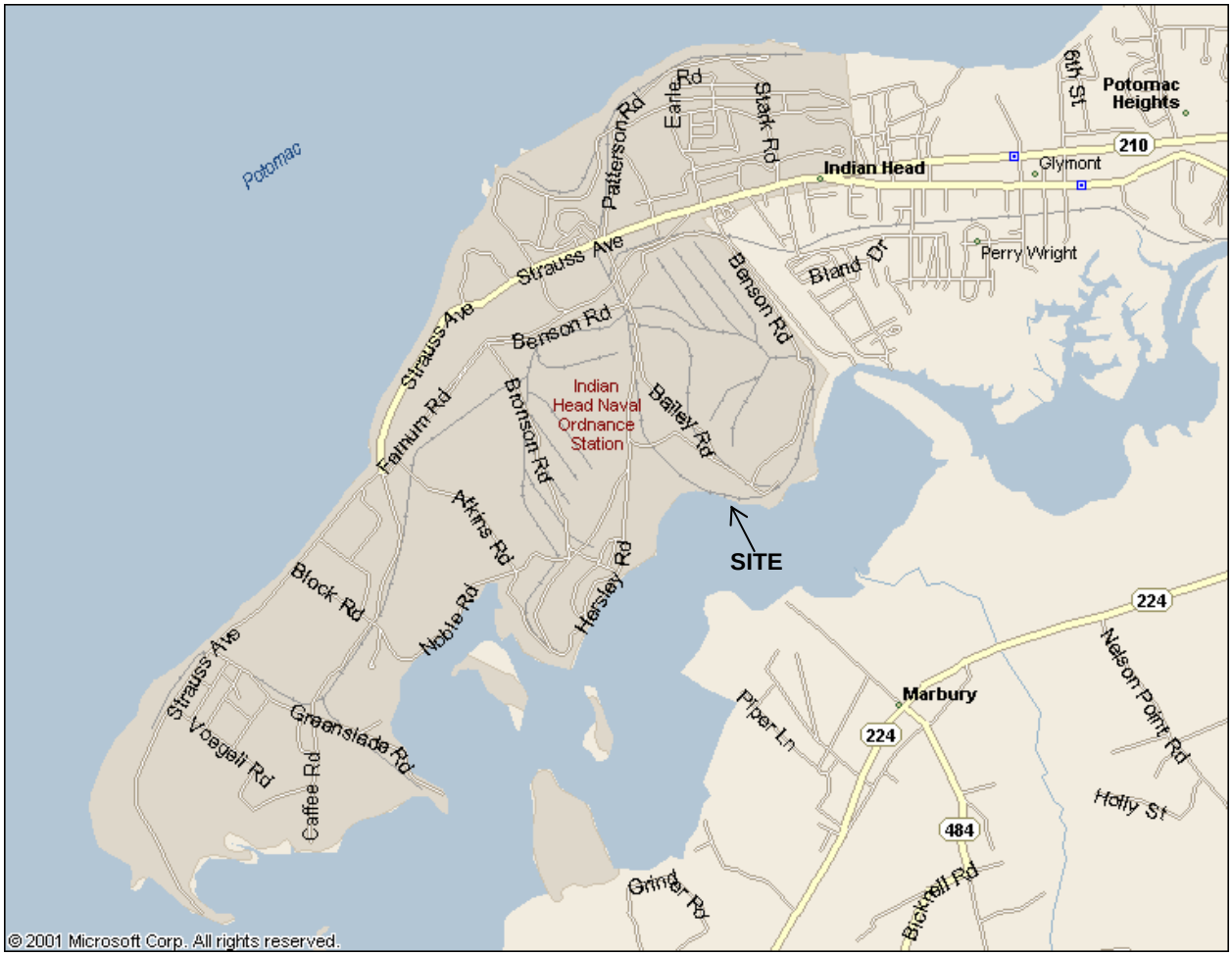

Figure 2-1
Site Location Map

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 key 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	Joe Walker (301) 743-2120 (site)
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 Jorgensen (301) 744-6745
OHM UXO Specialist	Al Grant (301) 743-2120 (site)
Program Certified Industrial Hygienist (CIH)	Dave Mummert, CIH (419) 425-6129 (office)

Program Health and Safety Manager	Robert Brooks, CSP (732) 469-5599, Ext. 681 (office) (908) 217-5124 (cellular)
Business Line Lead, Health and Safety	Robert Brooks, CSP (732) 469-5599, Ext. 681 (office) (908) 217-5124 (cellular)

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 are present or 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, cadmium, coal tar pitch volatiles, lead, PCB's, and trichloroethene (TCE).

Hazard information regarding the chemicals associated with the site activities at Scrap Yard 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)	• 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.
Cadmium	Inhalation, ingestion	0.005 mg/m^3	• Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, sunsternal pain, headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia, emphysema, proteinuria, mild ememia; potential occupational carcinogen • Imcompatible with strong oxidizers; elemental sulfur, selenium & tellurium

Table 4-1 Potential Chemical Hazards			
Chemical	**Exposure Routes**	**Permissible Exposure Limit (PEL) / Threshold Limit Value (TLV)**	**Health Hazards / Physical Hazards**
Coal Tar Pitch Volatiles	Inhalation, skin or eye contact	0.2 mg/m^3	• Dermatitis, bronchitis, potential occupational carcinogen • Incompatible with strong oxidizers
Lead	Skin, eye, inhalation, ingestion	0.2 mg/m^3	• A respiratory irritant; dry throat, cough, tight chest, dyspenia; nausea, vomiting, mental confusion, flu-like fever; CNS effects. • Reacts with oxidizers; displaces hydrogen from water and steam creating potential fire, explosion hazard.
PCB's	Skin, eye, inhalation, ingestion	1 mg/m^3	• Irritation of eyes; chloracne; liver damage; reproductive effects; potential occupational carcinogen • Incompatible with strong oxidizers
Trichloroethylene (TCE)	Skin, eye, inhalation, ingestion	50 ppm	• 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.

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 of 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 OHM personnel and OHM subcontractors. Hazard communication will include the following.

4.3.1 Container Labeling

OHM 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 OHM field projects and by an initial site orientation program.

At a minimum, OHM 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 OHM sites
- Emergency spill procedures
- Proper storage and labeling.

Before any new hazardous chemical is introduced on site, each OHM 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, OHM 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.

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.

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.

* *Based on "1998 ACGIH Threshold Limit Values... for Physical Agents."*
Note: *Refer to wind chill and work/warm-up charts attached.*

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.

Table 4-4D
Wind Chill Chart

Cooling Power of Wind on Exposed Flesh
Expressed as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	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 seconds			
	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	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	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:

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

Heat stress prevention is outlined in Shaw Environmental and Infrastructure, Inc. Health and Safety procedure HS400, Working in Hot Environments. This information will be reviewed during safety meetings. Workers are encouraged to increase consumption of water and electrolyte-containing beverages; e.g., Gatorade. Heat stress can be prevented by assuring an adequate work/rest schedule. Guidelines are presented below and should be used in conjunction with HS400.

In addition, workers are encouraged to take rests and report symptoms whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased based on worker recommendation to the SSO and SS. Heat stress can be prevented by assuring an adequate work/rest schedule and adequate fluid consumption. A guide for work/rest schedules for various protection levels are given below in Table 4-4F. The number of hours before a work/rest period is based on experience with similar work. The time periods should be considered maximum. It must also be remembered that individual physical variability's and differences in physical work activities may require revisions to site plans. This table should be used as a guide. Professional judgement of the SS and SSO is necessary to assure a fully protective plan to prevent heat stress disorders.

Table 4-4F
Guidelines For Work-Rest Periods
Protection Level
Number Of Hours Before Rest Period

Temperature	Level D	Level C	Level B	Level A
90+ F*	2.0	1.5	1.0	0.5
87.5 F	2.5	2.0	1.5	1.0
82.5 F	3.0	2.5	2.0	1.5
77.5 F	3.5	3.0	2.5	1.5
72.5	4.0	3.5	2.5	1.5

*Work above 100º F will be reviewed with the Project HSM to determine specific requirements.

Alternately the work/rest schedule can be calculated based on heat stress monitoring results. Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate 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.

Body temperature, measured orally or through the ear canal, may also be monitored to assess heat stress. Workers should not be permitted to continue work when their body temperature exceeds 100.4^{o}F (degrees

Fahrenheit) (38 degrees Celsius [^{o}C]). Monitoring should be conducted at the beginning of each break period as noted above.

Monitoring for heat stress will begin when the ambient temperature reaches or exceeds 70 ^{o}F when wearing chemical protective clothing (Level C, B, A), or 80 degrees Fahrenheit for site activities performed with no chemical protective clothing (Level D). Monitoring will include pulse rate, weight loss, oral/ or ear canal temperature, signs and symptoms of heat stress and fluid intake.

Heat stress prevention is outlined in procedure HS400 of the OHM 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 4-4G 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.

Table 4-4G
Hearing Protection Action Levels

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 required. 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.

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 (Stockhousen, 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 4-4 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.

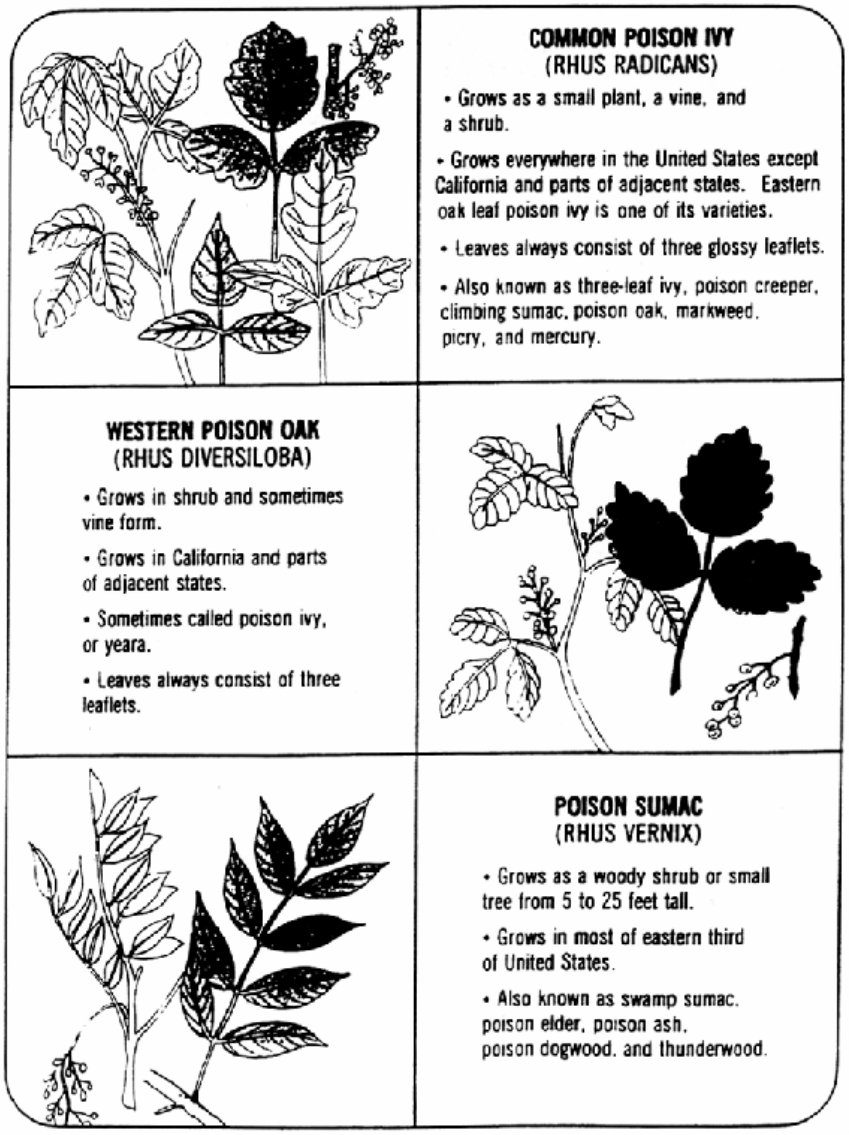

Figure 4-4
Poisonous Plants

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 repellant 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.

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.

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.

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. OHM employees involved in the operation and use of OHM and/or leased or rented vehicles will comply with the ***Shaw Environmental and Infrastructure, Inc. Motor Vehicle/Commercial Vehicle Operation and Maintenance Procedures*** (HS800/810). OHM requires employees to use seat belts at all times when traveling in OHM 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.

OHM 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 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.

OHM 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 OHM, 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.
- 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 Scrap yard. 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).

Table 6-1
Protection Levels

Task	Initial PPE Level	Upgrade PPE Level	Skin Protection	Respiratory Protection	Other PPE
Site preparation, installation of erosion controls, clearing, backfilling, road foundation and pavement, 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, monitoring well abandonment, pad soil removal, concrete pad cleaning, railroad track removal, adjacent soil removal	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 are 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.

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. OHM’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.

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 benzo(a)pyrene, dibenzo(a,h) anthracine, cadmium, lead, PCB's (Archolor 1260), and TCE. 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 Scrap Yard 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 will be used to monitor for toxic vapors. A lower explosive limit (LEL)/oxygen (O_2) 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.

Table 8-1
Air Monitoring Information

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
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/O_2 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 O_2 meter is calibrated by adjusting the O_2 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, H_2S, etc.).

OHM 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 know 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 OHM Project CIH may periodically review this data.

8.4 CALIBRATION REQUIREMENTS

The PID, LEL/O_2 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, OHM 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	• 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	• 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	• 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	• 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 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.

Table 9-2A
Potential Site Hazards

Chemical Hazards	• Materials at the site • Materials brought to the site
Physical Hazards	• Fire/explosion • Slip/trip/fall • Electrocution • Confined space • Immediately dangerous to life and health atmospheres • Excessive noise
Mechanical Hazards	• Heavy equipment • Stored energy system • Pinch points • Electrical equipment • Vehicle traffic
Environmental Hazards	• 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

- PPE selection/use
- Written and approved permits for hot work and confined space
- Following all OHM 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 Ambulance Fire Security	 (301) 744-4333 (301) 744-4333 (301) 744-4333 (301) 744-4333
Hospital - Southern Maryland Hospital 7503 Surrats Road Clinton, MD 20735 See Attachment H for directions to the hospital.	(301) 868-8000
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 RPM - Jeff Morris Activity Point of Contact - Shawn Jorgensen	 (301) 744-4122 (202) 685-3270 (301) 744-6745
OHM Personnel Project manager - Daniel Pringle Site Superintendent - Steve Carriere Site Safety Officer – Joe Walker UXO Specialist – Al Grant Program CIH – Dave Mummert Program Health and Safety Manager - Robert Brooks Business Line H&S Lead – Robert Brooks	 (412) 380-6248 (240) 882-1480 (cellular) (301) 743-3550 (trailer) (301) 743-2120 (site) (419) 425-6129 (office) (732) 469-5599 Ext. 681(office) (732) 469-5599 Ext. 681(office)
OHM (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.

It is recognized that the structure of the "Incident Command System" will change as additional response organizations are added. OHM will follow procedures as directed by the Fire Protection Division, Local Emergency Planning Commission, State and Federal Agencies as required. OHM 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 OHM 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.

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 OHM 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 OHM 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.

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 mate 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.)

- 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, OHM 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 OHM office trailer.

Table 9-6
Direct Reading Instrumentation

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 OHM 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:

- 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 OHM 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 and Infrastructure, 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

OHM 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

- 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:

- OHM 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 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 Scrap Yard 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 OHM/subcontractor personnel and visitors are presented in Table 10-1.

Table 10-1
Site Orientation

OHM/Subcontractors	Visitor Orientation
• 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 • UXO Awareness	• 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 OHM 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 OHM's worker medical profile is shown below. This program was developed in conjunction with a consultant toxicologist and OHM'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 OHM 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 OHM Medical Director and the HSM will be immediately notified of any suspected exposures to hazardous materials/wastes.

ATTACHMENT A
SAFETY PLAN ACKNOWLEDGEMENT

ATTACHMENT A
SAFETY PLAN ACKNOWLEDGEMENT

WORKER ACKNOWLEDGEMENT TO THE SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR THE WORK AT SCRAP YARD IN INDIAN HEAD, MARYLAND

I HAVE READ THE SITE-SAFETY PLAN FOR THIS SITE AND FULLY UNDERSTAND ITS CONTENTS.

Name	Date

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	• 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	• Clean up spills before initiating maintenance • Review maintenance procedures for safety practices		
	Struck By/Against Heavy Equipment	• 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	• Review equipment adjustment procedures, identify pinch points • Isolate/block pinch points to limit motion when inserting pins, fasteners, closing tackles	Leather gloves	
	Equipment failure	• Perform daily maintenance inspections on operating equipment		

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Equipment/ Facility Setup (Cont.)	Electrical Shock	• De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Use qualified electricians to hook up electrical circuits • Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Follow Health and Safety SH315, Control of Hazardous Energy and the Site-Specific Lockout/ Tagout/Try Plan	Lockout/Tagout Devices	Voltage meter or 'Tic' tracer
	Handling Heavy Objects	• 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 carrying heavy objects above shoulder level • Avoid manual lifting/carrying tasks		

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	• 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	• 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	• 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	• 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	• 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	• 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
• Forklifts/hand carts • Ladders • Hand Tools	• Daily equipment inspections as per manufacturers' requirements • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized

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	• 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	• Clear walkways, work areas of equipment, tools, and debris • Mark, identify, or barricade other obstructions		
	Handling Heavy Objects	• 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	• Wear face shield, goggles when operating powered clearing/grubbing equipment	Goggles and face shield	
	Overexertion	• Use the right tool for the task at hand • Avoid actions/activities that produce overexertion		
	Horseplay	• 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	• 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	• Avoid hand mowing/clearing in dense brush areas, suspected areas of stinging insects	Leather gloves	
	UXO	• 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		

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 (Cont.)	Contact with Poison Ivy	• 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	
	High/Low Ambient Temperature	• Monitor for Heat Stress in accordance with Health and Safety Procedure HS400 • Provide fluids to prevent worker dehydration		
Rock Check Dams Installation	Struck By/Against Heavy Equipment	• 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	
	Handling Heavy Objects	• 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 carrying heavy objects above shoulder level • Avoid manual lifting/carrying tasks		

Equipment Required	Inspection Requirements	Training Requirements
• Silt fence • Posts • Shovels • Heavy equipment	• Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review SSHASP

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	• 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	• 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	• Observe proper lifting techniques • Use dozer or trackhoe to move logs and brush		
	UXO	• 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	• Wear face shield, goggles when operating powered clearing/grubbing equipment	Face shield, goggles	
	Sharp Objects	• 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	• 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	

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing, Grubbing (Cont.)	Contact Dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers • Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions	Tyvek coveralls, duct tape bottom of coveralls to boots	
	Operations of Power Clearing Tools (brush saws, weed whackers)	• Wear eye, face, hand, and hearing protection when operating power clearing equipment • Shut-off/idle power tools walking between work areas • Store flammable liquids in well ventilated areas, away from work areas • Shut off equipment during refueling • Prohibit smoking while operating clearing equipment • Provide ABC (or equivalent) fire extinguishers for all work	Face shield, goggles, cloth gloves, ear plugs, steel toe work boots	
	High Noise Levels	• 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	• 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
	Unstable Ground; Rollover of Equipment	• Identify path of travel before moving dozer or trackhoe and inspect area for stable ground • Clearly mark any unstable areas		
	Walking on Machine Tracks	• 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)		

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	• Monitor weather forecast • Shut down operations should severe weather conditions exist		

Equipment Required	**Inspection Requirements**	**Training Requirements**
• Excavator/trackhoe and/or dozer • Power clearing tools (brush saws, week wackers)	• Daily equipment inspections as per manufacturers' requirements • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes)	• 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

ACTIVITY HAZARD ANALYSIS FOR PAD & ADJACENT SOIL REMOVAL				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Soil removal	Underground/ Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kV) 15 feet phase to ground clearance; 31 feet phase to phase clearance		
	Inhalation and Contact with Hazardous Substances	• 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
	Struck By/Against Heavy Equipment	• 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	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	

ACTIVITY HAZARD ANALYSIS FOR PAD & ADJACENT SOIL REMOVAL				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Soil removal (Cont.)	Slips, Trips, Falls	• 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	• 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	• 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	• 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	• Use the right tool for the task at hand • Maintain personal balance when performing manual excavation • Concentrate on the work task being performed		

ACTIVITY HAZARD ANALYSIS FOR PAD & ADJACENT SOIL REMOVAL				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Soil removal (Cont.)	Overexertion	• Use the right tool for the task at hand • Avoid actions/activities that produce overexertion		
	Horseplay	• Prohibit horseplay on all project sites • Review rules about horseplay with subcontract supervisors and workers • Remind workers not to respond/participate in horseplay started by others		

Equipment Required	Inspection Requirements	Training Requirements
• Excavator • Shovels, probes • Dump trucks • PID LEL/O_2 and vinyl chloride detector tubes, as necessary	• Daily equipment inspections as per manufacturers' requirements • Excavation inspection/permit • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized • Review site-specific chemical hazards

ACTIVITY HAZARD ANALYSIS FOR SCREENING OF CAD'S				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Screening Equipment Setup & Operation	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities	Do not use steel-toed boots	See UXO avoidance plan
	Electrical Safety	• Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Inspect all cords daily for structural integrity, ground continuity, and damaged insulation • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Follow Health and Safety HS315, Control of Hazardous Energy and the Site-Specific Lockout/ Tagout Plan		
	Spills	• Clean up spills before initiating maintenance • Review maintenance procedures for safety practices		
	Walking on Machine Tracks	• 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)		
	Struck By/Against Heavy Equipment	• 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 grapple adjustments are made • Do not attempt verbal communication in high noise backgrounds	Warning vests, hard hat, safety glasses, steel toed work boots	

ACTIVITY HAZARD ANALYSIS FOR SCREENING OF CAD'S				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Screening Equipment Setup & Operation cont.	Unstable Ground; Rollover of Equipment	• Identify path of travel before moving dozer or trackhoe and inspect area for stable ground • Clearly mark any unstable areas		
	Underground/ Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kV) 15 feet phase to ground clearance; 31 feet phase to phase clearance		
	Ladders	• Inspect ladders before use for mud buildup on treads • Clean mud from boots before climbing on ladders • Follow the three point of contact rule		
	Handling Heavy Objects	• 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 carrying heavy objects above shoulder level • Avoid manual lifting/carrying tasks	Leather gloves	
	Equipment failure	• Perform daily maintenance inspections on operating equipment		
	High/Low Ambient Temperature	• 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
	Sharp Objects	• 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	

ACTIVITY HAZARD ANALYSIS FOR SCREENING OF CAD'S				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Screening Equipment Setup & Operation cont.	Inhalation and Contact with Hazardous Substances	• 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
	High Noise Levels	• 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 Equip-ment on Trucks	• 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		
	Fire/Explosions	• Gasoline will be stored properly and in approved containers • Eliminate sources of ignition from the work area • Prohibit smoking • Provide 20lb ABC fire extinguisher • Store excess gas away from operations • Prohibit storage, transfer of flammable liquids in plastic containers • Bonding/ground cables must be used when transferring fuel		
	Pinch Points	• Review equipment adjustment procedures, identify pinch points • Isolate/block pinch points to limit motion when inserting pins, fasteners, closing tackles		
	Adverse Weather Conditions: - Lightning - High winds - Driving rain	• Monitor weather forecast • Shut down operations should severe weather conditions exist		

ACTIVITY HAZARD ANALYSIS FOR SCREENING OF CAD'S				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Screening Equipment Setup & Operation cont.	Slips, Trips, Falls	• Clear walkways work areas of equipment, tools, vegetation, and debris • Exit equipment slowly and maintain three point contact • Mark, identify, or barricade other obstructions		
Equipment Required		**Inspection Requirements**	**Training Requirements**	
• Backhoe/Trackhoe • Screening equipment • Conveyor • Hand Tools		• Daily equipment inspections as per manufacturers' requirements • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review pertinent sections of SSHASP • Review operations/safety manuals for all equipment utilized	

ACTIVITY HAZARD ANALYSIS FOR TORCH CUTTING OF UXO				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Equipment Setup	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities	Do not use steel-toed boots	See UXO avoidance plan
	Slips, Trips, Falls	• 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	• Clean up spills before initiating maintenance • Review maintenance procedures for safety practices		
	Struck By/Against Heavy Equipment	• 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 grapple adjustments are made • Do not attempt verbal communication in high noise backgrounds	Warning vests, hard hat, safety glasses, steel toed work boots	
	Pinch Points	• Review equipment adjustment procedures, identify pinch points • Isolate/block pinch points to limit motion when inserting pins, fasteners, closing tackles	Leather gloves	
	Equipment failure	• Perform daily maintenance inspections on operating equipment		

ACTIVITY HAZARD ANALYSIS FOR TORCH CUTTING OF UXO				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Equipment Setup cont.	Handling Heavy Objects	• 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 carrying heavy objects above shoulder level • Avoid manual lifting/carrying tasks		
	High/Low Ambient Temperature	• 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
	Sharp Objects	• 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	
	High Noise Levels	• 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 Equip-ment on Trucks	• 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		

ACTIVITY HAZARD ANALYSIS FOR TORCH CUTTING OF UXO				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Operating Oxy-Gasoline Safety Torch & Plasma Torch	Fire/Explosions	• UXO support must be present • UXO personnel will identify ordnance to be cut and specific spots to cut using an identification marker (paint, marker, etc.) • Complete Hot Work Permit • Gasoline will be stored properly and in approved containers • Eliminate sources of ignition from the work area • Prohibit smoking • Provide 20lb ABC fire extinguisher around Oxy-Gasoline torch and excess fuel storage area • Store excess gas away from cutting operations • Prohibit storage, transfer of flammable liquids in plastic containers • Bonding/ground cables must be used when transferring fuel	O_2/LEL Meter PID FID	
	Electrical Safety	• Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Inspect all cords daily for structural integrity, ground continuity, and damaged insulation • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Follow Health and Safety HS315, Control of Hazardous Energy and the Site-Specific Lockout/ Tagout Plan		

ACTIVITY HAZARD ANALYSIS FOR TORCH CUTTING OF UXO				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Operating Oxy-Gasoline Safety Torch and Plasma Torch	Cutting UXO	• UXO support must be present • Torch operating personnel will cut only ordnance that has been deemed and marked "inert" by UXO personnel • Torch operating personnel will cut only were UXO personnel have marked (paint, marker, etc.) on ordnance • All cutting equipment shall be inspected daily: defective equipment shall be removed from service, replaced or repaired, and reinspected before using again • The cutting equipment must contain a reverse-flow check valve in each hose or it must not be used anytime • Torches shall be inspected, at the beginning of each work shift, for leaking shutoff valves, hose couplings, and tip connections. Defective torches must be tagged out of service • Clogged torch tips must be cleaned with suitable cleaning wires or drills • Torches must be lighted with friction lighters only. • Torch valves must be closed and the gas supply shut off whenever work is suspended • Never interchange the fuel and oxygen gas hoses	Welders gloves, sleeves, and apron. Welding goggles of shad 5 or greater.	
Equipment Required		**Inspection Requirements**	**Training Requirements**	
• Backhoe/hand carts • Grappler attachment • Oxy-Gasoline Safety Torch & PlasmaTorch • Hand Tools • O_2/LEL Meter, PID, FID		• Daily equipment inspections as per manufacturers' requirements • Hot Work Permits • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review pertinent sections of SSHASP • Review operations/safety manuals for all equipment utilized • Review Oxy-Gasoline Safety Torch Video	

ACTIVITY HAZARD ANALYSIS FOR BACKFILLING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Backfilling	Struck By/Against Heavy Equipment,	• 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	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	
	Slips, Trips, Falls	• 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		
	Handling Heavy Objects	• 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	
	High /Low Ambient Temperature	• 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

ACTIVITY HAZARD ANALYSIS FOR BACKFILLING				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Equipment**	**Air Monitoring Devices**
Equipment Required		**Inspection Requirements**	**Training Requirements**	
• Dozer • PID, LEL/O_2 and vinyl chloride detector tubes, as necessary		• Daily equipment inspections as per manufacturers' requirements • Excavation inspection/permit • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized • Review site-specific chemical hazards	

ACTIVITY HAZARD ANALYSIS FOR CONCRETE PAD CLEANING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Concrete pad cleaning	Slips, Trips, Falls	• 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 Handling Heavy Objects	• 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 • Observe proper lifting technique • Avoid sudden movements, jerking motions • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Prohibit running, jumping during geotextile deployment • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Hard hat, goggles and face shield or safety glasses, steel toe work boots	

ACTIVITY HAZARD ANALYSIS FOR CONCRETE PAD CLEANING				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Equipment**	**Air Monitoring Devices**
Concrete pad cleaning (Con't)	High Noise Levels	• 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 85 dBA TWA	Ear plugs	Sound Level Meter
	High /Low Ambient Temperature	• 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**	
• Pressure washer		• Daily equipment inspections as per manufacturers' requirements • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized • Review site-specific chemical hazards	

ACTIVITY HAZARD ANALYSIS FOR INSTALLATION OF FOUNDATION AND PAVEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Installation of foundation and pavement	Inhalation and Contact with Hazardous Substances (pavement only)	• 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
	Struck By/Against Heavy Equipment	• 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	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	
	Slips, Trips, Falls	• 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		

ACTIVITY HAZARD ANALYSIS FOR INSTALLATION OF FOUNDATION AND PAVEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Installation of foundation and pavement (Cont.)	Handling Heavy Objects	• 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	
	High/Low Ambient Temperature	• 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**	
• Dozer • PID		• Daily equipment inspections as per manufacturers' requirements • Inspect all safety equipment (fire extinguishers, first aid kits and eye washes)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized	

ACTIVITY HAZARD ANALYSIS FOR WELL ABANDONMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Equipment**	**Air Monitoring Devices**
Well Abandonment	Sharp Objects	• 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 • Observe work area and location of other personnel before lifting or moving objects with sharp edges	Leather gloves	
	Handling Heavy Objects	• 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 • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meetings		
	Caught In/ Between Moving Parts of Mixer for Grout	• 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 wear proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lockout machinery before maintenance or service		
	Horseplay	• Prohibit horseplay on all project sites • Review rules about horseplay with subcontract supervisors and workers • Remind workers not to respond/participate in horseplay started by others		

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	• Clear walkways, work areas of equipment, drilling overburden, debris and other materials • Mark, identify, or barricade other obstructions		
	Inhalation and Contact with Grout	• 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	• Avoid hand mowing/clearing in dense brush areas, suspected areas of stinging insects	Leather gloves	
	Contact with Poison Ivy	• 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
• Grout mixer • Grout • Hand tools	• Daily equipment inspections as per manufacturers' requirements • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review SSHASP • Review MSDS for grout

ACTIVITY HAZARD ANALYSIS FOR RAILROAD TRACK REMOVAL				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Equipment**	**Air Monitoring Devices**
Railroad Track removal	Musculoskeletal Disorders (MSD)	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • ensure proper body positioning, do not work in awkward positions		
	Slips, Trips, Falls	• Mark, identify, or barricade other obstructions • Work areas, platforms, and walkways should be kept free of materials, debris, and obstructions such as ice, grease or oil that could cause a surface to become slick or otherwise hazardous • Clear walkways and drilling overburden • Clean mud and grease from boots before mounting a drill platform; watch for slippery ground when dismounting from the platform		
	Fire/Explosion	• Eliminate sources of ignition from the work area • Prohibit smoking • UXO support must be present • Provide ABC (or equivalent) fire extinguishers in all work areas, flammable storage areas, generator and compressor locations • Store flammable liquids in well ventilated areas • Prohibit storage, transfer of flammable liquids in plastic containers • Bonding/ground cables must be used when transferring fuel	Tyvek coveralls, latex or rubber overboots, inner cotton glove liners (based on weather) or inner sample gloves and outer nitrile gloves	PID

ACTIVITY HAZARD ANALYSIS FOR RAILROAD TRACK REMOVAL				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Equipment**	**Air Monitoring Devices**
Railroad track removal (Con't)	Caught In/Between	• 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		
	Sharp Objects	• 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 • Use a long handle shovel to move auger cuttings away from the auger	Cut resistant gloves	
	Struck By or Against Pinch Point	• Driller helper and other site personnel must know location of emergency shut-off switch and test before each startup • Pipe, drill rods, casing, augers, and similar drilling tools should be orderly stacked on racks or sills to prevent spreading, rolling or sliding		

ACTIVITY HAZARD ANALYSIS FOR RAILROAD TRACK REMOVAL

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Equipment	Air Monitoring Devices
Railroad track removal (Cont.)	Adverse Weather Conditions: - Lightning - High winds - Driving rain	• Monitor weather forecast • Shut down operations should severe weather conditions exist		
	Insect/Snake Bites	• 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		
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	

Equipment Required	Inspection Requirements	Training Requirements
•	• Daily equipment inspections as per manufacturers' requirements • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review SSHASP • Review operations/safety manuals for all equipment utilized • Review site-specific chemical hazards • Obtain MSDSs from drillers for materials brought to the site

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	• 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	• 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	• 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	• 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 hat 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	

ACTIVITY HAZARD ANALYSIS FOR EQUIPMENT DECONTAMINATION				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Equipment Decontamination (Cont.)	Handling Heavy Objects	• 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 actions/activities that contribute to overexertion • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meetings		
	Sharp Objects/Cuts and Punctures	• Wear cut resistant work gloves when the possibility of injury may be caused by sharp edges/objects or working with hand tools • Guard or pad metal edges of objects frequently used (access panels, etc.) or manipulated/ bypassed during maintenance • Position heavy objects to avoid manipulation while cleaning • Get assistance and dry glove surfaces to improve grip during object manipulation while cleaning	Leather gloves	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	
	Repetitive Strains	• Rotate job tasks on high vibration equipment • Report equipment that produces high vibration for inspection and maintenance • Wear vibration reducing gloves		

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	• Maintain a safe stance and body position operating pressurized equipment • Avoid rushing		
	High/Low Ambient Temperature	• 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
• Pressure washer	• Equipment inspections • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review SSHASP • Review site-specific AHA with all task personnel • Review operation manuals for the pumps and related equipment

ACTIVITY HAZARD ANALYSIS FOR SITE RESTORATION				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Site Restoration	Struck By/Against Heavy Equipment, Protruding Objects	• Wear reflective warning vests when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Wear hard hats, safety glasses with side shields, or splash/face shields and goggles, and steel-toe safety boots at all times • Understand and review hand signals	Warning vests, hard hat, safety glasses, steel toe work boots	
	Slips, Trips, Falls	• Clear, walkways of equipment, tools, debris, other materials • Mark, identify, or barricade other obstructions		
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs	
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person for manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads		
	High/Low Ambient Temperature	• 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**	
• Bobcat or forklift for moving bulky loads • Grass seed		• Equipment inspections • Inspection of all emergency equipment (i.e., first aid kits, fire extinguishers)	• Review SSHASP • Review site-specific AHA with all task personnel • Review operation manuals for the pumps and related equipment	

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	• 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	• 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	• 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		

ACTIVITY HAZARD ANALYSIS FOR STABILIZED CONSTRUCTION ENTRANCES				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		TWA		
	Slips, Trips, Falls	• Clear walkways, work areas of equipment and tools • Mark, identify, or barricade other obstructions		
Stabilized Construction Entrances (continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Use shears instead of a knife to cut the plastic sheeting.	Leather gloves	
	Allergic Reaction	• 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	• Avoid hand mowing/clearing in dense brush areas, suspected Areas of stinging insects	Leather gloves	
	Contact with Poison Ivy	• 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	

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	• Monitor weather forecast • Shut down operations should severe weather conditions exist		

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Loader • Geotextile • Aggregate	• Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review Site Specific Health and Safety Plan

ACTIVITY HAZARD ANALYSIS FOR INSTALLATION OF EROSION CONTROL MATTING				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Installation of Erosion Control Matting	Sharp Objects	• 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 matting (if possible)	Leather gloves	
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, tools, vegetation and debris • Mark, identify, or barricade other obstructions		
	Handling Heavy Objects	• 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 • Warm up muscles before engaging in manual lifting activities • Avoid actions/activities that contribute to over exertion • Review lifting posture/techniques regularly at safety meetings		
Installation of Erosion Control Matting (continued)	Overexertion	• Use the right tool for the task at hand • Avoid actions/activities that produce overexertion		
	Allergic Reaction	• 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	• Avoid hand mowing/clearing in dense brush areas, suspected Areas of stinging insects	Leather gloves	

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	• 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	• 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
• Matting	• Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review Site Specific Health and Safety Plan

ACTIVITY HAZARD ANALYSIS FOR DECONTAMINATION PAD CONSTRUCTION				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Decontamination Pad Construction	Handling Heavy Objects-(i.e. Wood structure)	• 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 • Warm up muscles before engaging in manual lifting activities • Avoid actions/activities that contribute to over exertion • Review lifting posture/techniques regularly at safety meetings		
	Slips, Trips, Falls	• Clear walkways, work areas of equipment and tools • Mark, identify, or barricade other obstructions • Place temporary weights (sand bags) on liner materials if wind conditions are present		
Decontamination Pad Construction (continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Use shears instead of a knife to cut the plastic sheeting.	Leather gloves	
	Adverse weather conditions	• Monitor weather forecast • Shut down operations should severe weather conditions exist		
EQUIPMENT REQUIRED		**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**	
• Poly sheeting • Wood		• Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review Site Specific Health and Safety Plan	

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	• 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	• 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	• 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		

ACTIVITY HAZARD ANALYSIS FOR MATERIAL HANDLING PAD CONSTRUCTION				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
	Slips, Trips, Falls	• Clear walkways, work areas of equipment and tools • Mark, identify, or barricade other obstructions		
Material Handling Pad Construction (continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Use shears instead of a knife to cut the plastic sheeting.	Leather gloves	
	Adverse weather conditions	• Monitor weather forecast • Shut down operations should severe weather conditions exist		

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
• Loader • Soil for berm • Aggregate	• Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)	• Review AHA with all task personnel • Review Site Specific Health and Safety Plan

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	• 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	• 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	• 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		

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)	Slips, Trips, Falls	• Clear walkways, work areas of equipment, tools, construction debris, and other materials • Mark, identify, or barricade other obstructions • Evaluate fall hazards above 4 ft.; use fall protection equipment (harness/lanyard), standard guardrails or other fall protection systems when working on elevated platforms above 6 ft. • Anchorage points for fall arrest systems must support at least 5,400 pounds for each worker • Use heavy duty industrial (type IA) ladders		
	Inhalation and Contact with Hazardous Substances	• 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	As prescribed by the Site Specific Health and Safety Plan	
Confined Space Entry (continued)	Electrical Shock	• De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Ensure light sources are Rated for Class I, Division I • Employ ground-fault circuit interrupters • Inspect all extension cords daily for structural integrity, ground continuity, and damage • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Follow Lockout-Tagout procedures in accordance with IT HS315	Lockout-Tagout Devices	Voltage Meter or Tic Tracer

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	• 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	• 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	• Rotate job tasks on high vibration equipment • Report equipment that produces high vibration for inspection and maintenance		
	Strains and Sprains	• 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		

ACTIVITY HAZARD ANALYSIS FOR CONFINED SPACE ENTRY				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
EQUIPMENT REQUIRED		**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**	
• LEL/O2 Meter • Tripod • Full body Harness and Lanyard • Lockout/Tagout devices • Fire extinguisher • Emergency Rescue Equipment		• Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) • Complete Confined Space Entry Permit in accordance with HS300. • Review the emergency rescue practice drill and evaluate performance. Complete Attachment 4 to HS300	• Review AHA AND site Specific Health and Safety Plan • Review operations/safety manuals for all equipment utilized • Ensure personnel are trained in CSE, Attendant and Supervisory Procedures in accordance with HS300.	

ATTACHMENT C
ACCIDENT PREVENTION PLAN

OHM Remediation Services Corp.

ACCIDENT PREVENTION PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
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Project No. 831866

November 26, 2002

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LIST OF ACRONYMS

Acronym	Title
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
OHM	OHM Remediation Services Corporation
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: Program Health and Safety Manager	Robert A. Brooks, CSP (732) 469-5599 (office)
	_____
Approved by: Project Manager	Dan Pringle 412-380-6248 (office)
	_____

2.0 BACKGROUND INFORMATION

2.1 OHM REMEDIATION SERVICES CORPORATION (OHM)

Contract No. N62470-97-D-5000, Task Order 077

The principal tasks to be conducted are listed below:

- Mobilization and site setup
- Site preparation
- E&S controls installation
- Monitoring well abandonment
- Clearing and grubbing
- Pad soil removal
- Concrete pad cleaning
- Railroad track removal
- Adjacent soil removal
- Backfilling
- Road foundation and pavement
- Site restoration
- Remove temporary facilities
- Site inspection
- Demobilization

2.2 OHM ACCIDENT EXPERIENCE

YEAR	EMR (Interstate)*	OSHA Recordable Incident Rate*
2001	0.54	2.5
2000	0.53	2.8
1999	0.53	3.3
* OHM		

2.3 HAZARDOUS ACTIVITIES REQUIRING ACTIVITY HAZARD ANALYSIS

- Mobilization and site setup
- Site preparation
- E&S controls installation
- Monitoring well abandonment
- Clearing and grubbing
- Pad soil removal
- Concrete pad cleaning

- Railroad track removal
- Adjacent soil removal
- Backfilling
- Road foundation and pavement
- Site restoration
- Remove temporary facilities
- Site inspection
- Demobilization

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

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 of 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.

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), Program 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

OHM subcontractors will be screened for safety performance and compliance with the Federal Alcohol and Drug testing requirements prior to being issued any contract for site work. OHM 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 OHM subcontractors.

5.2 SUBCONTRACTOR/SUPPLIER SAFETY RESPONSIBILITIES

All subcontractor employees are subject to the same training and medical surveillance requirements as OHM 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 will 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.

OHM subcontractors are required to sign off and comply with all requirements of the OHM 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 OHM/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 41 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 OHM 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 OHM 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 OHM 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 OHM daily safety meetings. Daily safety meetings will comply with Procedure HS051.

7.0 SAFETY AND HEALTH INSPECTIONS

7.1 SAFETY INSPECTIONS

The OHM 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 OHM Program 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 OHM 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

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

As required, OHM 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

OHM 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. OHM will establish programs to recognize people and projects that demonstrate excellence in safety performance. OHM 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. The OHM site supervisor will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. OHM will provide and enforce safety rules to protect employees, subcontractors, clients, and the public.

8.2 OHM SAFETY INCENTIVE PROGRAMS

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

8.3 OHM 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 Program 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.

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 OHM 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 Program 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 subcontractor safety performance records have been verified prior to contract award and monitor subcontractor 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 OHM Program Health and Safety Manager tracks and maintains incident records per Federal reporting requirements (OSHA 300 Log). 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

OHM 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. OHM personnel will evacuate any injured person 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.

- **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 PERSONALPROTECTIVE 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 Program Health and Safety Manager and/or the CIH. 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. OHM 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, Program 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.

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 E of the SSHASP.

12.12 ACCESS AND HAUL ROAD PLAN

Not applicable.

12.13 DEMOLITON 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.

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, OHM 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 Shaw Environmental and Infrastructure, Inc. 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

Cadmium

Cola Tar Pitch Volatiles

Lead

PCB's

Trichloroethene

Diesel Fuel

Gasoline

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*          NIOSH POCKET GUIDE TO CHEMICAL HAZARDS                    *
*                                                                    *
* Produced by: US National Institute for Occupational Safety and Health *
* Provided by: Canadian Centre for Occupational Health and Safety      *
* * * * * * * * * * * * * * * * * * * * * * * * NPG diskette - March 1998 *
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CHEMICAL NAME : Arsenic, organic compounds (as As)
SYNONYMS : Synonyms vary depending upon the specific organic arsen
ic compound.
CCOHS RECORD NUMBER : 39

DESCRIPTION : Appearance and odor vary depending upon the specific or
ganic arsenic compound.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
: None

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 0.5 mg/m3

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 0.5 mg/m3

IDLH CONCENTRATION : Not determined yet.

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
To be added later.

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Recommendations regarding personal protective clothing vary depending upon t
he specific compound.

EYE PROTECTION :
Recommendations regarding eye protection vary depending upon the specific co
mpound.

SKIN CLEAN-UP :
Recommendations regarding washing the skin vary depending upon the specific compound.

CLOTHING/PPE REMOVAL :
Recommendations regarding the removal of personal protective clothing that b ecomes wet or
contaminated vary depending upon the
specific compound.

CLOTHING/PPE CHANGE :
Recommendations regarding the daily changing of personal protective clothing vary depending upon the
specific compound.

PPE FACILITIES :
Recommendations regarding the need for eyewash or quick drench facilities va ry depending upon the
specific compound.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Ingestion; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
In animals: irritation skin, possible dermatitis; respiratory distress; diar rhea; kidney damage; muscle
tremor, seizure; possible gastrointestinal tract, reproductive effects; possibl e liver damage

TARGET ORGANS :
Skin, respiratory system, kidneys, central nervous system, liver, gastrointe stinal tract, reproductive system

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, immediately wash the contaminated skin w
ith soap and water. If this
chemical penetrates the clothing, immediately remove the clothing, wash the ski
n with soap and water, and
get medical attention promptly.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person
to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected
person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : Properties vary depending upon the specific organic ars
enic compound.
INCOMPATIBILITIES AND REACTIVITIES :
Varies

MEASUREMENT METHOD :
Particulate filter; Reagent; Ion chromatography/Hydride generation atomic ab
sorption spectrometry;
NIOSH Manual of Analytical Methods (NMAM), 4th edition [#5022, Arsenic, Organo-
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*** END OF RECORD ***

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CHEMICAL NAME : Cadmium dust (as Cd)
SYNONYMS : Cadmium metal: Cadmium
Other synonyms vary depending upon the specific cadmium compound.
CAS REGISTRY NUMBER : 7440-43-9 (metal)
RTECS NUMBER : EU9800000 (metal)
DOT/NAERG NUMBERS : 2570 / 154 (compounds)
CCOHS RECORD NUMBER : 87
MOLECULAR FORMULA : Cd (metal)

DESCRIPTION : Metal: Silver-white, blue-tinged lustrous, odorless sol id.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NIOSH REL*:
NOTE : See Appendix A
[NOTE : The REL applies to all Cadmium compounds (as Cd).]

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
[1910.1027]
TIME WEIGHTED AVERAGE (TWA) : 0.005 mg/m3
[NOTE : The PEL applies to all Cadmium compounds (as Cd).]

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
[1910.1027]
TIME WEIGHTED AVERAGE (TWA) : 0.005 mg/m3
[NOTE : The PEL applies to all Cadmium compounds (as Cd).]

IDLH CONCENTRATION : Potential NIOSH carcinogen.
[9 mg/m3 (as Cd)]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION:
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)
OR 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 breathing apparatus operated in pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
No recommendation is made specifying the need for personal protective equipment for the body.

EYE PROTECTION :
No recommendation is made specifying the need for eye protection.

SKIN CLEAN-UP :
The worker should wash daily at the end of each work shift.

CLOTHING/PPE REMOVAL :
No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

CLOTHING/PPE CHANGE :
Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the work premises.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Ingestion

POTENTIAL SYMPTOMS OF EXPOSURE :
Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, sub sternal (occurring beneath
the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense
of smell), emphysema, proteinuria, mild anemia; potential occupational carcinog en

TARGET ORGANS :
Respiratory system, kidneys, prostate, blood

POTENTIAL OCCUPATIONAL CARCINOGEN :
prostatic & lung cancer

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, wash the contaminated skin with soap and water.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : 112.4
BOILING POINT : 1409 deg F
FREEZING POINT : MLT: 610 deg F

SOLUBILITY : Insoluble
VAPOR PRESSURE : 0 mmHg (approx)
SPECIFIC GRAVITY : 8.65 (metal)

FLASH POINT : Not applicable.
LOWER EXPLOSIVE LIMIT : Not applicable.
UPPER EXPLOSIVE LIMIT : Not applicable.
IONIZATION POTENTIAL : Not applicable.
FLAMMABILITY CLASS :
Metal: Noncombustible Solid in bulk form, but will burn in powder form.
INCOMPATIBILITIES AND REACTIVITIES :
Strong oxidizers; elemental sulfur, selenium & tellurium

MEASUREMENT METHOD :
Particulate filter; Acid; Flame atomic absorption spectrometry; NIOSH Manual of Analytical Methods
(NMAM), 4th edition [#7048]

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix A:
New Policy
For the past 20 plus years, NIOSH has subscribed to a carcinogen policy that was published in 1976 by Edward J. Fairchild, II, Associate Director for Cincinnati Operations, which called for "no detectable exposure levels for proven carcinogenic substances" (Annals of the New York Academy of Sciences, 271:200-207, 1976). This was in response to a generic OSHA rulemaking on carcinogens. Because of advances in science and in approaches to risk assessment and risk management, NIOSH has adopted a more inclusive policy. NIOSH recommended exposure limits (RELs) will be based on risk evaluations using human or animal health effects data, and on an assessment of what levels can be feasibly achieved by engineering controls and measured by analytical techniques. To the extent feasible, NIOSH will project not only a no-effect exposure, but also exposure levels at which there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the Occupational Safety and Health Act of 1970, which charges NIOSH to ". . .describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."
.

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

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Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

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Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

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"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a

pressure-demand or other positive-pressure mode.

*** END OF RECORD ***

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CHEMICAL NAME : Coal tar pitch volatiles
SYNONYMS : Synonyms vary depending upon the specific compound (e.g
.
pyrene
phenanthrene
acridine
chrysene
anthracene & benzo(a)pyrene).
CAS REGISTRY NUMBER : 65996-93-2
RTECS NUMBER : GF8655000
CCOHS RECORD NUMBER : 145

NOTE : NIOSH considers coal tar, coal tar pitch, and creosote
to be coal tar products.
DESCRIPTION : Black or dark-brown amorphous residue.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
TIME WEIGHTED AVERAGE (TWA) : 0.1 mg/m3 (cyclohexane-extractable fracti
on)
NOTE : See Appendix A
NOTE : See Appendix C

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 0.2 mg/m3 (benzene-soluble fraction) [191
0.1002]
NOTE : See Appendix C

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 0.2 mg/m3 (benzene-soluble fraction) [191
0.1002]
NOTE : See Appendix C

IDLH CONCENTRATION : Potential NIOSH carcinogen.

[80 mg/m3]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION:
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)
OR 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 breathing apparatus operated in pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Wear appropriate personal protective clothing to prevent skin contact.

EYE PROTECTION :
Wear appropriate eye protection to prevent eye contact.

SKIN CLEAN-UP :
The worker should wash daily at the end of each work shift.

CLOTHING/PPE REMOVAL :
No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

CLOTHING/PPE CHANGE :
Workers whose clothing may have become contaminated should change into uncontaminated clothing

before leaving the work premises.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Dermatitis, bronchitis, potential occupational carcinogen

TARGET ORGANS :
Respiratory system, skin, bladder, kidneys

POTENTIAL OCCUPATIONAL CARCINOGEN :
lung, kidney & skin cancer

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo
unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact
lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, immediately wash the contaminated skin w
ith soap and water. If this
chemical penetrates the clothing, immediately remove the clothing, wash the ski
n with soap and water, and
get medical attention promptly.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person
to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected
person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : Properties vary depending upon the specific compound.

FLAMMABILITY CLASS :
Combustible Solids
INCOMPATIBILITIES AND REACTIVITIES :
Strong oxidizers

MEASUREMENT METHOD :
Particulate filter; Benzene; Gravimetric; OSHA Analytical Methods Manual, 19
90 edition [#58]

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix A:
New Policy
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The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)."
[Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological

feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

.

Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

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.

"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a pressure-demand or other positive-pressure mode.

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Appendix C: NIOSH considers coal tar products (i.e., coal tar, coal tar pitch, or creosote) to be potential occupational carcinogens; the NIOSH REL (10-hour TWA) for coal tar products is 0.1 mg/m3 (cyclohexane-extractable fraction).

OSHA PEL NOTES

Appendix C: The OSHA PEL (8-hour TWA) for coal tar pitch volatiles is 0.2 m
g/m3 (benzene-soluble
fraction). OSHA defines "coal
tar pitch volatiles" in 29 CFR 1910.1002 as the fused polycyclic hydrocarbon
s that volatilize from the
distillation residues of
coal, petroleum (excluding asphalt), wood, and other organic matter and incl
udes substances such as
anthracene, benzo(a)pyrene
(BaP), phenanthrene, acridine, chrysene, pyrene, etc.

*** END OF RECORD ***

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CHEMICAL NAME : Lead
SYNONYMS : Lead metal
Plumbum
CAS REGISTRY NUMBER : 7439-92-1
RTECS NUMBER : OF7525000
CCOHS RECORD NUMBER : 368
MOLECULAR FORMULA : Pb

DESCRIPTION : A heavy, ductile, soft, gray solid.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NIOSH REL*:
TIME WEIGHTED AVERAGE (TWA) : 0.100 mg/m3
NOTE : See Appendix C
[NOTE : The REL also applies to other lead compounds (as Pb).]

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
[1910.1025]
TIME WEIGHTED AVERAGE (TWA) : 0.050 mg/m3
NOTE : See Appendix C
[NOTE : The PEL also applies to other lead compounds (as Pb).]

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
[1910.1025]
TIME WEIGHTED AVERAGE (TWA) : 0.050 mg/m3
NOTE : See Appendix C
[NOTE : The PEL also applies to other lead compounds (as Pb).]

IDLH CONCENTRATION : 100 mg/m3 (as Pb)

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION

BASED ON OSHA PEL

UP TO 0.5 mg/m3:
Any air-purifying respirator with a high-efficiency particulate filter (APF = 10)
OR Any supplied-air respirator (APF = 10)

UP TO 1.25 mg/m3:
Any supplied-air respirator operated in a continuous-flow mode (APF = 25)
OR Any powered, air-purifying respirator with a high-efficiency particulate filter (APF = 25)

UP TO 2.5 mg/m3:
Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50)
OR Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode (APF = 50)
OR Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter (APF = 50)
OR Any self-contained breathing apparatus with a full facepiece (APF = 50)
OR Any supplied-air respirator with a full facepiece (APF = 50)

UP TO 50 mg/m3:
Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode (APF = 1000)

UP TO 100 mg/m3:
Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 2000)

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDI
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)
OR 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 breathing apparatus operated in pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator with a high-efficiency particul
ate filter (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Wear appropriate personal protective clothing to prevent skin contact.

EYE PROTECTION :
Wear appropriate eye protection to prevent eye contact.

SKIN CLEAN-UP :
The worker should wash daily at the end of each work shift.

CLOTHING/PPE REMOVAL :
Work clothing that becomes wet or significantly contaminated should be remov
ed and replaced.

CLOTHING/PPE CHANGE :
Workers whose clothing may have become contaminated should change into uncon
taminated clothing
before leaving the work premises.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Ingestion; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Weakness, lassitude (weakness, exhaustion), insomnia; facial pallor; anorexi
a, weight loss, malnutrition;
constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paraly
sis wrist, ankles;
encephalopathy; kidney disease; irritation eyes; hypotension

TARGET ORGANS :
Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingiv
al tissue

EYES - FIRST AID :

If this chemical contacts the eyes, immediately wash the eyes with large amo
unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact
lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, promptly flush the contaminated skin wit
h soap and water. If this
chemical penetrates the clothing, promptly remove the clothing and flush the sk
in with water. If irritation
persists after washing, get medical attention.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person
to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected
person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : 207.2
BOILING POINT : 3164 deg F
FREEZING POINT : MLT: 621 deg F
SOLUBILITY : Insoluble
VAPOR PRESSURE : 0 mmHg (approx)
SPECIFIC GRAVITY : 11.34

FLASH POINT : Not applicable.
LOWER EXPLOSIVE LIMIT : Not applicable.
UPPER EXPLOSIVE LIMIT : Not applicable.
IONIZATION POTENTIAL : Not applicable.
FLAMMABILITY CLASS :
Noncombustible Solid in bulk form.
INCOMPATIBILITIES AND REACTIVITIES :
Strong oxidizers, hydrogen peroxide, acids

MEASUREMENT METHOD :
Particulate filter; Nitric acid/Hydrogen peroxide; Flame atomic absorption s

pectrometry; NIOSH Manual of
Analytical Methods (NMAM), 4th edition [#7082] [Also #7105, #7300]

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix C: NIOSH considers "Lead" to mean metallic lead, lead oxides, and lead salts (including organic salts such as lead soaps but excluding lead arsenate). The NIOSH REL for lead (10-hour TWA) is 0.100 mg/m3; air concentrations should be maintained so that worker blood lead remains less than 0.060 mg Pb/100 g of whole blood.

OSHA PEL NOTES
Appendix C: OSHA considers "Lead" to mean metallic lead, all inorganic lead compounds (lead oxides
and lead salts), and a class
of organic compounds called soaps; all other lead compounds are excluded fro
m this definition. The
OSHA PEL (8-hour TWA) is 0.050
mg/m3; other OSHA requirements can be found in 29 CFR 1910.1025. The OSHA P
EL (8-hour TWA)
for lead in "non-ferrous foundries with
less than 20 employees" is 0.075 mg/m3.

*** END OF RECORD ***

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CHEMICAL NAME : Chlorodiphenyl (42 percent chlorine)
SYNONYMS : Aroclor(R) 1242
PCB
Polychlorinated biphenyl
CAS REGISTRY NUMBER : 53469-21-9
RTECS NUMBER : TQ1356000
DOT/NAERG NUMBERS : 2315 / 171
CCOHS RECORD NUMBER : 125
MOLECULAR FORMULA : C6H4ClC6H3Cl2 (approx)

DESCRIPTION : Colorless to light-colored, viscous liquid with a mild, hydrocarbon odor.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NIOSH REL*:
TIME WEIGHTED AVERAGE (TWA) : 0.001 mg/m3
NOTE : See Appendix A
[NOTE : The REL also applies to other PCBs.]

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 1 mg/m3
SKIN PRECAUTION : Potential for skin absorption.

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 1 mg/m3
SKIN PRECAUTION : Potential for skin absorption.

IDLH CONCENTRATION : Potential NIOSH carcinogen.
[5 mg/m3]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION

BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION:
Any self-contained breathing apparatus that has a full facepiece and is oper
ated in a pressure-demand or
other positive-pressure mode (APF = 10,000)
OR 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 breathin
g apparatus operated in
pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, f
ront- or back-mounted organic
vapor canister having a high-efficiency particulate filter (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Wear appropriate personal protective clothing to prevent skin contact.

EYE PROTECTION :
Wear appropriate eye protection to prevent eye contact.

SKIN CLEAN-UP :
The worker should immediately wash the skin when it becomes contaminated.

CLOTHING/PPE REMOVAL :
Work clothing that becomes wet or significantly contaminated should be remov
ed and replaced.

CLOTHING/PPE CHANGE :
Workers whose clothing may have become contaminated should change into uncon
taminated clothing
before leaving the work premises.

PPE FACILITIES :
Eyewash fountains should be provided in areas where there is any possibility
that workers could be
exposed to the substances; this is irrespective of the recommendation involving

the wearing of eye
protection., Facilities for quickly drenching the body should be provided withi
n the immediate work area for
emergency use where there is a possibility of exposure.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Skin absorption; Ingestion; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Irritation eyes; chloracne; liver damage; reproductive effects; potential oc
cupational carcinogen

TARGET ORGANS :
Skin, eyes, liver, reproductive system

POTENTIAL OCCUPATIONAL CARCINOGEN :
evidence in animals: tumors of the pituitary gland & liver, leukemia

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo
unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact
lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, immediately wash the contaminated skin w
ith soap and water. If this
chemical penetrates the clothing, immediately remove the clothing, wash the ski
n with soap and water, and
get medical attention promptly.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person
to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected
person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : 258 (approx)
BOILING POINT : 617-691 deg F
FREEZING POINT : -2 deg F
SOLUBILITY : Insoluble
VAPOR PRESSURE : 0.001 mmHg
SPECIFIC GRAVITY : Sp.Gr(77 deg F): 1.39

FLASH POINT : Not applicable.
LOWER EXPLOSIVE LIMIT : Not applicable.
UPPER EXPLOSIVE LIMIT : Not applicable.
IONIZATION POTENTIAL : Unknown for lack of data.
FLAMMABILITY CLASS :
Nonflammable Liquid, but exposure in a fire results in the formation of a bl
ack soot containing PCBs,
polychlorinated dibenzofurans & chlorinated dibenzo-p-dioxins.
INCOMPATIBILITIES AND REACTIVITIES :
Strong oxidizers

MEASUREMENT METHOD :
Particulate filter/Florisil(R) tube; Hexane; Gas chromatography with electro
n capture detection; NIOSH
Manual of Analytical Methods (NMAM), 4th edition [#5503, PCBs]

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix A:
New Policy
For the past 20 plus years, NIOSH has subscribed to a carcinogen policy
that was published in 1976 by Edward J. Fairchild, II, Associate Director
for Cincinnati Operations, which called for "no detectable exposure levels
for proven carcinogenic substances" (Annals of the New York Academy of
Sciences, 271:200-207, 1976). This was in response to a generic OSHA
rulemaking on carcinogens. Because of advances in science and in
approaches to risk assessment and risk management, NIOSH has adopted a more
inclusive policy. NIOSH recommended exposure limits (RELs) will be based
on risk evaluations using human or animal health effects data, and on an
assessment of what levels can be feasibly achieved by engineering controls
and measured by analytical techniques. To the extent feasible, NIOSH will
project not only a no-effect exposure, but also exposure levels at which

there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the Occupational Safety and Health Act of 1970, which charges NIOSH to ". . .describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."

.

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

.

Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

.

Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

.

"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that

occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a pressure-demand or other positive-pressure mode.

*** END OF RECORD ***

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*          NIOSH POCKET GUIDE TO CHEMICAL HAZARDS                  *
*                                                                  *
* Produced by: US National Institute for Occupational Safety and Health *
* Provided by: Canadian Centre for Occupational Health and Safety      *
* * * * * * * * * * * * * * * * * * * * * * * * NPG diskette - March 1998 *
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CHEMICAL NAME : Trichloroethylene
SYNONYMS : Ethylene trichloride
TCE
Trichloroethene
Trilene
CAS REGISTRY NUMBER : 79-01-6
RTECS NUMBER : KX4550000
DOT/NAERG NUMBERS : 1710 / 160
CCOHS RECORD NUMBER : 629
MOLECULAR FORMULA : ClCH=CCl2

DESCRIPTION : Colorless liquid (unless dyed blue) with a chloroform-l
ike odor.

*** EXPOSURE LIMITS ***

CONVERSION FACTOR :
1 ppm = 5.37 mg/m3 at 25 deg C and 1 atmosphere

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NOTE : See Appendix A
NOTE : See Appendix C

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 100 ppm
CEILING EXPOSURE LIMIT (C) : 200 ppm 300 ppm (5-minute maximum peak in
any 2 hours)

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 50 ppm (270 mg/m3)
SHORT TERM EXPOSURE LIMIT (STEL) : 200 ppm (1080 mg/m3)

IDLH CONCENTRATION : Potential NIOSH carcinogen.
[1000 ppm]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION:
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)
OR 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 breathing apparatus operated in pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Wear appropriate personal protective clothing to prevent skin contact.

EYE PROTECTION :
Wear appropriate eye protection to prevent eye contact.

SKIN CLEAN-UP :
The worker should immediately wash the skin when it becomes contaminated.

CLOTHING/PPE REMOVAL :
Work clothing that becomes wet or significantly contaminated should be removed and replaced.

CLOTHING/PPE CHANGE :
No recommendation is made specifying the need for the worker to change clothing after the workshift.

PPE FACILITIES :
Eyewash fountains should be provided in areas where there is any possibility that workers could be

exposed to the substances; this is irrespective of the recommendation involving the wearing of eye
protection., Facilities for quickly drenching the body should be provided withi
n the immediate work area for
emergency use where there is a possibility of exposure.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Skin absorption; Ingestion; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Irritation eyes, skin; headache, vertigo (an illusion of movement); vis dist
urbance, fatigue, giddiness,
tremor, somnolence (sleepiness, unnatural drowsiness), nausea, vomiting; dermat
itis; cardiac arrhythmias,
paresthesia; liver injury; potential occupational carcinogen

TARGET ORGANS :
Eyes, skin, respiratory system, heart, liver, kidneys, central nervous syste
m

POTENTIAL OCCUPATIONAL CARCINOGEN :
evidence in animals: liver & kidney cancer

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo
unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact
lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, promptly wash the contaminated skin with soap and water. If this
chemical penetrates the clothing, promptly remove the clothing and wash the ski
n with soap and water. Get
medical attention promptly.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected

person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : 131.4
BOILING POINT : 189 deg F
FREEZING POINT : -99 deg F
SOLUBILITY : 0.1 percent
VAPOR PRESSURE : 58 mmHg
SPECIFIC GRAVITY : 1.46

FLASH POINT : Unknown for lack of data.
LOWER EXPLOSIVE LIMIT : LEL(77 deg F): 8 percent
UPPER EXPLOSIVE LIMIT : UEL(77 deg F): 10.5 percent
IONIZATION POTENTIAL : 9.45 eV
FLAMMABILITY CLASS :
Combustible Liquid, but burns with difficulty.
INCOMPATIBILITIES AND REACTIVITIES :
Strong caustics & alkalis; chemically-active metals (such as barium, lithium
, sodium, magnesium, titanium
& beryllium)

MEASUREMENT METHOD :
Charcoal tube; Carbon disulfide; Gas chromatography with flame ionization de
tection; NIOSH Manual of
Analytical Methods (NMAM), 4th edition [#1022]

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix A:
New Policy
For the past 20 plus years, NIOSH has subscribed to a carcinogen policy
that was published in 1976 by Edward J. Fairchild, II, Associate Director
for Cincinnati Operations, which called for "no detectable exposure levels
for proven carcinogenic substances" (Annals of the New York Academy of
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approaches to risk assessment and risk management, NIOSH has adopted a more

inclusive policy. NIOSH recommended exposure limits (RELs) will be based on risk evaluations using human or animal health effects data, and on an assessment of what levels can be feasibly achieved by engineering controls and measured by analytical techniques. To the extent feasible, NIOSH will project not only a no-effect exposure, but also exposure levels at which there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the Occupational Safety and Health Act of 1970, which charges NIOSH to ". . .describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."

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The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

.

Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

.

Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

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"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition

also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a pressure-demand or other positive-pressure mode.

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Appendix C: NIOSH considers trichloroethylene (TCE) to be a potential occupational carcinogen and recommends a REL of 2 ppm (as a 60-minute ceiling) during the usage of TCE as an anesthetic agent and 25 ppm (as a 10-hour TWA) during all other exposures.

*** END OF RECORD ***

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*          NIOSH POCKET GUIDE TO CHEMICAL HAZARDS                  *
*                                                                  *
* Produced by: US National Institute for Occupational Safety and Health *
* Provided by: Canadian Centre for Occupational Health and Safety      *
* * * * * * * * * * * * * * * * * * * * * * * NPG diskette - March 1998 *
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CHEMICAL NAME : Diesel exhaust
SYNONYMS : Synonyms vary depending upon the specific diesel exhaus
t component.
CCOHS RECORD NUMBER : 207

DESCRIPTION : Appearance and odor vary depending upon the specific di
esel exhaust component.

*** EXPOSURE LIMITS ***

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NOTE : See Appendix A

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
: None

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
: None

IDLH CONCENTRATION : Potential NIOSH carcinogen.
[Not determined yet.]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY
DETECTABLE CONCENTRATION:
Any self-contained breathing apparatus that has a full facepiece and is oper
ated in a pressure-demand or
other positive-pressure mode (APF = 10,000)
OR 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 breathin

g apparatus operated in
pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, f
ront- or back-mounted organic
vapor canister having a high-efficiency particulate filter (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
No recommendation is made specifying the need for personal protective equipm
ent for the body.

EYE PROTECTION :
No recommendation is made specifying the need for eye protection.

SKIN CLEAN-UP :
No recommendation is made specifying the need for washing the substance from
the skin (either
immediately or at the end of the work shift).

CLOTHING/PPE REMOVAL :
No recommendation is made specifying the need for removing clothing that bec
omes wet or
contaminated.

CLOTHING/PPE CHANGE :
No recommendation is made specifying the need for the worker to change cloth
ing after the workshift.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Eye irritation, pulmonary function changes; potential occupational carcinoge
n

TARGET ORGANS :
Eyes, respiratory system

POTENTIAL OCCUPATIONAL CARCINOGEN :
evidence in animals: lung tumors

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected person warm and at rest.
Get medical attention as soon as possible.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : Properties vary depending upon the specific component d
iesel exhaust
component.
INCOMPATIBILITIES AND REACTIVITIES :
Varies

MEASUREMENT METHOD :
Particulate filter; none; Evolved gas analysis/Thermal optical analyzer; NIO
SH Manual of Analytical
Methods (NMAM), 4th edition [#5040, Elemental Carbon]

*** EXPOSURE LIMIT APPENDICES ***

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Occupational Safety and Health Act of 1970, which charges NIOSH to ". . .describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."

.

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

.

Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

.

Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

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"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the

use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a pressure-demand or other positive-pressure mode.

*** END OF RECORD ***

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*          NIOSH POCKET GUIDE TO CHEMICAL HAZARDS                    *
*                                                                    *
* Produced by: US National Institute for Occupational Safety and Health *
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* * * * * * * * * * * * * * * * * * * * * * * * * NPG diskette - March 1998 *
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CHEMICAL NAME : Gasoline
SYNONYMS : Motor fuel
Motor spirits
Natural gasoline
Petrol
CAS REGISTRY NUMBER : 8006-61-9
RTECS NUMBER : LX3300000
DOT/NAERG NUMBERS : 1203 / 128
CCOHS RECORD NUMBER : 299

NOTE : A complex mixture of volatile hydrocarbons (paraffins, cycloparaffins & aromatics).
DESCRIPTION : Clear liquid with a characteristic odor.

*** EXPOSURE LIMITS ***

CONVERSION FACTOR :
1 ppm = 2.95 mg/m3 at 25 deg C and 1 atmosphere (approx)

NIOSH RECOMMENDED EXPOSURE LIMITS (REL)
NOTE : See Appendix A

OSHA CURRENT PERMISSIBLE EXPOSURE LIMITS (PEL)
: None

OSHA 1989 (VACATED) PERMISSIBLE EXPOSURE LIMITS (PEL)
TIME WEIGHTED AVERAGE (TWA) : 300 ppm (900 mg/m3)
SHORT TERM EXPOSURE LIMIT (STEL) : 500 ppm (1500 mg/m3)

IDLH CONCENTRATION : Potential NIOSH carcinogen.
[Not determined yet.]

*** RESPIRATORY PROTECTION ***

RECOMMENDATIONS FOR RESPIRATOR SELECTION
BASED ON NIOSH REL

AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION:
Any self-contained breathing apparatus that has a full facepiece and is oper
ated in a pressure-demand or
other positive-pressure mode (APF = 10,000)
OR 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 breathin
g apparatus operated in
pressure-demand or other positive-pressure mode (APF = 10,000)

ESCAPE:
Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, f
ront- or back-mounted organic
vapor canister (APF = 50)
OR Any appropriate escape-type, self-contained breathing apparatus

*** PERSONAL PROTECTION AND SANITATION ***

SKIN PROTECTION :
Wear appropriate personal protective clothing to prevent skin contact.

EYE PROTECTION :
Wear appropriate eye protection to prevent eye contact.

SKIN CLEAN-UP :
The worker should immediately wash the skin when it becomes contaminated.

CLOTHING/PPE REMOVAL :
Work clothing that becomes wet should be immediately removed due to its flam
mability hazard (i.e., for
liquids with a flash point <100 deg F).

CLOTHING/PPE CHANGE :
No recommendation is made specifying the need for the worker to change cloth
ing after the workshift.

PPE FACILITIES :
Eyewash fountains should be provided in areas where there is any possibility
that workers could be
exposed to the substances; this is irrespective of the recommendation involving
the wearing of eye

protection., Facilities for quickly drenching the body should be provided withi
n the immediate work area for
emergency use where there is a possibility of exposure.

*** HEALTH HAZARDS AND FIRST AID ***

POTENTIAL ROUTES OF EXPOSURE :
Inhalation; Skin absorption; Ingestion; Skin and/or eye contact

POTENTIAL SYMPTOMS OF EXPOSURE :
Irritation eyes, skin, mucous membrane ; dermatitis; headache, fatigue, blur
red vision, dizziness, slurred
speech, confusion, convulsions; chemical pneumonia (aspiration liquid); possibl
e liver, kidney damage;
potential occupational carcinogen

TARGET ORGANS :
Eyes, skin, respiratory system, central nervous system, liver, kidneys

POTENTIAL OCCUPATIONAL CARCINOGEN :
evidence in animals: liver & kidney cancer

EYES - FIRST AID :
If this chemical contacts the eyes, immediately wash the eyes with large amo
unts of water, occasionally
lifting the lower and upper lids. Get medical attention immediately. Contact
lenses should not be worn
when working with this chemical.

SKIN - FIRST AID :
If this chemical contacts the skin, immediately flush the contaminated skin
with soap and water. If this
chemical penetrates the clothing, immediately remove the clothing and flush the
skin with water. If irritation
persists after washing, get medical attention.

INHALATION - FIRST AID :
If a person breathes large amounts of this chemical, move the exposed person
to fresh air at once. If
breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected
person warm and at rest.
Get medical attention as soon as possible.

INGESTION - FIRST AID :
If this chemical has been swallowed, get medical attention immediately.

*** PHYSICAL AND CHEMICAL PROPERTIES ***

MOLECULAR WEIGHT : 72 (approx)
BOILING POINT : 102 deg F
FREEZING POINT : Unknown for lack of data.
SOLUBILITY : Insoluble
VAPOR PRESSURE : 38-300 mmHg
SPECIFIC GRAVITY : Sp.Gr(60 deg F): 0.72-0.76

FLASH POINT : -45 deg F
LOWER EXPLOSIVE LIMIT : 1.4 percent
UPPER EXPLOSIVE LIMIT : 7.6 percent
IONIZATION POTENTIAL : Unknown for lack of data.
FLAMMABILITY CLASS :
Class IB Flammable Liquid
INCOMPATIBILITIES AND REACTIVITIES :
Strong oxidizers such as peroxides, nitric acid & perchlorates

MEASUREMENT METHOD :
None available

*** EXPOSURE LIMIT APPENDICES ***

NIOSH REL NOTES
Appendix A:
New Policy
For the past 20 plus years, NIOSH has subscribed to a carcinogen policy that was published in 1976 by Edward J. Fairchild, II, Associate Director for Cincinnati Operations, which called for "no detectable exposure levels for proven carcinogenic substances" (Annals of the New York Academy of Sciences, 271:200-207, 1976). This was in response to a generic OSHA rulemaking on carcinogens. Because of advances in science and in approaches to risk assessment and risk management, NIOSH has adopted a more inclusive policy. NIOSH recommended exposure limits (RELs) will be based on risk evaluations using human or animal health effects data, and on an assessment of what levels can be feasibly achieved by engineering controls and measured by analytical techniques. To the extent feasible, NIOSH will project not only a no-effect exposure, but also exposure levels at which there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the

Occupational Safety and Health Act of 1970, which charges NIOSH to ". . .describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."

.

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

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Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

.

Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

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"Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals."

.

When thresholds for carcinogens that would protect 100 percent of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the

use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a 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 SCBA operated in a pressure-demand or other positive-pressure mode.

*** END OF RECORD ***

ATTACHMENT E
HURRICANE PREPAREDNESS PLAN

OHM Remediation Services Corp.

HURRICANE PREPAREDNESS PLAN
REMOVAL ACTION FOR SITE 41 – SCRAP YARD
INDIAN HEAD DIVISION - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT NO. N62470-97-D-5000
TASK ORDER 077

Prepared for:

DEPARTMENT OF THE NAVY
Engineering Field Activity - Chesapeake
1314 Harwood Street S.E.
Washington Navy Yard, DC 20374-5018

Prepared by:

OHM Remediation Services Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Reviewed by:

Joseph W. Colella for
Daniel W. Pringle
Project Manager

Robert G. [illegible]
Robert Brooks, CSP
Program Health and Safety Manager

OHM Project No. 831866

November 26, 2002

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LIST OF ACRONYMS

Acronym	Title
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
OHM	OHM Remediation Services Corporation
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 OHM Remediation Services Corporation (OHM) 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 formwork 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 ($\geq$ 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.

Gale - Non-tropical windstorm with winds 38 to 63 mph (33 to 55 knots).

Hurricane - A tropical cyclone in which the maximum sustained surface wind is 74 mph (64 knots) or greater.

Hurricane Warning - A warning that sustained winds of 74 mph (64 knots) or higher, associated with a hurricane, are expected in a specified coastal area in 24 hours or less.

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 - Non-tropical windstorm with winds 38 to 62 mph (33 to 55 knots).

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."

Tornado - Violent rotating columns of air with winds 115 to 288 mph (100 to 250 knots).

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 OHM 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 trailer and SSO/SS site 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 trailer. 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 - DESTRUCTIVE WINDS ARE POSSIBLE WITHIN 96 HOURS (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 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 IV with all site personnel.
- Maintain Condition IV requirements.

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 poses a threat to the project site within 48 hours. 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 contact 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 POSSIBLE WITHIN 24 HOURS (TROPICAL STORM WARNING)

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 conference to decide if a downgrade of the phase is necessary.

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

5.5 CONDITION I - DESTRUCTIVE WINDS ARE POSSIBLE 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/or 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

☐ Notify Project Manager

☐ 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:_____

HURRICANE PREPAREDNESS CHECKLIST

Itemized Equipment Checklist, Condition III.

Equipment	Secure in Place	Remove from Project Site

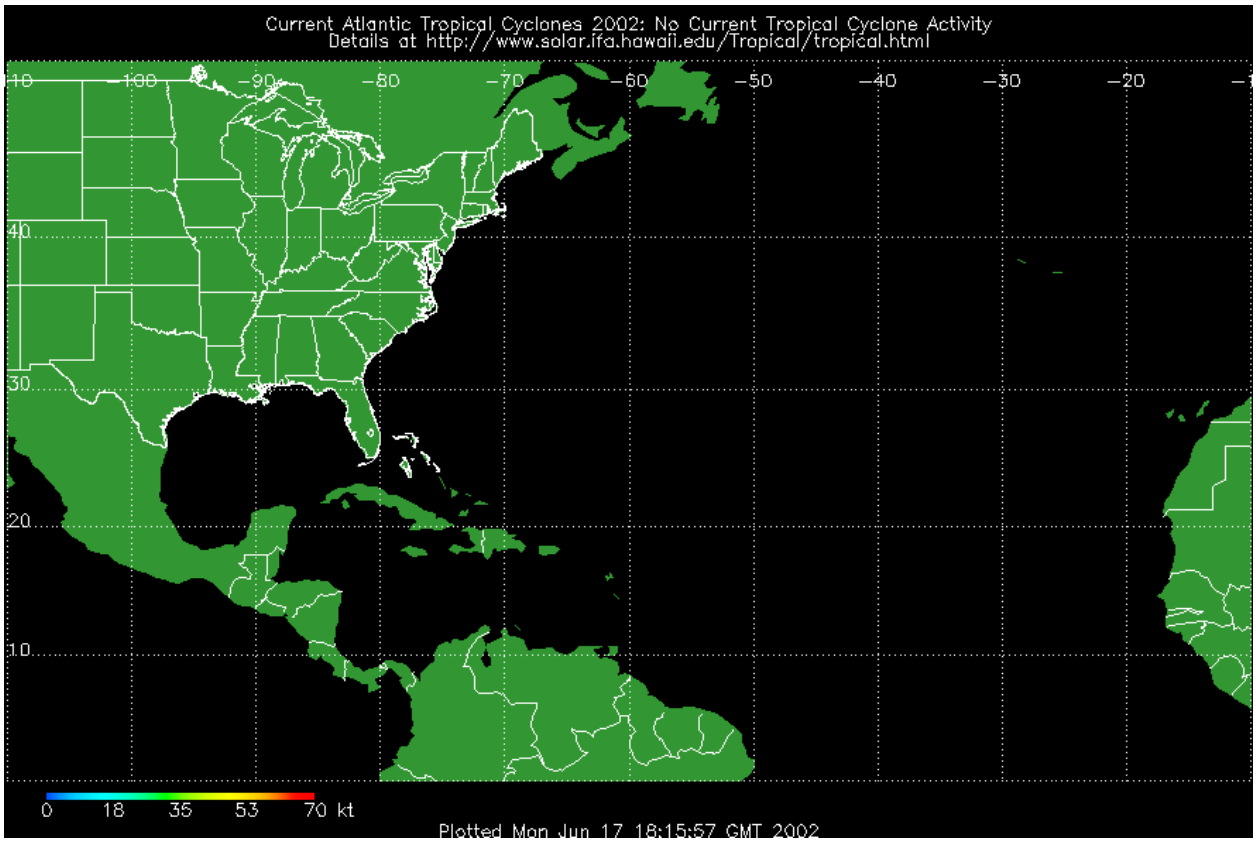
ATTACHMENT B
EMERGENCY PHONE NUMBERS

EMERGENCY TELEPHONE NUMBERS	
Local Agencies Base Fire Protection Division Ambulance Fire Security	 (301) 744-4333 (301) 744-4333 (301) 744-4333 (301) 744-4333
Hospital - Southern Maryland Hospital 7503 Surrats Road Clinton, MD 20735 See Attachment E of the SSHASP for directions to hospital	(301) 868-8000
Regional Poison Control Center	(800) 282-5846
Federal Agencies Center for Disease Control	 (404) 639-3311
LANTDIV ROICC - Lt. Russ Hime/Cathy Gardner RPM - Jeff Morris Activity Point of Contact - Shawn Jorgensen	 (301) 744-4122 (202) 685-3270 (301) 744-6745
OHM Personnel Project Manager -Daniel Pringle Site Superintendent – Steve Carriere Site Safety Officer – Joe Walker UXO Specialist – Al Grant Program CIH – Dave Mummert Program Health and Safety Manager - Robert Brooks Vice President, Health and Safety Program - Warren Houseman	 (412) 380-6248 (240) 882-1480 (cellular) (301) 743-3550 (site trailer) (301) 743-3550 (site trailer) (419) 425-6129 (732) 469-5599 (412) 858-3917
OHM (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: Scrap Yard

Project No.: 8318661

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

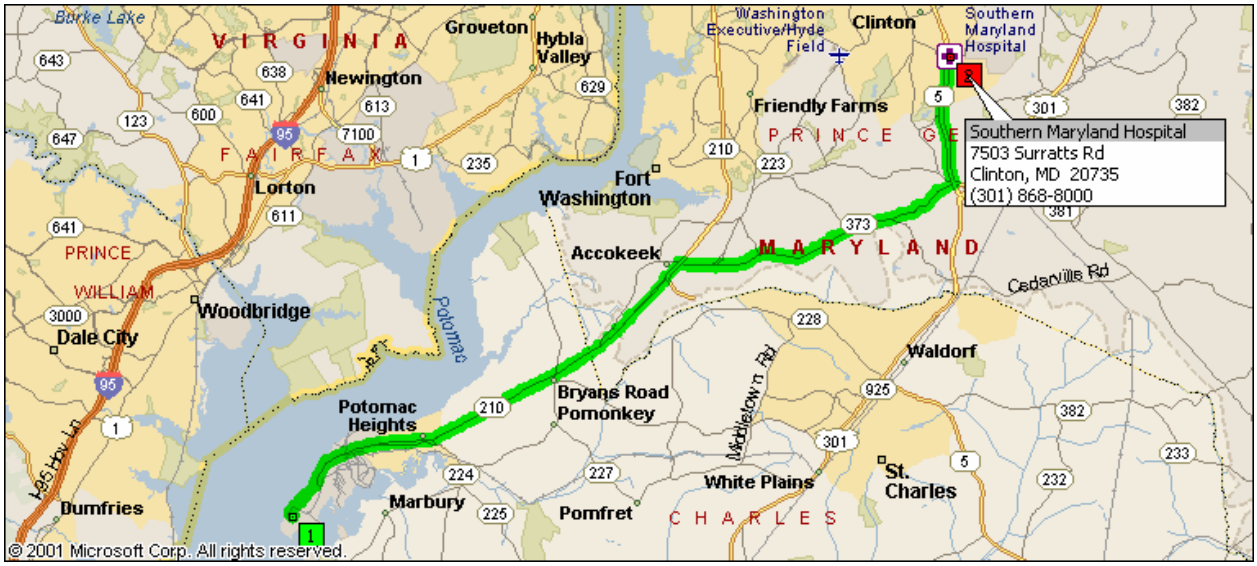
NOTE: ***Shaw Environmental, Inc. health and safety procedures that will be utilized during the project are listed below. A copy of all the Shaw Environmental, Inc. Health and Safety Procedures (HS001 through HS999) is available on the Intranet (Loop)***.

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

ATTACHMENT H
ROUTE TO HOSPITAL

ATTACHMENT H
ROUTE TO HOSPITAL

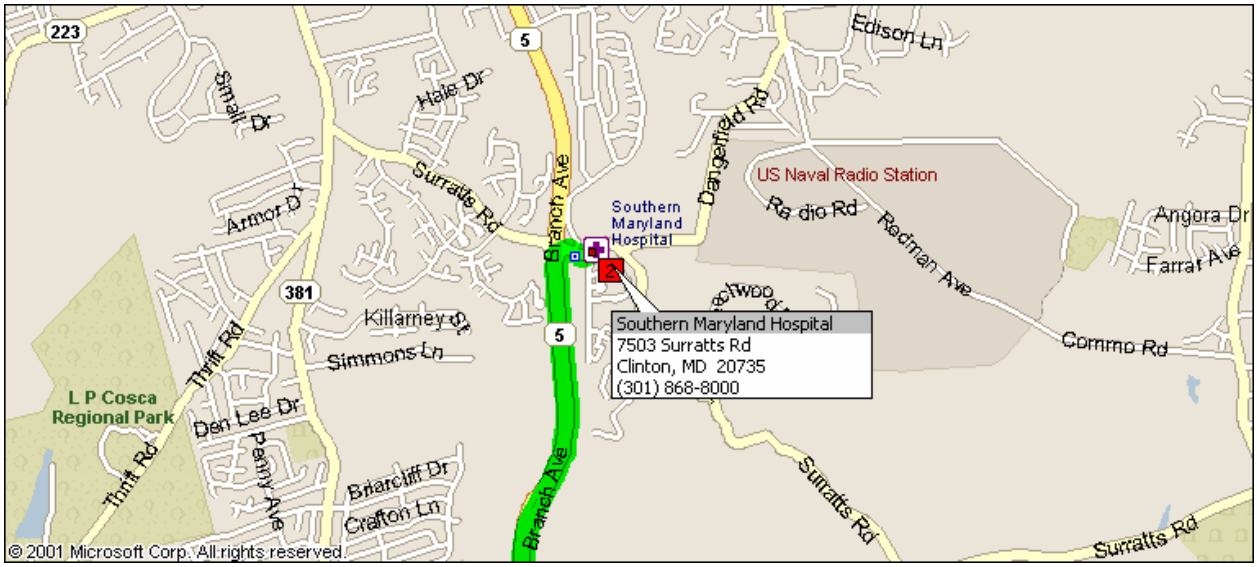
Directions to
Southern Maryland Hospital
7503 Surratts Road
Clinton, MD 20735
(301) 868-8000



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

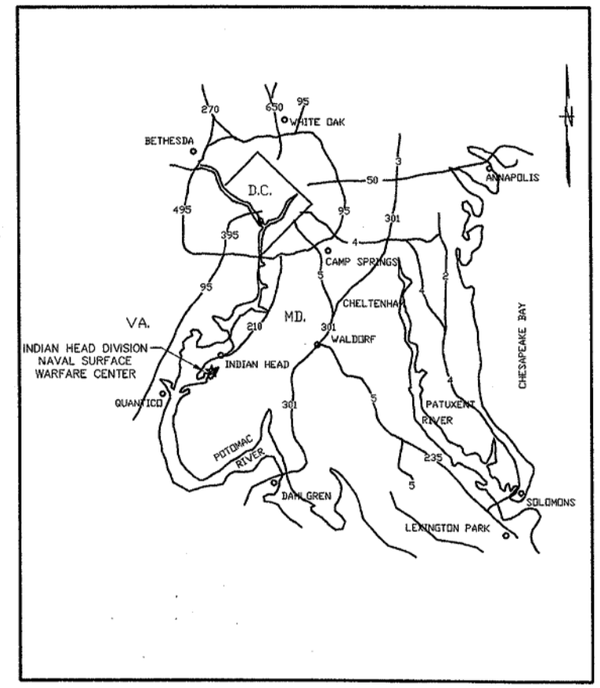
CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND
RAC CONTRACT NO. N62470-97-D-5000 D.O.0077

PROJECT LOCATION MAP

NOT TO SCALE

DRAWING INDEX

NAVFAC DWG. No.	SHEET No.	SHEET TITLE
3456975	T-1	TITLE SHEET
3456976	T-2	GENERAL NOTES AND LEGEND
3456977	C-1	EXISTING CONDITIONS PLAN
3456978	C-2	EROSION AND SEDIMENT CONTROL PLAN
3456979	C-3	EROSION AND SEDIMENT CONTROL NOTES
3456980	C-4	REVEGETATION NOTES
3456981	C-5	EROSION AND SEDIMENT CONTROL DETAILS
3456982	C-6	EXCAVATION AND FILL PLAN
3456983	C-7	RESTORATION PLAN
3456984	C-8	MISCELLANEOUS DETAILS



VICINITY MAP

10 0 10 20

SCALE IN MILES

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

DSN	JJC	DRN	VAB
CHK.	RCM	DATE	
SUPERVISED BY		TITLE	
PREPARED		DATE	
APPROVED		TITLE	
		DATE	

Tetra Tech NUS, Inc.
FORTIS PLAZA 10
651 HOLIDAY DR.
PITTSBURGH, PA 15220

03A	403		
04	404		
E.I.C.	405		
	406		
	401		
	402		
04B			

RECEIVED BY RDCO DATE

STD FOR COMMANDER NAVFAC

SEAL AREA

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.

ENGINEERING FIELD ACTIVITY-CHESAPEAKE

INDIAN HEAD, MARYLAND

INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
TITLE SHEET

CODE I.D. NO. 80091

DRAWING SIZE: D

CONST. CONT. NO.
N62470-97-D-0077

SPEC. 21-97-5000-0077

NAVFAC DRAWING NO.
3456975

SHEET 1 OF 10

T-1

ACAD:0525T002.dwg 11/15/01 HJB

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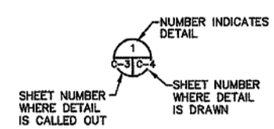
GENERAL NOTES

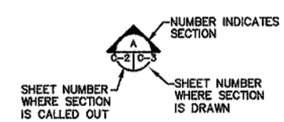
1. GRID COORDINATES REFERENCE MARYLAND STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM, 1983 (NAD83).
2. ELEVATIONS REFERENCE NATIONAL GEODETIC VERTICAL DATUM, 1929 (NGVD29).
3. EXISTING TOPOGRAPHY AND FEATURES WERE PREPARED BY MURPHY HOBSON SACKS OF RALEIGH, NORTH CAROLINA VIA FIELD SURVEY PERFORMED DECEMBER 1997.
4. ONE FOOT CONTOUR INTERVAL UNLESS OTHERWISE INDICATED.
5. UTILITY LOCATIONS WERE OBTAINED FROM IHDIV-NSWC BASEWIDE MAP. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY UNDERGROUND UTILITY LOCATIONS PRIOR TO THE BEGINNING OF ANY SITE WORK USING A MINIMUM OF TWO PASSIVE DETECTION METHODS (E.G., ELECTROMAGNETIC INDUCTION, GROUND PENETRATING RADAR, MAGNETIC LOCATORS, ACOUSTIC SURVEY, ETC.) SUBJECT TO THE APPROVAL OF THE RESIDENT OFFICER IN CHARGE OF CONSTRUCTION (ROICC).
6. ALL WORK FOR THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS. ALL METHODS OF WORK FOR THIS PROJECT SHALL ALSO COMPLY WITH FEDERAL, STATE OF MARYLAND, AND LOCAL ORDINANCES.
7. THIS PROJECT REQUIRES GRADE B GEOGRAPHIC INFORMATION SYSTEM (GIS) COORDINATE ACCURACY. THE CONTRACTOR SHALL PERFORM A POST-CONSTRUCTION SURVEY OF ALL NEW AND/OR ALTERED EXISTING ITEMS PROVIDED AS A RESULT OF THIS CONSTRUCTION. SEE SPECIFICATION SECTION 02224 PARAGRAPH TITLED GIS GRADE B POST-CONSTRUCTION LOCATION.
8. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. CHECK GRAPHIC SCALE BEFORE SCALING DRAWINGS.
9. THE CONTRACTOR SHALL THOROUGHLY INSPECT THE SITE PRIOR TO CONSTRUCTION TO VERIFY EXISTING SITE CONDITIONS AND TO VERIFY THE REMOVAL BY OTHERS, OF ALL RECYCLABLE AND BULKY WASTE FROM THE SCRAP YARD.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION. SEE DRAWING C-1 FOR EXISTING MONUMENTS.
11. THE CONTRACTOR SHALL STAKE THE LOCATION OF ALL AREAS TO BE EXCAVATED OR DISTURBED PRIOR TO ACTUAL WORK. THE FIELD LOCATIONS MUST BE REVIEWED AND APPROVED BY THE ROICC.
12. THE LOCATION(S) FOR CONTRACTOR STAGING AREA(S) ARE TO BE APPROVED BY THE ROICC AND SHALL BE OUT OF THE WAY OF TRAFFIC AND/OR PEDESTRIAN FLOW. ALL TO-BE-DETERMINED STAGING AREAS OUTSIDE APPROVED LIMITS OF DISTURBANCE SHALL, AT A MINIMUM, BE RINGED WITH SILT FENCE AND HAVE ONLY ONE POINT OF INGRESS/EGRESS OVER AN APPROVED STABILIZED STONE CONSTRUCTION ENTRANCE.
13. THE SOLE POINT FOR INGRESS AND EGRESS OF THE SITE WILL BE VIA A STABILIZED STONE CONSTRUCTION ENTRANCE WHICH WILL BE CONSTRUCTED ACCORDING TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
14. THE CONTRACTOR WILL PROVIDE INGRESS/EGRESS CONTROL INTO THE SITE AS PART OF MOBILIZATION ACTIVITIES.
15. THE CONTRACTOR WILL PROVIDE MAXIMUM PROTECTION FOR EXISTING UTILITIES WHICH ARE TO REMAIN IN SERVICE. THE CONTRACTOR WILL PROVIDE ALL TEMPORARY SERVICES. THE CONTRACTOR WILL CONTACT THE ROICC AT (TO BE DETERMINED AT PRE-CONSTRUCTION MEETING) TO ARRANGE FOR LOCATION OF BASE UTILITIES. VERIFICATION OF THE UTILITY LOCATIONS MUST BE MADE PRIOR TO ANY CONSTRUCTION.
16. EXISTING GROUNDWATER MONITORING WELLS WILL BE IMPACTED BY EXCAVATION AND OTHER SITE ACTIVITIES AND WILL THEREFORE BE ABANDONED. NEW GROUNDWATER MONITORING WELLS WILL BE INSTALLED DURING THE REMEDIAL ACTION WITH THE NUMBER AND LOCATIONS OF THE WELLS TO BE DETERMINED.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LIMITING ALL WORK TO THE IMMEDIATE PROJECT AREA WITHIN THE APPROVED LIMITS OF DISTURBANCE. ALL AREAS DISTURBED BY THE CONTRACTOR THAT ARE OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED BY THE CONTRACTOR TO LIKE OR BETTER CONDITION.
18. THE CONTRACTOR SHALL MAINTAIN ALL WORK AREAS FREE FROM DUST AND ODORS IN A MANNER APPROVED BY THE ROICC.
19. ALL DISTURBED AREAS INCLUDING EARTHEN AREAS DEVOID OF VEGETATION PRIOR TO CONSTRUCTION, SHALL BE GRADED TO MAINTAIN POSITIVE DRAINAGE.
20. ALL AREAS WITHIN THE LIMITS OF DISTURBANCE SHALL BE STABILIZED (SEEDED AND MULCHED, BITUMINOUS CONCRETE OR AGGREGATE PAVED) IMMEDIATELY UPON ESTABLISHING FINAL GRADE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING THE MEASURES INDICATED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
21. REMOVE EXISTING FENCE OUTSIDE THE SOUTHERN WALL OF THE SCRAP YARD IN ORDER TO EXCAVATE IMPACTED SOIL AND REMOVE EXISTING RAILROAD RAIL, TIES AND BALLAST. NEW FENCING WILL BE INSTALLED IN LOCATIONS WHERE FENCING WAS REMOVED.
22. REMOVE SOIL FROM THE SURFACE OF THE CONCRETE PAD. REMOVE RAILROAD RAIL, TIES AND BALLAST TO A DEPTH OF 12 INCHES BELOW EXISTING GROUND SURFACE WITHIN LIMITS OF REMEDIATION. EXCAVATE SOILS FROM THE AREA OUTSIDE OF THE CONCRETE PAD AS INDICATED AND UNTIL VERIFICATION THAT ALL CHEMICALS OF CONCERN (COC) HAVE BEEN REMOVED OR REDUCED TO LEVELS BELOW THE PRELIMINARY REMEDIATION GOALS (PRGs). THE PLANAR LIMITS OF SOIL EXCAVATION OUTSIDE OF THE CONCRETE PAD WILL EXTEND NO FURTHER THAN THE LIMIT OF REMEDIATION (SITE LIMTS).
23. STOCKPILE REMOVED/EXCAVATED SOIL AND OTHER WASTES [I.E. RAILROAD MATERIALS, CARTRIDGE ACTIVATED DEVICES (CADs), AND WASTEWATER] SEPARATELY AS REQUIRED TO MINIMIZE OFF-SITE TREATMENT/DISPOSAL FACILITY COSTS. THE NUMBER OF STOCKPILES WILL BE DETERMINED BY THE CONTRACTOR BASED ON WASTE DISPOSAL CHARACTERIZATION RESULTS AND THE REQUIREMENTS OF THE SELECTED TREATMENT AND/OR DISPOSAL FACILITY SUBJECT TO APPROVAL BY THE ROICC.

GENERAL LEGEND

BM-L11-14	BENCHMARK
41MW01	MONITORING WELL
X 7.3	SPOT ELEVATION
	GUY WIRE
	SPOT LIGHT
	HAUL ROUTE
	TREELINE
—SF—SF—SF—SF—SF—	SILT FENCE
—S—S—S—S—S—	ABOVE GROUND STEAM LINE
—E—E—E—E—E—	OVER HEAD ELECTRIC (WITH UTILITY POLE)
—X—X—X—X—X—	EXISTING FENCE
	STREAM/ EDGE OF WATER
	RAILROAD TRACKS
	HIDDEN/ REMOVED RAILROAD TRACKS
	LIMIT OF DISTURBANCE
	LIMIT OF REMEDIATION
10	EXISTING SURFACE ELEVATION CONTOUR
1+00	CONSTRUCTION BASELINE
	DELINEATED WETLANDS



DETAIL IDENTIFIER



SECTION IDENTIFIER

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

DPA	403		
04	404		
E.I.C.	405		
	406		
	401		
	402		
	04B	DATE	REVIEWED BY ROICC

Tetra Tech NUS, Inc. 661 ANDERSON DR. PITTSBURGH, PA 15220

DES. ING. JOB: HJB DWG: CHK: RCM

PREPARED BY: [signature] DATE: 11/15/01

PROJECT MANAGER: [signature] DATE: 11/15/01

PRICING: [signature] DATE: 11/15/01

EFD FOR COMMANDER NAVFAC

STATE OF MARYLAND PROFESSIONAL ENGINEER

SEAL AREA

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON, D.C.
NAVAL SURFACE WARFARE CENTER INDIAN HEAD DIVISION, INDIAN HEAD, MARYLAND

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
GENERAL NOTES AND LEGEND

CODE I.D. NO. 80091

DRAWING SIZE: D

CONST. CONT. NO. N62470-97-D-0077

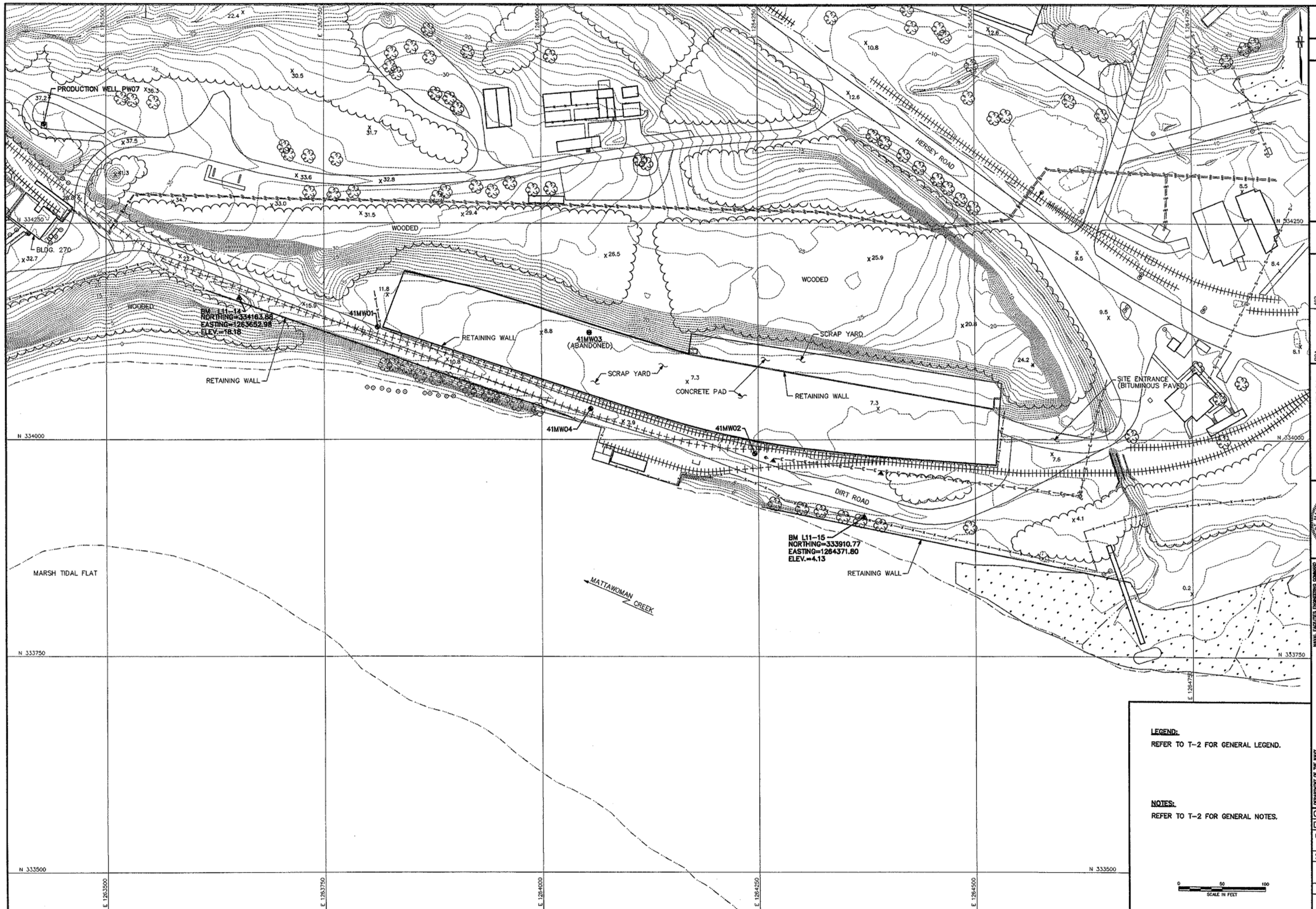
SPEC. 21-97-5000-0077

NAVFAC DRAWING NO. 3456976

SHEET 2 OF 10

T-2

ACAD:0505GN05.dwg 11/15/01 HJB



LEGEND:

REFER TO T-2 FOR GENERAL LEGEND.

NOTES:

REFER TO T-2 FOR GENERAL NOTES.

SYMBOL	DESCRIPTION	DATE	APPROVED

REVISIONS

D9A	403	
04	404	
E.L.C.	405	
491	406	
402	D4B	DATE

REVIEWED BY ROICC

Tetra Tech NUS, Inc.
10775-D GUILFORD RD.
PITTSBURGH, PA 15235

DES. TNO
DR. MJD
CHK. RGM
TITLE
DATE
APPROVED

ETD FOR COMMANDER NAVFAC

SEAL AREA

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.

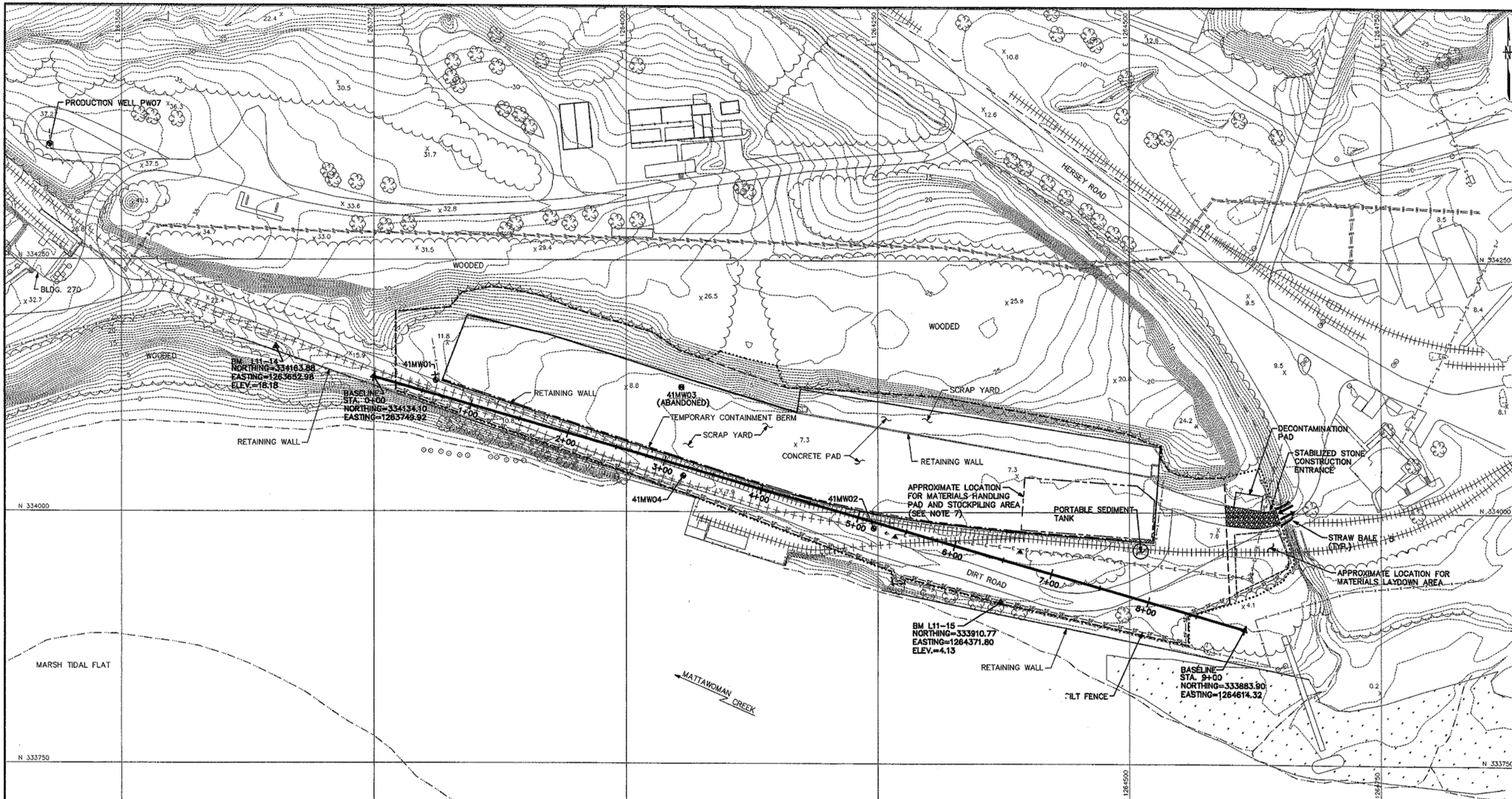
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
BEAM ROAD, MARYLAND

NAVAL SURFACE WARFARE CENTER
BEAM ROAD DIVISION

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
EXISTING CONDITIONS PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO.
N62470-97-D-0077
SPEC. 21-97-5003-0077
NAVFAC DRAWING NO.
3456977
SHEET 3 OF 10
C-1

ACAD:C9705CP07.dwg 11/15/01 HJB



NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
2. REFER TO DRAWINGS C-3 AND C-4 FOR EROSION AND SEDIMENT CONTROL PLAN NOTES AND REVEGETATION NOTES, RESPECTIVELY.
3. CLEAR BUT DO NOT GRUB WITHIN THE LIMITS OF DISTURBANCE WHERE REQUIRED FOR INSTALLATION OF TEMPORARY FACILITIES, REMOVAL OF RAILROAD RAILS, TIES, AND BALLAST, AND REMOVAL/EXCAVATION OF SOIL UNLESS OTHERWISE INDICATED.
4. DECONTAMINATION PAD, MATERIALS HANDLING PAD(S), CONSTRUCTION LAYDOWN AREA(S), AND STABILIZED STONE CONSTRUCTION ENTRANCE LOCATION TO BE DETERMINED PRIOR TO CONSTRUCTION BY THE CONTRACTOR, SUBJECT TO APPROVAL BY THE ROICC.
5. TEMPORARY SECURITY FENCE SHALL BE INSTALLED ALONG THE SITE PERIMETER AS NECESSARY TO RESTRICT ACCESS DURING THE REMEDIAL ACTION.
6. THE LOCATION OF THE TEMPORARY CONTAINMENT BERMS TO BE DETERMINED UPON REMOVAL OF SOILS FROM THE CONCRETE PAD AND A CONDITION ASSESSMENT OF THE CONCRETE PAD.
7. THE MATERIALS HANDLING PAD AND STOCKPILE AREAS SHALL BE LINED TO PREVENT DISCHARGES TO THE ENVIRONMENT.

LEGEND:

REFER TO T-2 FOR GENERAL LEGEND.

- EXISTING MONITORING WELL (TO BE ABANDONED)
- ABANDONED MONITORING WELL
- HAUL ROUTE
- LIMIT OF DISTURBANCE
- LIMIT OF REMEDIATION
- TEMPORARY CONTAMINMENT BERM
- SILT FENCE
- EXISTING SURFACE ELEVATION CONTOUR
- DELINEATED WETLANDS

0 50 100
SCALE IN FEET

ACAD:0525CP08.dwg 11/15/01 HJB

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

D9A	403		
04	404		
E.L.C.	405		
481	406		
402	D4B	DATE	

REVIEWED BY ROICC

EFD FOR COMMANDER NAVFAC

Tetra Tech NUS, Inc.
FOSTER PLAZA VII
661 ANDERSON DRIVE
PITTSBURGH, PA 15220

DES. TNS | DR. GLT | CHK. RGM
DESIGNED BY E.L.C. | TITLE | DATE
PROJECT MGR. | NAVFAC RDC | DATE
APPROVED

SEAL AREA

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
WASHINGTON, D.C.

NAVAL FACILITIES ENGINEERING COMMAND
INDIAN HEAD, MARYLAND

INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
EROSION AND SEDIMENT CONTROL PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO.
N62470-97-D-0077
SPEC. 21-97-5000-0077
NAVFAC DRAWING NO.
3456978
SHEET 4 OF 10
C-2

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. UNLESS OTHERWISE INDICATED, ALL VEGETATION AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

2. THE CONTRACTOR SHALL NOTIFY THE ROICC AND MARYLAND DEPARTMENT OF THE ENVRIONMENT (MDE) BOTH IN WRITING AND BY TELEPHONE (MDE AT (410) 631-3510):

   A. 7 DAYS PRIOR TO THE REQUIRED PRE-CONSTRUCTION MEETING
   B. FOLLOWING INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES AND PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITIES.
   C. 7 DAYS PRIOR TO FINAL INSPECTION

3. CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND SEQUENCE OF CONSTRUCTION CONTAINED IN THE EROSION AND SEDIMENT CONTROL PLAN REPORT AND DRAWINGS, AND HAVE THEM INSPECTED AND APPROVED BY THE ROICC PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE IN THE FIELD WITH THE APPROVAL OF THE ROICC. ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND DO NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR APPROVAL FROM THE ROICC. THE CONTRACTOR MUST OBTAIN PRIOR APPROVAL FROM THE ROICC AND MDE FOR CHANGES TO EROSION AND SEDIMENT CONTROL PLAN AND/OR THE SEQUENCE OF CONSTRUCTION.

4. ALL INGRESS TO, AND EGRESS FROM THE SITE SHALL BE AT LOCATIONS PROTECTED BY AN APPROVED STABILIZED STONE CONSTRUCTION ENTRANCE.

5. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN A CONTINUOUSLY EFFECTIVE OPERATING CONDITION UNTIL SUCH TIME AS THEY ARE REMOVED WITH PRIOR APPROVAL FROM THE ROICC AND MDE.

6. THE CONTRACTOR SHALL APPLY SEED AND ANCHORED STRAW MULCH, OR APPROVED STABILIZATION MEASURES, TO ALL DISTURBED AREAS AND STOCKPILES WITHIN 14 CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA (7 DAYS FOR SENSITIVE AREAS). MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.

7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBANCE ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED. ALL ACCUMULATED WATER IN EXCAVATIONS WILL BE COLLECTED AND TESTED TO DETERMINE THE APPROPRIATE DISPOSAL METHOD.

8. IN THE EVENT THAT A DETERMINATION IS MADE TO ALLOW SURFACE DISCHARGE OF WATER GENERATED BY THE MATERIALS HANDLING PADS AND WATER COLLECTED IN EXCAVATIONS, ALL WATER WILL BE BROADCAST UPON AN APPROVED VEGETATED AREA. WATER RESULTING FROM EXCAVATION DEWATERING OPERATIONS SHALL PASS THROUGH AN APPROVED FILTRATION DEVICE PRIOR TO DISCHARGE. DECONTAMINATION WATER WILL BE CONTAINERIZED AND CHARACTERIZED PRIOR TO OFF-SITE DISPOSAL.

9. THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. THE STABILIZED STONE CONSTRUCTION ENTRANCE SHALL BE INSPECTED DAILY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION AND SEDIMENT CONTROL DEVICES AND THE STABILIZED STONE CONSTRUCTION ENTRANCE SHALL BE MADE IMMEDIATELY. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCE WHEN SEDIMENT ACCUMULATION REACHES 50% OF FABRIC HEIGHT. ANY SEDIMENT REMOVED FROM THE EROSION AND SEDIMENT CONTROL DEVICES DURING MAINTENANCE ACTIVITIES PRIOR TO BACKFILLING ALL EXCAVATIONS SHALL BE STOCKPILED FOR OFF-SITE DISPOSAL.

10. PRIOR TO REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND ESTABLISH PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING THE PERMANENT SEED MIXTURE INDICATED ON DRAWING C-4 WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NO LATER THAN 14 CALENDAR DAYS AFTER ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.

11. THE SITE'S APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLAN, TEST REPORTS, AND LOG OF ALL EROSION AND SEDIMENT CONTROL FEATURES INSPECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR, AND THE LOGS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES FOR INSPECTION BY DULY AUTHORIZED OFFICIALS.

12. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED EXCAVATION AREAS SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO MINIMIZE DOWNSLOPE EROSION. PROTECTIVE METHODS, SUCH AS EROSION CONTROL MATTING AND RIPRAP MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.

13. TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES SHALL BE REMOVED, WITH APPROVAL OF THE ROICC AND MDE, WITHIN 30 CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS.

14. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM STANDING ON THE SURFACE FOR MORE THAN 24 HOURS AFTER THE END OF A RAINFALL EVENT EXCEPT IN DESIGNATED DRAINAGE COURSES AND CHANNEL FLOW AREAS WHICH MAY DRAIN AS LONG AS 48 HOURS AFTER THE END OF A RAINFALL EVENT. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.

15. THE ROICC AND MDE INSPECTOR HAVE THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES IF DEEMED NECESSARY.

16. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, AND GROUND COVER.

17. OFF-SITE BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL FROM THE ROICC AND MDE. ALL BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.

18. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THE PLANS (INCLUDING, BUT NOT LIMITED TO OFF-SITE BORROW), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTAL EROSION CONTROL PLAN TO THE ROICC FOR SUBMISSION TO THE STATE OF MARYLAND FOR REVIEW AND CONCURRENCE. THE SUPPLEMENTAL PLAN IS NOT TO BE IMPLEMENTED UNTIL APPROVAL IS RECEIVED FROM THE ROICC AND MDE.

EROSION AND SEDIMENT CONTROL PLAN NOTES (CONTINUED)

19. ALL UNDISTURBED AREAS SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION ACTIVITIES AND UNTIL PERMANENT VEGETATION IN THE DISTURBED AREAS HAS BEEN ESTABLISHED.

20. DEWATERING DEVICE(S) SHALL BE CONSTRUCTED IN SUCH A WAY THAT PREVENTS WATER REMOVED FROM SOILS FROM INFILTRATING TO THE GROUNDWATER. RATHER THE STRUCTURE SHALL ALLOW FOR THE COLLECTION AND TEMPORARY STORAGE OF ALL WATER GENERATED BY DEWATERING PROCEDURES.

21. DURING CLEARING ACTIVITIES ABOVE GROUND TREE MATERIAL WITHIN LIMITS OF DISTURBANCE WILL BE CHIPPED AND TAKEN OFF-SITE FOR USE ELSEWHERE AT IHDIV-NSWC.

22. FINAL STABILIZATION OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ROICC AND MDE INSPECTOR BEFORE EROSION AND SEDIMENT CONTROLS ARE REMOVED.

23. THE TEMPORARY CONTAINMENT BERM(S) WILL BE CONSTRUCTED TO DIRECT WATER THAT FLOWS ACROSS THE CONCRETE PAD TO THE PORTABLE SEDIMENT TANKS. THE BERM(S) WILL BE CONSTRUCTED OF AN IMPERMEABLE MATERIAL THAT PREVENTS FLOW THROUGH THE BERM(S). THE BERM(S) WILL BE INSPECTED DAILY AND AFTER EACH RAIN AND/OR CONCRETE CLEANING EVENT.

24. SITE INFORMATION:
    TOTAL AREA OF SITE 131,000 SQUARE FEET
    AREA DISTURBED 137,100 SQUARE FEET
    TOTAL REMOVED 1,350 CUBIC YARDS (ESTIMATED)
    TOTAL EXCAVATED 610 CUBIC YARDS (INCLUDES RAILROAD)
    TOTAL FILL 610 CUBIC YARDS
    OFF-SITE BORROW 610 CUBIC YARDS
    OFF-SITE TREATMENT AND/OR DISPOSAL 1,960 CUBIC YARDS (INCLUDES RAILROAD)

SEQUENCE OF CONSTRUCTION

1. HOLD PRE-CONSTRUCTION MEETING WITH THE CONTRACTING OFFICER AND THE MDE INSPECTOR.

2. INSPECT SITE PRIOR TO CONSTRUCTION TO VERIFY EXISTING SITE CONDITIONS AND UNDERGROUND UTILITY LOCATIONS. VERIFY REMOVAL BY OTHERS OF ALL RECYCLABLE AND BULKY WASTE FROM THE SCRAP YARD.

3. ESTABLISH HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION. STAKE THE LOCATIONS OF ALL AREAS TO BE EXCAVATED OR DISTURBED PRIOR TO ACTUAL WORK.

4. INSTALL ALL PERIMETER CONTROLS FOR STABILIZED STONE CONSTRUCTION ENTRANCE. INSTALL THE STABILIZED STONE CONSTRUCTION ENTRANCE. INSTALL ALL PERIMETER CONTROLS FOR DECONTAMINATION PAD, AND MATERIALS STORAGE AND STAGING AREAS AS INDICATED ON DRAWING C-2. ACTUAL LOCATIONS WILL BE DETERMINED BY THE REMEDIAL ACTION CONTRACTOR (RAC) AND APPROVED BY ROICC PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES. ALL PERIMETER CONTROLS WILL CONFORM TO STANDARS AND SPECIFICATIONS IDENTIFIED IN THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MANUAL UNLESS OTHERWISE SPECIFIED. (THE SEQUENCE OF CONSTRUCTION THAT FOLLOWS ASSUMES THAT THE SITE 41 CONCRETE PAD WILL BE USED AS THE MATERIALS HANDLING PAD(S). IF THE CONTRACTOR ELECTS NOT TO USE THE CONCRETE PAD AS THE MATERIALS HANDLING PAD(S), A MATERIALS HANDLING PAD(S) SHOULD BE ADDED TO SEQUENCE OF CONSTRUCTION ITEMS 5, 6 AND 21. IN ADDITION, PERIMETER CONTROLS FOR THE MATERIALS HANDLING PAD WOULD BE REQUIRED.) THE PERIMETER CONTROLS TO BE INSTALLED INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

   * SILT FENCE LOCATED SOUTH OF SITE 41 AS INDICATED.
   * SILT FENCE ON THE DOWNSLOPE SIDES OF THE MATERIALS STORAGE AND STAGING AREAS, DECONTAMINATION PAD, AND STABILIZED STONE CONSTRUCTION ENTRANCE.
   * TEMPORARY CONTAINMENT BERM LOCATED ON DOWNSLOPE SIDES OF THE CONCRETE PAD TO DIRECT RUNOFF TO THE TEMPORARY SEDIMENT AND WASTEWATER STORAGE TANKS.
   * ADDITIONAL CONTROLS AS MAY BE REQUIRED BY THE CONTRACTING OFFICER AND/OR WARRANTED BY SITE CONDITIONS AND BEST CONSTRUCTION PRACTICES.

5. CLEAR AND GRUB CONSTRUCTION LAYDOWN AREAS, AND AREAS FOR MATERIALS STORAGE AND STAGING AREAS, AND DECONTAMINATION PAD.

6. CONSTRUCT DECONTAMINATION PAD, CONSTRUCTION LAYDOWN AREAS, AND MATERIALS STORAGE AND STAGING AREAS.

7. CLEAR BUT DO NOT GRUB WITHIN THE LIMITS INDICATED.

8. ABANDON EXISTING GROUNDWATER MONITORING WELLS 41MW01, 41MW02 AND 41MW04 IN ACCORDANCE WITH COMAR 26.04.04. VERIFY ABANDONMENT OF GROUNDWATER MONITORING WELL 41MW03 IN ACCORDANCE WITH COMAR 26.04.04.

9. PERFORM A SWEEP OF THE CONCRETE PAD FOR UNEXPLODED ORDNANCE (UXO). FOLLOWING THE UXO SWEEP, REMOVE SOIL FROM THE SURFACE OF THE CONCRETE PAD AND STOCKPILE WITHIN THE CONCRETE PAD AT THE AREA(S) DESIGNATED AS THE MATERIALS HANDLING PAD(S). DETERMINE THE NUMBER OF STOCKPILES REQUIRED BASED ON WASTE DISPOSAL CHARACTERIZATION RESULTS AND THE REQUIREMENTS OF THE SELECTED TREATMENT AND/OR DISPOSAL FACILITY, SUBJECT TO APPROVAL BY THE ROICC. MECHANICALLY SCREEN SOILS REMOVED FROM THE CONCRETE PAD TO REMOVE CADS. STOCKPILE SCREENED SOIL WITHIN THE CONCRETE PAD AT A DESIGNATED LOCATION, BASED ON THE REQUIREMENTS OF THE SELECTED DISPOSAL FACILITY, SUBJECT TO APPROVAL BY THE ROICC. MANAGE CADS IN ACCORDANCE WITH THE NAVSEA INSTRUCTION 8023.11, STANDARD OPERATING PROCEDURES FOR THE PROCESSING OF EXPENDABLE ORDNANCE AT THE NAVY AND MARINE CORPS ACTIVITIES (NAVSEA, 1991). MANAGE MATERIALS REMAINING FROM TREATMENT OF CADS OFF-SITE AT AN APPROVED DISPOSAL FACILITY.

10. REMOVE RAILROAD RAIL AND TIES WITHIN LIMITS INDICATED. CLEAN RAILS WITHIN CONTAMINATED AREAS AND STOCKPILE CLEANED RAILS FOR SALVAGE BY OTHERS. STOCKPILE TIES FOR OFF-SITE DISPOSAL.

11. EXCAVATE SOIL FROM THE AREA OUTSIDE OF THE CONCRETE PAD AS INDICATED. MECHANICALLY SCREEN EXCAVATED SOILS TO REMOVE CADS. MANAGE CADS IN ACCORDANCE WITH SEQUENCE OF CONSTRUCTION ITEM 10. PERFORM VERIFICATION SAMPLING FOR THE AREA OUTSIDE OF THE CONCRETE PAD IN ACCORDANCE WITH THE VERIFICATION SAMPLING AND ANALYSIS PLAN (VSAP). EXCAVATE ADDITIONAL MATERIAL AS REQUIRED PENDING RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS. STOCKPILE SOIL EXCAVATED FROM THE AREAS SURROUNDING THE CONCRETE PAD WITHIN THE CONCRETE PAD AT THE AREA(S) DESIGNATED AS THE MATERIALS HANDLING PAD(S). DETERMINE THE NUMBER OF STOCKPILES REQUIRED BASED ON WASTE DISPOSAL CHARACTERIZATION RESULTS AND THE REQUIREMENTS OF THE SELECTED TREATMENT AND/OR DISPOSAL FACILITY, SUBJECT TO APPROVAL BY THE ROICC. MANAGE MATERIALS REMAINING FROM TREATMENT OF CADS OFF-SITE AT AN APPROVED DISPOSAL FACILITY.

12. EXCAVATE RAILROAD BALLAST REMAINING WITHIN LIMITS AND TO DEPTH INDICATED AND MANAGE OFF-SITE AT AN APPROVED DISPOSAL FACILITY.

SEQUENCE OF CONSTRUCTION (CONTINUED)

13. FOLLOWING VERIFICATION THAT ALL COCS HAVE BEEN REMOVED OR REDUCED TO LEVELS BELOW THE PRGs, BACKFILL EXCAVATIONS TO PRE-EXCAVATION CONDITIONS USING FILL, TOPSOIL, AND GRANULAR MATERIAL, AS INDICATED. VEGETATE IMMEDIATELY AFTER TOPSOIL IS PLACED.

14. FOLLOWING THE REMOVAL OF ALL STOCKPILED SOILS FROM THE CONCRETE PAD, VISUALLY ASSESS THE INTEGRITY OF THE CONCRETE PAD TO DETERMINE IF STEAM CLEANING THE CONCRETE PAD IS APPROPRIATE (I.E. DETERMINE IF THE CONCRETE PAD IS SUFFICIENTLY INTACT TO ALLOW COLLECTION OF RINSEWATER). IF THE IHDIV-NSWC ENVIRONMENTAL DEPARTMENT PERSONNEL JUDGE THE CONCRETE PAD CAPABLE OF RETAINING THE RINSEWATER, PROCEED TO SEQUENCE OF CONSTRUCTION ITEM 15, OTHERWISE CLEAN THE CONCRETE PAD OF ALL SOILS, PERFORM VERIFICATION SAMPLING IN ACCORDANCE WITH THE VSAP, AND PROCEED TO SEQUENCE OF CONSTRUCTION ITEM 17.

15. CONSTRUCT TEMPORARY CONTAINMENT BERM(S) ALONG THE DOWNSLOPE SIDE OF THE CONCRETE PAD. IF REQUIRED, REMOVE ANY SOILS OR OTHER MATERIALS PRIOR TO CONSTRUCTING TEMPORARY CONTAINMENT BERMS. INSTALL THE PORTABLE SEDIMENT TANKS, TEMPORARY WASTEWATER STORAGE TANKS, AND MECHANICAL SYSTEMS REQUIRED TO PUMP COLLECTED WATER THROUGH THE PORTABLE SEDIMENT TANKS AND TO THE WASTEWATER STORAGE TANKS.

16. STEAM CLEAN THE EXPOSED CONCRETE PAD WITH HIGH PRESSURE, HIGH TEMPERATURE WATER, AND COLLECT ALL RINSEWATER. FOLLOWING CLEANING OF THE CONCRETE PAD SURFACE, PERFORM VERIFICATION SAMPLING FOR THE CONCRETE PAD IN ACCORDANCE WITH THE VSAP. IF THE RESULTS OF THE VERIFICATION SAMPLING INDICATE COC CONCENTRATIONS HAVE BEEN REDUCED TO LEVELS BELOW THE PRGs, REMOVE TEMPORARY CONTAINMENT BERMS, MANAGE BERM MATERIAL OFF-SITE AT AN APPROVED TREATMENT AND/OR DISPOSAL FACILITY, AND PROCEED TO SEQUENCE OF CONSTRUCTION ITEM 18. IF THE RESULTS OF VERIFICATION SAMPLING INDICATE COC CONCENTRATIONS IN EXCESS OF THE PRGs, RECLEAN THE SUBJECT AREA AND REPEAT VERIFICATION SAMPLING. IF THE RESULTS OF THE SECOND VERIFICATION SAMPLING EVENT INDICATE COC CONCENTRATIONS IN EXCESS OF THE PRGs THEN REMOVE TEMPORARY CONTAINMENT BERMS, MANAGE BERM MATERIAL OFF-SITE AT AN APPROVED TREATMENT AND/OR DISPOSAL FACILITY, AND PROCEED TO SEQUENCE OF CONSTRUCTION ITEM 17.

17. PLACE A 2-INCH THICK BITUMINOUS CONCRETE LAYER OVER THE SUBJECT PORTION OF THE CONCRETE PAD AS DIRECTED BY THE ROICC.

18. MANAGE REMOVED RAILROAD TIES, RAILROAD BALLAST AND EXCAVATED SOIL OFF-SITE AT AN APPROVED TREATMENT AND/OR DISPOSAL FACILITY.

19. INSTALL NEW GROUNDWATER MONITORING WELLS AS INDICATED.

20. CONSTRUCT ACCESS ROAD AND REPLACE FENCING WHERE REQUIRED.

21. REMOVE ALL TEMPORARY FACILITIES (I.E., DECONTAMINATION PAD, SEDIMENT TANKS, WASTEWATER STORAGE TANKS, ETC.). RESTORE AND REVEGETATE AS NEEDED. WHEN ALL UPSTREAM AREAS HAVE BEEN STABILIZED AND HAVE BEEN ACCEPTED BY THE ROICC AND WITH THE APPROVAL OF THE MDE INSPECTOR, REMOVE ALL REMAINING PERIMETER CONTROLS AND IMMEDIATELY STABILIZE ALL AREAS DISTURBED BY THE REMEDIAL ACTION.

OWNER'S/DEVELOPERS CERTIFICATION:

"I/WE HEREBY CERTIFY THAT I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN AND THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPEMENT WILL BE ACCOMPLISHED STRICTLY IN ACCORDANCE WITH THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT."

(PRINT NAME & TITLE) (SIGNATURE) (DATE)

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR CURRENT REVISIONS THEREOF, AND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT REGULATIONS."

DATE

MD. REGISTRATION NO. P.E., R.L.S., OR R.L.A.

ACAD: 0525CN06.dwg 11/16/01 HJB

REVISIONS
SYMBOL | DESCRIPTION | DATE | APPROVED

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DES. TWS | DR. DLT | CHK. RCM
SUBMITTED BY | DATE
PROGRAM MANAGER | DATE
APPROVED | DATE
EFD FOR COMMANDER NAVFAC
09A 403 | 04 404 | E.I.C. 405 | 401 408 | 402 04B
REVIEWED BY ROICC | DATE

SEAL AREA

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
WASHINGTON, D.C.
INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND
CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
EROSION AND SEDIMENT CONTROL NOTES

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62470-97-D-0077
SPEC. 21-97-5000-0077
NAVFAC DRAWING NO. 3456979
SHEET 5 OF 10
C-3

REVEGETATION NOTES

SECTION I – VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

I. INSTALL EROSION AND SEDIMENT CONTROL STRUCTURES (EITHER TEMPORARY OR PERMANENT) SUCH AS SILT FENCE AND STRAW BALES PRIOR TO OTHER SITE DISTURBANCE.

II. PERFORM ALL GRADING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. FINAL GRADING AND SHAPING IS NOT NECESSARY FOR TEMPORARY SEEDING.

III. SCHEDULE REQUIRED SOIL TESTS TO DETERMINE SOIL AMENDMENT COMPOSITION AND APPLICATION RATES. SUBMIT TEST RESULTS AND RECOMMENDATIONS FOR SEED MIX AND FERTILIZER RATES FOR APPROVAL BY ROICC.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER. SOIL ANALYSIS WILL BE 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 SUITABLE FOR ACCURATE APPLICATION BY APPROVED EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE ROICC. FERTILIZERS SHALL BE DELIVERED TO THE SITE, FULLY LABELED ACCORDING TO APPLICABLE STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADE NAME OR TRADEMARK, AND WARRANTY OF THE PRODUCER.

III. LIME MATERIALS SHALL BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50% TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50% WILL PASS THROUGH A #100 MESH SIEVE, AND 98 TO 100% WILL PASS THROUGH A #20 MESH SIEVE.

IV. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISCING OR OTHER SUITABLE MEANS. REFER TO MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, 1994 SECTION 20.0.

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS, CHISEL PLOWS, OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT SHOULD NOT BE ROLLED OR DRAGGED SMOOTH, BUT LEFT IN THE ROUGHENED CONDITION. SLOPED AREAS (GREATER THAN 3H:1V) SHOULD BE TRACKED BY A DOZER LEAVING THE SURFACE IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

b. APPLY SOIL AMENDMENTS AS PER SOIL TEST AND AS PRESCRIBED ON 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 VEGETATIVE ESTABLISHMENT:

1. SOIL pH SHALL BE BETWEEN 6.0 AND 7.0.
2. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (PPM).
3. TOPSOIL SHALL CONTAIN 5.0 TO 8.0% ORGANIC MATTER BY WEIGHT.
4. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
5. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON-SITE, ADDING TOPSOIL AMENDMENTS IS REQUIRED IN ACCORDANCE WITH SECTION 21.0 FOR TOPSOIL FROM THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 1994.

b. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE SOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT SOIL FROM SLIDING DOWN A SLOPE.

c. APPLY SOIL AMENDMENTS AS PER SOIL TEST, AND AS PRESCRIBED ON THE SEEDING SUMMARY.

d. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISCING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE; REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION, LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE. STEEP SLOPES (STEEPER THAN 3H:1V) SHOULD BE TRACKED BY A DOZER LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. THE TOP 1 TO 3 INCHES OF SOIL SHOULD BE LOOSE AND FRIABLE. SEEDBED LOOSENING MAY NOT BE NECESSARY ON NEWLY DISTURBED AREAS.

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 LAW.

NOTE: SEED TAGS SHALL BE MADE AVAILABLE TO ROICC TO VERIFY TYPE AND RATE OF SEED USED.

E. METHODS OF SEEDING

I. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER), BROADCAST OR DROP SEEDER, OR A CULTIPACKER SEEDER.

a. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES WILL NOT EXCEED THE FOLLOWING:
NITROGEN: 100 POUNDS/ACRE OF SOLUBLE NITROGEN
PHOSPHOROUS: 200 POUNDS/ACRE
POTASSIUM: 200 POUNDS/ACRE

b. LIME – USE ONLY GROUND AGRICULTURAL LIMESTONE. NORMALLY NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

c. SEED AND FERTILIZER SHALL BE MIXED ON SITE, AND SEEDING SHALL BE DONE IMMEDIATELY WITHOUT INTERRUPTION.

d. IF SOIL AMENDMENTS ARE BEING APPLIED DURING HYDROSEEDING, APPLICATION BY DISCING AS DISCUSSED IN REVEGETATION NOTES (SECTION I, B, IV) NEED NOT BE PERFORMED.

II. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

a. SEED SPREAD SHALL BE INCORPORATED INTO THE SOIL AT THE RATES PRESCRIBED ON THE TEMPORARY OR PERMANENT SEEDING SUMMARIES. THE SEEDED AREA SHALL THEN BE ROLLED WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

b. WHERE PRACTICAL, SEED SHOULD BE APPLIED IN TWO DIRECTIONS PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

III. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.

a. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.

b. WHERE PRACTICAL, SEED SHOULD BE APPLIED IN TWO DIRECTIONS PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

F. MULCH SPECIFICATIONS

I. STERILE STRAW SHALL CONSIST OF THOROUGHLY THRESHED WHEAT OR OAT STRAW, REASONABLY BRIGHT IN COLOR, AND SHALL NOT BE MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY, AND SHALL BE FREE OF NOXIOUS WEED SEEDS.

II. WOOD CELLULOSE FIBER MULCH (WCFM)

a. WCFM SHALL CONSIST OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

b. WCFM SHALL BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

c. WCFM, INCLUDING DYE, SHALL CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

d. WCFM SHALL BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER, AND OTHER ADDITIVES TO FORM A HOMOGENOUS SLURRY. THE MULCH MATERIAL SHALL FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND SHALL COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDINGS.

e. WCFM SHALL CONTAIN NO ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

f. WOOD CELLULOSE FIBER MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH TO APPROXIMATELY 10 mm., DIAMETER APPROXIMATELY 1 mm., pH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6% MAXIMUM, AND WATER HOLDING CAPACITY OF 90% MINIMUM.

NOTE: ONLY STERILE STRAW MULCH SHOULD BE USED IN AREAS WHERE A STAND OF ONE SPECIES OF GRASS IS DESIRED.

G. MULCHING SEEDED AREAS – MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

I. IF GRADING IS COMPLETED OUTSIDE OF THE SEEDING SEASON, AN APPROPRIATE NURSERY CROP ALONG WITH MULCH SHALL BE APPLIED TO THE GRADED AREAS.

II. WHEN STERILE STRAW MULCH IS USED, IT SHALL BE SPREAD OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS/ACRE. MULCH SHALL BE APPLIED TO A UNIFORM LOOSE DEPTH OF BETWEEN 1 AND 2 INCHES. MULCH APPLIED SHALL ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED, AND MUST BE ANCHORED.

III. WOOD CELLULOSE FIBER USED AS A MULCH SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 LBS. PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS. OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

H. SECURING STRAW MULCH (MULCH ANCHORING): MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON SIZE OF AREA AND EROSION HAZARD:

I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS IS THE MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD BE USED ON THE CONTOUR.

II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LBS/ACRE.

III. APPLICATIONS OF LIQUID BINDERS SHOULD BE APPLIED HEAVIER AT EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. THE REMAINDER OF AREA SHOULD BE UNIFORM AFTER BINDER APPLICATION.

IV. LIGHTWEIGHT: PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

V. PEG AND TWINE: SECURE MULCH BY STRETCHING TWINE BETWEEN 8 TO 10 INCH PEGS DRIVEN TO WITHIN 3 INCHES OF THE SOIL SURFACE IN A CRISS-CROSS WITHIN A SQUARE PATTERN.

I. REPAIRS AND MAINTENANCE

INSPECT ALL SEEDED AREAS FOR FAILURES AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

I. ONCE THE VEGETATION IS ESTABLISHED, THE SITE SHALL HAVE 90% GROUND COVER TO BE CONSIDERED ADEQUATELY STABILIZED, AS DETERMINED BY THE ROICC.

II. IF THE STAND PROVIDES LESS THAN 40% GROUND COVERAGE, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING RECOMMENDATIONS.

III. IF THE STAND PROVIDES BETWEEN 40% AND 90% GROUND COVERAGE, OVERSEEDING AND FERTILIZING USING HALF OF THE RATES ORIGINALLY APPLIED MAY BE NECESSARY, AS DETERMINED AND DIRECTED BY THE ROICC.

TEMPORARY SEEDING

VEGETATION – ANNUAL GRASS OR GRAIN USED TO PROVIDE COVER ON DISTURBED AREAS FOR UP TO TWELVE MONTHS. FOR LONGER DURATION OF VEGETATIVE COVER, PERMANENT SEEDING IS REQUIRED.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE				FERTILIZER RATE (10-10-10)	LIME RATE
SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS		
ANNUAL RYE GRASS	50	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)

NOTE:
1) IN LIEU OF PROVIDING MARYLAND STANDARD FERTILIZER AND LIME RATES PERFORM SOIL TEST TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER.
2) THE FERTILIZATION RATE (10-10-10) REFERS TO THE PERCENT N, P_2O_5, AND K_2O PROVIDED IN THE FERTILIZER.

PERMANENT SEEDING

SEEDING GRASS AND LEGUMES TO ESTABLISH GROUND COVER FOR A MINIMUM PERIOD OF ONE YEAR ON DISTURBED AREAS GENERALLY RECEIVING LOW MAINTENANCE.

PERMANENT SEEDING SUMMARY

SEED MIXTURE				FERTILIZER RATE (10-20-20)	LIME RATE
SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS		
SWITCHGRASS	7	YEAR ROUND	1/4-1/2 INCHES	900 lb/ac (20 lb/1000 sf)	4000 lb/ac (100 lb/1000 sf)
PARTRIDGE PEA	20	YEAR ROUND	1/4-1/2 INCHES		
LITTLE BLUESTEM	7	YEAR ROUND	1/4-1/2 INCHES		
ANNUAL RYE GRASS	10	YEAR ROUND	1/4-1/2 INCHES		
CANADIAN WILD RYE	6	YEAR ROUND	1/4-1/2 INCHES		
INDIAN GRASS	7	YEAR ROUND	1/4-1/2 INCHES		
BIG BLUESTEM	7	YEAR ROUND	1/4-1/2 INCHES		

NOTE:
1) IN LIEU OF PROVIDING MARYLAND STANDARD FERTILIZER AND LIME RATES PERFORM SOIL TEST TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER.
2) THE FERTILIZATION RATE (10-20-20) REFERS TO THE PRESENT N, P_2O_5, AND K_2O PROVIDED IN THE FERTILIZER.

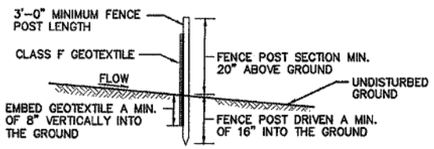
SYMBOL | DESCRIPTION | DATE | APPROVED
REVISIONS

Tetra Tech NUS, Inc. FOSTER PLAZA VII, 661 ANDERSEN DRIVE, PITTSBURGH, PA 15220
DES. TWS | DR. DLT | CHK. RCM
EFD FOR COMMANDER NAVFAC
SEAL AREA

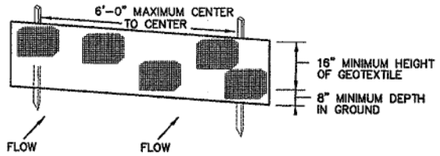
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY–CHESAPEAKE
WASHINGTON, D.C.
INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND
CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 – SCRAP YARD
REMEDIAL ACTION DESIGN
REVEGETATION NOTES

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO. N62470-97-D-0077
SPEC. 21-97-5000-0077
NAVFAC DRAWING NO. 3456980
SHEET 6 OF 10
C-4

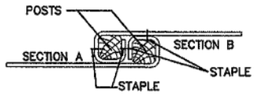
ACAD:0525CN07.dwg 11/15/01



CROSS SECTION



PERSPECTIVE VIEW



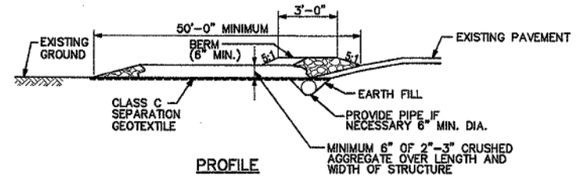
TOP VIEW – JOINING TWO ADJACENT SILT FENCE SECTIONS

NOTES:

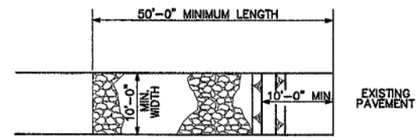
1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1.5" BY 1.5" SQUARE (MIN) CUT OR 1.75" DIAMETER (MIN) ROUND AND SHALL BE OF SOUND HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. CLASS F GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE REQUIREMENTS OF CLASS F GEOTEXTILE.
3. FROM CONSTRUCTION BASELINE STATION 6+00 TO 8+50 GEOTEXTILE SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED 24" AT THE TOP AND MID SECTION.

SILT FENCE DETAIL (1 / C-2 | C-5)

NOT TO SCALE



PROFILE



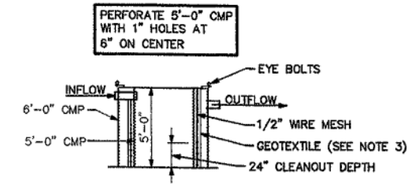
PLAN VIEW

NOTES:

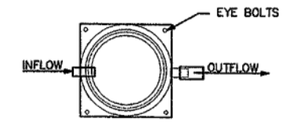
1. GEOTEXTILE SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.
2. ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE STABILIZED STONE CONSTRUCTION ENTRANCE SHALL BE PIPED THROUGH THE ENTRANCE TO MAINTAIN POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED STONE CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5H:1V SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. THE PIPE SHALL BE SIZED ACCORDING TO DRAINAGE REQUIREMENTS.

STABILIZED STONE CONSTRUCTION ENTRANCE DETAIL (2 / C-2 | C-5)

NOT TO SCALE



ELEVATION



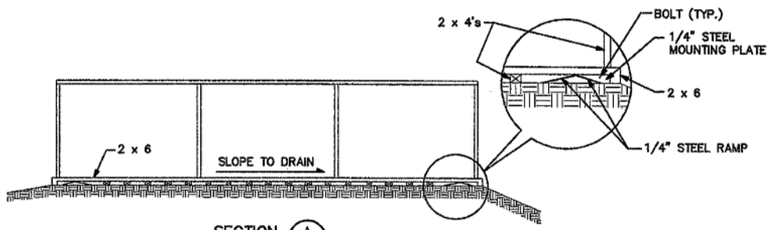
PLAN VIEW

NOTES:

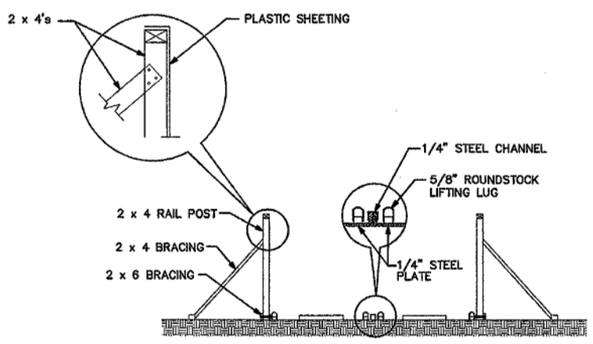
1. AN EXAMPLE OF A TYPICAL SEDIMENT TANK IS SHOWN. OTHER CONTAINER DESIGNS CAN BE USED IF THE STORAGE VOLUME IS ADEQUATE AND APPROVAL IS OBTAINED FROM THE ROICC AND MDE.
2. PORTABLE SEDIMENT TANKS SHALL BE PLACED IN SERIES IF ADDITIONAL RETENTION TIME OR CAPACITY IS REQUIRED. ONE CUBIC FOOT OF STORAGE SHALL BE PROVIDED FOR EACH GALLON PER MINUTE OF PUMP DISCHARGE CAPACITY.
3. GEOTEXTILE MESH SIZE MAY VARY FROM TANK TO TANK IF TANKS ARE INSTALLED IN SERIES. ALL GEOTEXTILES SHALL HAVE AOS LESS THAN 0.3 MM, PERMEABILITY GREATER THAN 0.01 CM/SEC, GRAB TENSILE GREATER THAN 90 LBS AND BURST STRENGTH GREATER THAN 145 PSI. THE DOWNSTREAM-MOST GEOTEXTILE SHALL HAVE BURST STRENGTH GREATER THAN 320 PSI.
4. DISCHARGE FROM PORTABLE SEDIMENT TANKS SHALL BE CONTROLLED TO PROTECT DOWNSLOPE AREAS FROM EROSION. EROSION CONTROLS (E.G. EROSION CONTROL MATTING, RIPRAP, ETC.) SHALL BE SUBJECT TO ROICC AND MDE APPROVAL.

PORTABLE SEDIMENT TANK DETAIL (3 / C-2 | C-5)

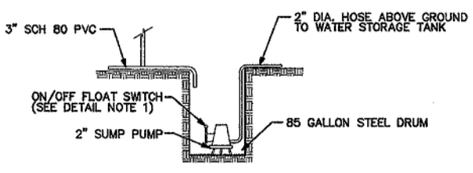
NOT TO SCALE



SECTION (A / C-5 | C-5)



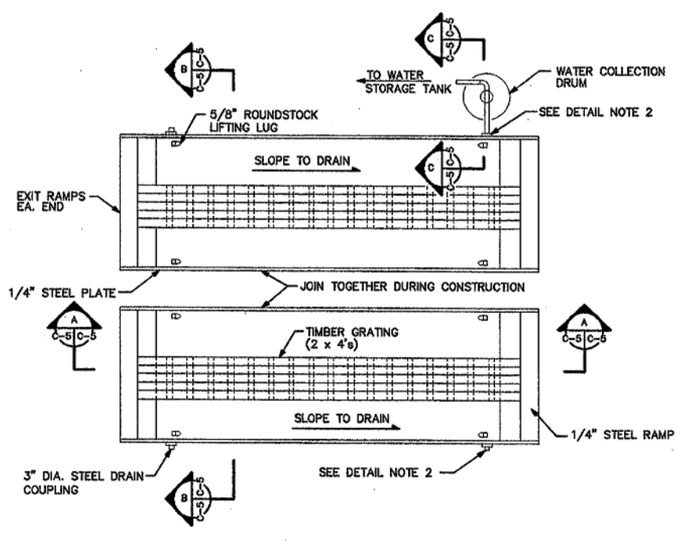
SECTION (B / C-5 | C-5)



SECTION (C / C-5 | C-5)

NOTES:

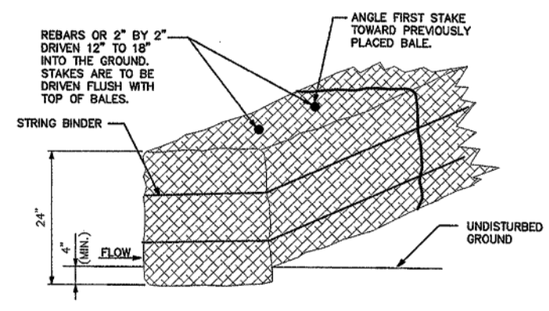
1. ON/OFF OPERATION OF PUMP IS CONTROLLED BY FLOAT SO THAT PUMP STARTS WHEN SUMP WATER LEVEL REACHES 4" BELOW SUMP INLET AND SHUTS OFF WHEN WATER LEVEL DROPS TO PUMP DISCHARGE LEVEL.
2. DRAIN COUPLING IS TO BE FITTED WITH QUICK DISCONNECT AND 3" DIA. SCH 80 PVC (INNER COUPLING) OR 3" DIA. RUBBER DISCHARGE 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.



PLAN – DECONTAMINATION PAD

DECONTAMINATION PAD DETAIL (4 / C-2 | C-5)

NOT TO SCALE



STRAW BALE DETAIL (5 / C-2 | C-5)

NOT TO SCALE

LEGEND:

REFER TO DRAWING T-2 FOR GENERAL LEGEND.

NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.

ACAD:08250C03.dwg 11/15/01 H.B

SYMBOL	DESCRIPTION	DATE	APPROVED
403			
404			
405			
408			
401			
402			
09A			
04			

REVISIONS

REVIEWED BY ROICC	DATE
O4B	

Tetra Tech NUS, Inc. 661 ANDERSON DR. PITTSBURGH, PA 15220

DSN: PMS | DR: GLT | CHK: RGH | TRL: WLC | DATE: 11/01

PREPARED: Paul M. Schlosser | DATE: 11/01

APPROVED: Eric J. Wilhelm | DATE: 11/01

ERD FOR COMMANDER NAVFAC

STATE OF MARYLAND — PROFESSIONAL ENGINEER — ERIC J. WILHELM — No. 15224 — CIVIL

SEAL AREA

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY–CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.

INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 – SCRAP YARD
REMEDIAL ACTION DESIGN
EROSION AND SEDIMENT CONTROL DETAILS

CODE I.D. NO. 80091

DRAWING SIZE: D

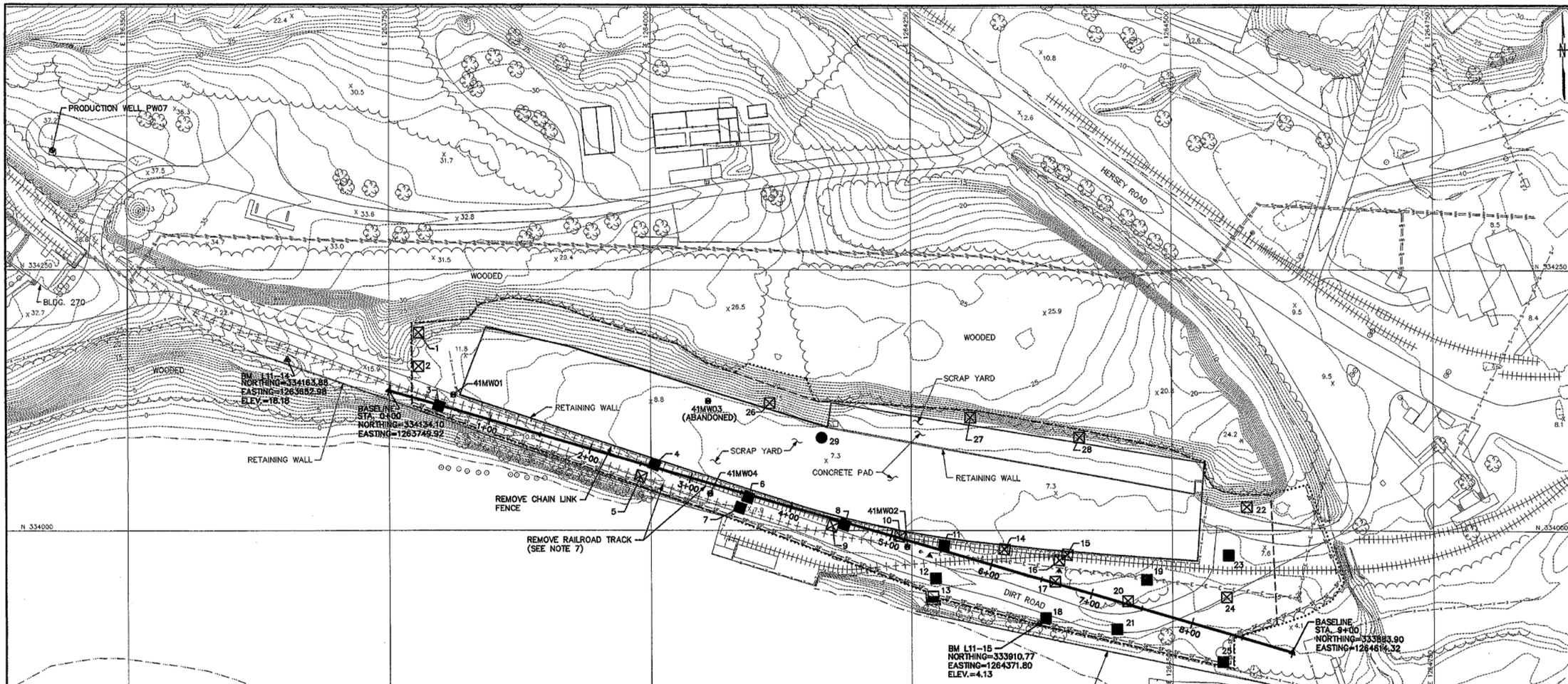
CONST. CONT. NO. N62470-97-D-0077

SPEC. 21-97-5000-0077

NAVFAC DRAWING NO. 3456981

SHEET 7 OF 10

C-5



SOIL REMOVAL				
LOCATION ID	SAMPLE ID	NORTHING	EASTING	STOCKPILE
1	S41SS001	334190	1263778	1
2	S41SS002	334157	1263778	1
3	S41SS003	334119	1263798	1
4	S41SS009	334064	1264003	1
5	S41SS010	334052	1263990	1
6	S41SS013	334032	1264093	1
7	S41SS014	334022	1264085	1
8	S41SS017	334005	1264186	1
9	S41SS04	334004	1264174	1
10	S41SS05	333995	1264239	1
11	S41SS022	333985	1264281	1
12	S41SS023	333954	1264273	2
13	41SS02	333937	1264270	1
14	S41SS06	333982	1264339	1
15	S41SS07	333977	1264399	1
16	S41SS027	333971	1264392	2
17	S41SS028	333951	1264388	1
18	S41SS029	333916	1264378	2
19	S41SS033	333953	1264475	1
20	S41SS034	333932	1264457	1
21	S41SS035	333906	1264447	2
22	S41SS037	334022	1264571	1
23	S41SS038	333976	1264554	2
24	S41SS039	333936	1264552	1
25	S41SS040	333874	1264548	1
26	S41SS011	334122	1264114	1
27	S41SS019	334109	1264307	2
28	S41SS024	334090	1264411	1
29	S41SS016	334090	1264164	3

NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
2. SAMPLE LOCATIONS SHOWN ARE LIMITED TO THOSE SAMPLE LOCATIONS WHERE COCs EXCEED THE PRGs. FOR COMPLETE ANALYTICAL RESULTS REFER TO THE INITIAL ASSESSMENT STUDY (NEESA, MAY 1983), SUPPLEMENTAL PRELIMINARY ASSESSMENT REPORT (NEESA, 1992), FINAL SITE INSPECTION REPORT (E/A&H, MARCH 1994), REMEDIAL INVESTIGATION (RI) REPORT (TtNUS, JULY 1999) AND FEASIBILITY STUDY (FS) REPORT (TtNUS, JANUARY 2001).
3. SAMPLE LOCATION GRID COORDINATES REPRESENT THE CENTER OF 10-FOOT BY 10-FOOT EXCAVATION AREAS. EXCAVATION AREAS SHALL BE ORIENTED NORTH AND SOUTH, UNLESS LOCATED ALONG THE RAILROAD TRACKS. EXCAVATION AREAS LOCATED ALONG THE RAILROAD TRACKS SHALL BE ORIENTED IN THE DIRECTION OF THE RAILROAD TRACKS.
4. LIMITS OF EXCAVATION AREAS INDICATED ARE INITIAL EXCAVATION LIMITS. EXCAVATION LIMITS MAY INCREASE BASED ON RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS. EXCAVATION LIMITS SHALL NOT EXTEND BEYOND THE LIMIT OF REMEDIATION OR BELOW STRUCTURES (E.G., CONCRETE PAD).
5. EXCAVATION DEPTHS INDICATED ARE INITIAL EXCAVATION DEPTHS. EXCAVATION DEPTHS MAY INCREASE BASED ON RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS. EXCAVATION DEPTHS SHALL NOT EXTEND BELOW THE GROUNDWATER TABLE, EXCEPT AT LOCATION ID NO. 13.
6. STOCKPILE 1 ASSUMES DISPOSAL AT A SUBTITLE D LANDFILL, STOCKPILE 2 ASSUMES DISPOSAL AT A SUBTITLE C LANDFILL, AND STOCKPILE 3 ASSUMES TREATMENT AT AN INCINERATION FACILITY OR DISPOSAL AT A SUBTITLE C LANDFILL. STOCKPILE DISPOSITION BASED ON HISTORIC SAMPLE RESULTS (SEE NOTE 2 ABOVE). EXCAVATED SOIL DISPOSITION/STOCKPILE IDENTIFIERS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL DETERMINE THE NUMBER OF STOCKPILES REQUIRED BASED ON WASTE DISPOSAL CHARACTERIZATION RESULTS AND THE REQUIREMENTS OF THE SELECTED TREATMENT AND/OR DISPOSAL FACILITIES, SUBJECT TO APPROVAL BY THE ROICC.
7. REMOVE RAILROAD RAIL, TIES AND BALLAST TO A DEPTH OF 12-INCHES BELOW EXISTING GROUND SURFACE WITHIN LIMITS OF REMEDIATION. CLEAN SOIL FROM RAILS WITHIN A CONTAINED AREA, AND STOCKPILE CLEANED RAILS FOR SALVAGE BY OTHERS. STOCKPILE TIES FOR SUBSEQUENT OFF-SITE DISPOSAL AT AN APPROVED DISPOSAL FACILITY. BALLAST OR SOIL EXCAVATED ABOVE AND BETWEEN TIES SHALL BE STOCKPILED FOR DISPOSAL OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
8. REMOVE SOIL FROM THE SURFACE OF THE CONCRETE PAD AND STOCKPILE AS REQUIRED (SEE NOTE 6 ABOVE). LOCATION IDENTIFIER 29 (SAMPLE LOCATION S41SS0160006) IS A HISTORIC SAMPLE LOCATION WHERE PCB WAS DETECTED OVER 500 PPM.

LEGEND:

REFER TO DRAWING T-2 FOR GENERAL LEGEND.

- 41MW01 — MONITORING WELL (TO BE ABANDONED)
- ++++ — HIDDEN/ REMOVED RAILROAD TRACKS
- 29 — SURFACE SOIL SAMPLE
- 1 — SOIL REMOVAL (6-INCH DEPTH, 10' x 10')
- 19 — SOIL REMOVAL (18-INCH DEPTH, 10' x 10')
- 13 — SOIL REMOVAL (8-FOOT DEPTH, 10' x 10')

0 50 100
SCALE IN FEET

AC40:0525CP20.dwg 11/15/03 HJB

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

403	D9A		
404	04		
405	E.I.C.		
406	401		
407	D4B		
DATE	REVIEWED BY ROICC		

Tetra Tech NUS, Inc.
CENTER BLOCK 10
400 WOOD STREET
PITTSBURGH, PA 15222

DES.	TWC		
DR.	GJ	TITLE	
CHK.	RGM	DATE	
APPROVED BY			

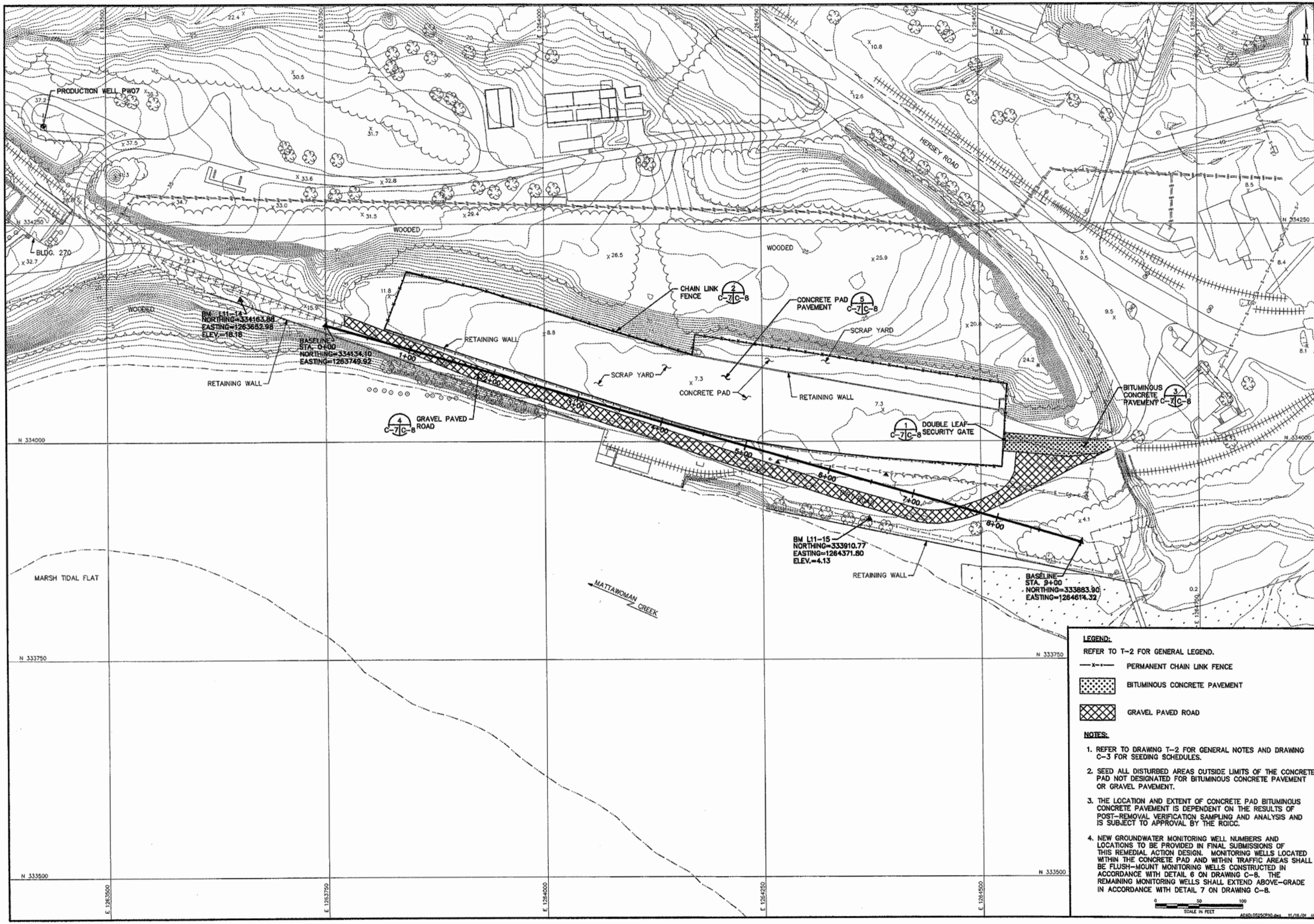
ED FOR COMMANDER NAVFAC
DATE

SEAL AREA

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.
INDIAN HEAD DIVISION, NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
EXCAVATION AND FILL PLAN

CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO.
N62470-97-D-0077
SPEC. 21-97-9000-0077
NAVFAC DRAWING NO.
3456982
SHEET 8 OF 10
C-6



LEGEND:

REFER TO T-2 FOR GENERAL LEGEND.

—x—x— PERMANENT CHAIN LINK FENCE

BITUMINOUS CONCRETE PAVEMENT

GRAVEL PAVED ROAD

NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES AND DRAWING C-3 FOR SEEDING SCHEDULES.
2. SEED ALL DISTURBED AREAS OUTSIDE LIMITS OF THE CONCRETE PAD NOT DESIGNATED FOR BITUMINOUS CONCRETE PAVEMENT OR GRAVEL PAVEMENT.
3. THE LOCATION AND EXTENT OF CONCRETE PAD BITUMINOUS CONCRETE PAVEMENT IS DEPENDENT ON THE RESULTS OF POST-REMOVAL VERIFICATION SAMPLING AND ANALYSIS AND IS SUBJECT TO APPROVAL BY THE ROICC.
4. NEW GROUNDWATER MONITORING WELL NUMBERS AND LOCATIONS TO BE PROVIDED IN FINAL SUBMISSIONS OF THIS REMEDIAL ACTION DESIGN. MONITORING WELLS LOCATED WITHIN THE CONCRETE PAD AND WITHIN TRAFFIC AREAS SHALL BE FLUSH-MOUNT MONITORING WELLS CONSTRUCTED IN ACCORDANCE WITH DETAIL 6 ON DRAWING C-8. THE REMAINING MONITORING WELLS SHALL EXTEND ABOVE-GRADE IN ACCORDANCE WITH DETAIL 7 ON DRAWING C-8.

0 50 100
SCALE IN FEET

ACAD:05250P10.dwg 11/18/01 ULB

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

D9A	403		
D4	404		
E.I.C.	405		
401	406		
402	D48	DATE	
REVIEWED BY ROICC			

Tetra Tech NUS, Inc.
661Th Broad St., Suite 1000
Pittsburgh, PA 15222

DES.	TRC	DR.	ELT
CHK.	RGM	TITLE	
DATE			
SUBMITTED BY			
TITLE		DATE	11/16/01
APPROVED BY			
TITLE		DATE	

ISSUED FOR COMMANDER SAVFAC

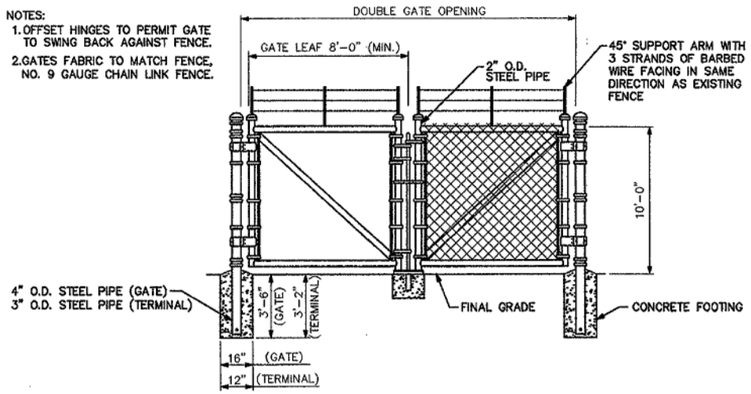
STATE OF MARYLAND
SEAL AREA

NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C.
NAVAL ENGINEERING FIELD ACTIVITY-CHESAPEAKE
DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD DIVISION, INDIAN HEAD, MARYLAND

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
RESTORATION PLAN

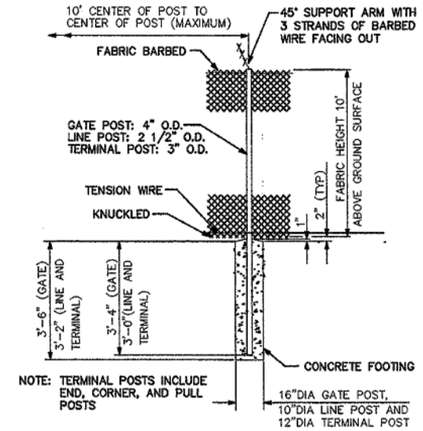
CODE I.D. NO. 80091
DRAWING SIZE: D
CONST. CONT. NO.
N62470-97-D-0077
SPEC. 21-97-5060-0077
NAVFAC DRAWING NO.
3456983
SHEET 9 OF 10
C-7

NOTES:
1. OFFSET HINGES TO PERMIT GATE TO SWING BACK AGAINST FENCE.
2. GATES FABRIC TO MATCH FENCE, NO. 9 GAUGE CHAIN LINK FENCE.



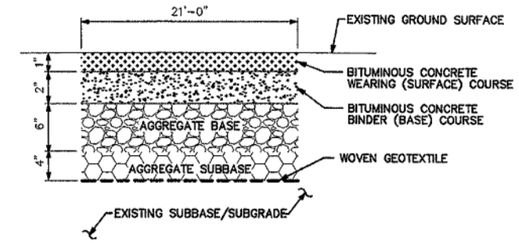
DOUBLE LEAF SECURITY GATE DETAIL (1 / C-7 | C-8)

NOT TO SCALE



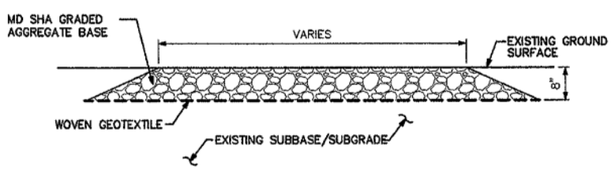
CHAIN LINK FENCE DETAIL (2 / C-7 | C-8)

NOT TO SCALE



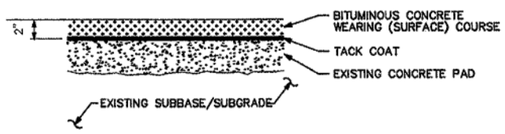
BITUMINOUS CONCRETE PAVEMENT DETAIL (3 / C-7 | C-8)

NOT TO SCALE



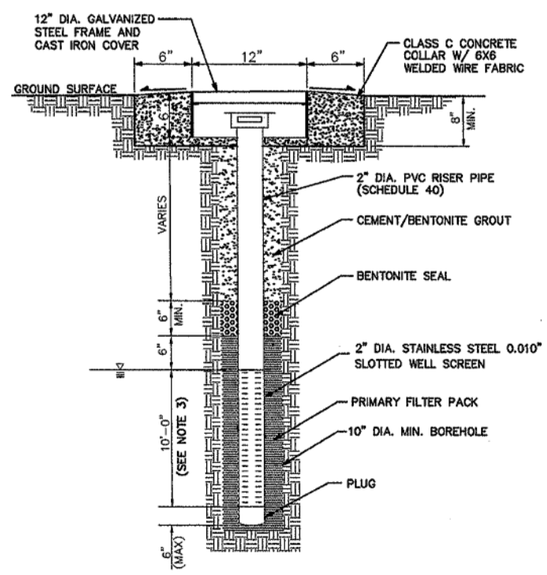
GRAVEL PAVED ROAD DETAIL (4 / C-7 | C-8)

NOT TO SCALE



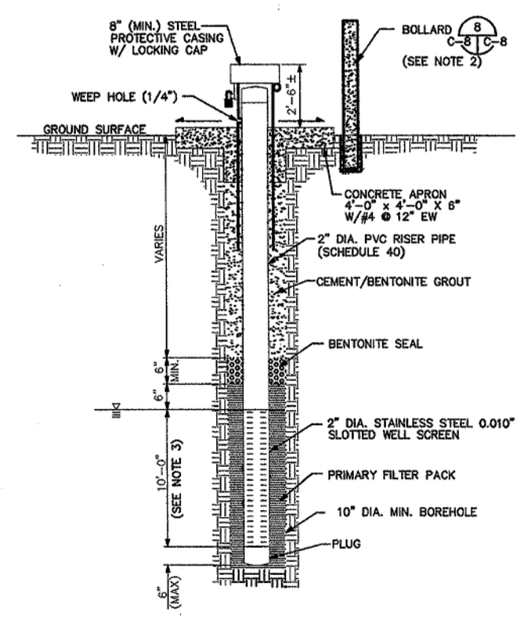
CONCRETE PAD PAVEMENT DETAIL (5 / C-7 | C-8)

NOT TO SCALE



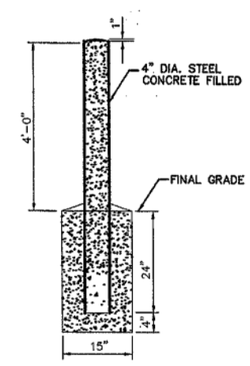
FLUSH MOUNT MONITORING WELL DETAIL (6 / C-7 | C-8)

NOT TO SCALE



MONITORING WELL DETAIL (7 / C-7 | C-8)

NOT TO SCALE



BOLLARD (8 / C-8 | C-8)

NOT TO SCALE

LEGEND:

REFER TO DRAWING T-2 FOR GENERAL LEGEND.

NOTES:

1. REFER TO DRAWING T-2 FOR GENERAL NOTES.
2. PROVIDE 4 BOLLARDS FOR EACH PROPOSED MONITORING WELL AT EACH CORNER OF THE CONCRETE APRON.
3. MONITORING WELL SCREEN INTERVALS SHALL EXTEND FROM THE WATER TABLE DOWN 10-FEET.

SYMBOL	DESCRIPTION	DATE	APPROVED
	REVISIONS		

03A	403		
04	404		
E.I.C.	405		
	406		
	401		
	402		
DATE	REVIEWED BY RGCC	DATE	

Tetra Tech NUS, Inc. — PITTSBURGH, PA 15220

ESC. JCH | DSN. GLT | CHK. TWS | SUBMITTED BY | TITLE | DATE | CODE | ISSUED FOR COMMANDER NAVFAC | RECEIVED | DATE

STATE OF MARYLAND — PROFESSIONAL ENGINEER — SEAL AREA

NAVAL FACILITIES ENGINEERING COMMAND
DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY-CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND, D.C.
INDIAN HEAD, MARYLAND
INDIAN HEAD DIVISIONAL NAVAL SURFACE WARFARE CENTER

CONTRACT DOCUMENTS (100%) SUBMISSION
SITE 41 - SCRAP YARD
REMEDIAL ACTION DESIGN
MISCELLANEOUS DETAILS

CODE I.D. NO. 80091
DRAWING SIZE D
CONST. CONTRACT NO. N62470-97-D-8007
SPEC. 21-97-5807
NAVFAC DRAWING NO. 345698
SHEET 10 OF 10
C-8

ACAD: 0505CD04.dwg 11/16/01 HJB

GRAY PAGE 41-25 SITE

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY - CHESAPEAKE
NAVAL FACILITIES ENGINEERING COMMAND
BUILDING 212, WASHINGTON NAVY YARD
WASHINGTON, D.C. 20374

SPECIFICATION NO:
21-97-5000-0077

CONTRACT NO:
N62470-97-D-5000-0077

SITE 41

SCRAP YARD
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:

STATE OF MARYLAND
GEORGE JOHN LATULIPPE
No. 11079
REGISTERED PROFESSIONAL ENGINEER

Architectural:		Structural:
N/A		N/A
Electrical:	**Mechanical:**	**Submitted by:**
N/A	N/A	

AUGUST 2002

SPECIFICATION APPROVED BY: _____ DATE: _____

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SECTION 01115N

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, Waste Management

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EP 75-1-2	(2000) Unexploded Ordnance (UXO) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities
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 PROTECTON 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

UXO HTRW Support 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 cleaning procedures; compaction procedures; storage, transportation, and treatment requirements; wastewater treatment plan (water resulting from

decontamination, concrete pad rinsewater, excavation dewatering, excavated soil dewatering); and a detailed sequence of events for the construction, and treatment methods.

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 UXO HTRW SUPPORT WORK PLAN

Provide a site specific Unexploded Ordnance (UXO) Hazardous, Toxic, and Radioactive Waste (HTRW) Support Work Plan (UXO HTRW Support Work Plan) in accordance with Section C of the basic contract and NAVSEA OP 5 Volume 1, "Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping" (Sixth Edition). The UXO HTRW Support Work Plan shall be submitted to the Naval Ordnance Safety and Security Activity (NOSSA) for approval. Site work shall not commence until the UXO HTRW Support Work Plan is approved. The UXO HTRW Support Work Plan shall be prepared in accordance with NAVSEA Instruction 8023.11, "Standard Operating Procedures for Manufacture, Handling, and Storage of Expendable Ordnance at Navy and Marine Corps Activities" and COE EP 75-1-2.

1.5 RECORDS

1.5.1 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 will supply the CADD files to be used.

1.5.2 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 Conditions Report to the ROICC NTR.

1.5.3 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.

1.5.4 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.

1.5.5 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.

1.5.6 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.

1.5.7 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.

1.5.8 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.

1.5.9 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.

1.5.10 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 modifications, final documents, complete set of geotechnical laboratory results, complete set of field test and laboratory analytical results, 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. Report shall also include an evaluation of the temporary on-site treatment and off-site treatment systems, including quantities of contaminated soil and wastewater treated, contaminants removed, quality of effluent, problems encountered, and solutions implemented.

1.6 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.

1.7 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, groundwater monitoring well abandonment, and removal/excavation and off-site treatment

and disposal of waste-contaminated soil in order to protect potential human and ecological receptors, and site restoration. Specifically, the selected remedy is to remove the soil from within the concrete pad area and excavate contaminated soil from outside the concrete pad area as indicated. The removed and excavated soil would be managed off-site at an approved treatment, storage, and disposal (TSD) facility. The disturbed areas will be revegetated, new concrete pad perimeter fencing installed, and replacement monitoring wells installed. A bituminous concrete layer will be placed on the concrete pad if the concrete pad cannot be cleaned of Chemicals of Concern (COCs) to less than the Remedial Action Objectives (RAOs).

1.8 LOCATION

The work shall be located at the Indian Head Division Naval Surface Warfare Center, Indian Head, Maryland, Site 41.

1.9 DESCRIPTION OF CONTAMINANTS PRESENT

Site 41 - Scrap yard is one of several Installation Restoration (IR) sites located at the IHDIV-NSWC facility. From the 1960s to 1988 electrical transformers were reportedly stored at the northwestern end of the site prior to off-site disposal (TtNUS, 2001). A 1981 inspection identified 17 electrical transformers as either PCB contaminated or PCB containing (Hart, 1983). These transformers were believed to have leaked and contaminated the soil in this portion of the site. Additionally, lead batteries were stored at the site and may have released lead to the surface soils (E/A&H, 1994).

1.9.1 Previous Investigations

An Initial Assessment Study (IAS) (Hart, 1983) was performed to evaluate various sites at IHDIV-NSWC to determine if a potential threat to human health or the environmental existed. Site 41 was not identified as a site that exhibited a potential threat. A supplemental preliminary assessment (PA) report (NEESA, 1992) was prepared to evaluate an additional 17 sites, including Site 41. The PA recommended that further investigation be conducted at Site 41. Site 41 was further investigated as a follow-up to the supplemental PA during a site inspection (SI) (Phase II) which was conducted at 12 sites. Site 41 was recommended for further study based on the results of the SI. In 1997, a Remedial Investigation (RI), which included human health and environment risk assessments, was performed at Site 41 (TtNUS, 1999).

1.9.2 Sources of Contamination

The scrap yard is active and is used to store metal materials and scraps, including storage drums and furniture. Electrical transformers containing or contaminated with PCBs and lead-acid batteries were previously stored in the scrap yard.

1.9.3 Description of Contamination

Site 41 is estimated to contain approximately 1,510 cubic yards of contaminated soil. Soil, sediment and groundwater samples were collected and analyzed to determine the extent of contamination at Site 41. Soil COCs are polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCB), and inorganics. Shallow groundwater COCs are trichloroethene (TCE) and inorganics. There were no COCs for surface water

or sediment based on protection of human health. Some of the ecologically-based Chemicals of Potential Concern (COPCs) identified in Mattawoman Creek surface water and sediment may be site related. A description of surface and subsurface soil, groundwater, and surface water and sediment waste contamination, summarized from the Record of Decision (ROD)(USEPA et al., 2001) is provided below.

1.9.3.1 Surface and Subsurface Soil

The COCs for soil based on protection of human health are the PAHs, benzo(a)pyrene and dibenzo(a,h)anthracene, PCB (Aroclor 1260), and inorganics (arsenic and lead). The COCs for soil based on protection of ecological receptors are PCB (Aroclor 1260), and inorganics (arsenic, cadmium and lead).

Surface soil samples (up to 2 feet deep) were collected in 1997 and 1999. Benzo(a)pyrene and dibenzo(a,h)anthracene were detected in at least 70 percent of the surface soil samples collected in 1997 at concentrations ranging from 49 ug/kg to 2,000 ug/kg. Samples collected in 1999 were not analyzed for PAHs. Aroclor 1260 was detected in more than 80 percent of the surface soil samples collected in 1997 and 1999 at concentrations ranging from 25 ug/kg to 180,000 ug/kg. Arsenic and lead were detected in all the surface soil samples collected in 1997 and 1999. Arsenic concentrations ranged from 2 mg/kg to 1,290 mg/kg, and lead concentrations ranged from 4.4 mg/kg to 6,400 mg/kg. Cadmium was detected in over 80 percent of the surface soil samples collected in 1997 and 1999 at concentrations ranging from 0.06 mg/kg to 231 mg/kg. Most of the surface soil on the concrete pad is contaminated. Contamination is more sporadic outside of the concrete pad, and there is no pattern to the detections. The concentrations and locations of the COCs detected in surface soil are shown on Figures 2-6 (0 to 6 inches deep) and 2-7 (12 to 18 inches deep) of the ROD.

Subsurface soil samples (more than 2 feet deep) were collected in 1992. Benzo(a)pyrene was only detected in two subsurface soil samples, at concentrations of 100 ug/kg and 190 ug/kg. Subsurface soil samples were not collected in 1997 or 1999. Dibenzo(a,h)anthracene and Aroclor 1260 were not detected in subsurface soil. Arsenic was detected in less than 50 percent of the subsurface soil samples, at concentrations ranging from 1.3 mg/kg to 328 mg/kg. Cadmium was only detected in two subsurface soil samples, at concentrations of 1.2 mg/kg and 2 mg/kg. Lead was detected in all subsurface soil samples, at concentrations ranging from 1.7 to 47 mg/kg. In general, the concentrations of the COCs were much lower in the subsurface soil than in the surface soil. The only area of concern with respect to subsurface soil is the maximum concentration of arsenic (328 mg/kg) at soil boring 41SB02 at a depth of 8 feet. This is the only area of subsurface soil that results in unacceptable risks to human health under the anticipated future non-residential land use for the site.

Maximum surface and subsurface soil concentrations were also compared to USEPA Soil Screening Levels (SSLs) for migration from soil to groundwater. The maximum detected concentrations of benzo(a)anthracene, Aroclor 1260, antimony, arsenic, cadmium, total chromium, and lead exceeded the respective SSL. Only arsenic was detected in shallow groundwater beneath the site.

1.9.3.2 Groundwater

The only COC for shallow groundwater based on protection of human health is

arsenic. Additional COCs for shallow groundwater, based on exceedances of federal and state Maximum Contaminant Levels (MCLs) for drinking water, are TCE and beryllium. The only exceedance of the proposed MCL for arsenic (5 ug/L) was at location S41MW02 (37.6 ug/L). Detected concentrations of TCE were 8 ug/L at location S41MW01 and 32 ug/L at location S41MW03. The MCL for TCE is 5 ug/L. TCE was not detected in any soil samples collected at the site. The concentrations of beryllium barely exceeded the MCL (4 ug/L) at location S41MW02 (4.3 ug/L) and location S41MW03 (4.8 ug/L). There is no apparent pattern or plume for the detections of the COCs in shallow groundwater. The highest concentrations of TCE and beryllium were detected in the most upgradient well (S41MW03), although this well is within the concrete pad area. The concentrations and locations of the detections of COCs and other chemicals detected in groundwater are shown on Figure 2-8 of the ROD.

1.9.3.3 Surface Water and Sediment

There were no unacceptable risks or COCs identified for protection of human health from exposure to surface water or sediment.

The following were identified as chemicals of potential concern (COPCs) for surface water or the aquatic food chain during the ecological risk assessment: Aroclor 1260, cadmium, chromium, copper, lead, mercury, silver, and zinc. Aroclor 1260, cadmium, chromium, copper, lead, mercury, and silver were not detected in Mattawoman Creek near the site but were only detected in a sample of ponded water collected in April 1993 from within the concrete pad area (41SW01). All detections of zinc in Mattawoman Creek were below the state surface water quality criteria.

The following were identified as COPCs for sediment during the ecological risk assessment: 1,1-dimethylhydrazine, nitrocellulose, N-nitrosodiphenylamine, mercury, nickel, and silver. The only organic COPC detected at Site 41 was nitrocellulose. All the metals were also detected in site soil.

1.10 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 105 calendar days (45 calendar days to obtain an approved Work Plan and 60 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.

1.11 PROJECT INFORMATION

1.11.1 Contract Drawings

Contract drawings are as follows:

DWG No.	NAVFAC DWG No.	Title
T-1	3456975	Title Sheet
T-2	3456976	General Notes and Legend
C-1	3456977	Existing Conditions Plan
C-2	3456978	Erosion and Sediment Control Plan

DWG No.	NAVFAC DWG No.	Title
C-3	3456979	Erosion and Sediment Control Notes
C-4	3456980	Revegetation Notes
C-5	3456981	Erosion and Sediment Control Details
C-6	3456982	Excavation and Fill Plan
C-7	3456983	Restoration Plan
C-8	3456984	Miscellaneous Details

1.11.2 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. 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.

c. 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.

d. Draft Final Record of Decision, Site 41 - Scrap Yard, Indian Head Division, Naval Surface Warfare Center, Indian Head, Maryland, U.S. Environmental Protection Agency, Maryland Department of the Environment, and Naval Surface Warfare Center, Indian Head Division, May 2001.

1.12 SCHEDULING

The IHDIV-NSWC 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.

1.12.1 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.

1.12.2 Work Outside Regular Hours

Work outside regular hours requires ROICC NTR approval. Contractor shall submit an application to the ROICC NTR, two 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.

1.13 SECURITY REQUIREMENTS

The Contractor shall comply with the general security requirements as stipulated in Section C, Part 2.0, of the basic contract.

1.14 STORAGE AND TEMPORARY BUILDINGS

1.14.1 Storage in Existing Buildings

Storage in existing buildings shall not be allowed.

1.14.2 Open Site Storage Size and Location

The open site available for storage, laydown, materials handling, and decontamination shall be confined to the areas indicated by the ROICC NTR.

1.14.3 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, Universe 65 u/lc typeface.

1.14.4 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.

1.15 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.

1.16 UTILITY SERVICES

1.16.1 Temporary Utilities

Contractor shall provide his own utilities.

1.16.2 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.

1.17 RESTRICTIONS ON EQUIPMENT

1.17.1 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.

1.17.2 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.

1.18 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 COE EP 1110-1-8.

1.19 PUBLIC RELEASE OF INFORMATION

Contractor shall comply with requirements stated in Section C, Part 2.0, of the basic contract.

1.20 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.

1.20.1 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.

1.21 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.

1.21.1 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. 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 the 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.

1.21.2 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.

1.21.3 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.

1.22 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 --

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SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
SITE 41, SCRAP YARD, RAD, IHDIV-NSWC, MD

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	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 RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	DATE RCD FRM APPR AUTH	
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01115N	SD-01 Preconstruction Submittals															
			Work Plan	1.3														
			UXO HTRW Support Work Plan	1.4														
			SD-11 Closeout Submittals															
			As-Built records	1.5.1														
			Environmental Conditions Report	1.5.2														
			Status reports	1.5.3														
			QC meeting minutes	1.5.4														
			Test Results Summary Report	1.5.5														
			Contractor Production Report	1.5.6														
			QC Report	1.5.7														
			Rework Items List	1.5.8														
			Permits	1.5.9														
			Stormwater Pollution Prevention	1.21.1														
			Plan															
			Notice of Intent	1.21.1														
			Notice of Termination	1.21.1														
			Contractor's Closeout Report	1.5.10														
		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															

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		01525	Daily Confined Space Entry	3.3.7														
			Permit															
			Reports	1.17														
		01575N	SD-01 Preconstruction Submittals															
			Environmental Protection Plan	1.9														
			Sediment and Erosion Control	1.4														
			Plan															
			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	1.6.2														
			documentation															
			Waste determination	3.5.1														
			documentation															
			Disposal documentation for	1.6.3														
			hazardous and regulated waste															
			Contractor 40 CFR employee	1.6.4														
			training records															
			Regulatory notification	1.6.5														
			Erosion and sediment control	1.6.6														
			inspection reports															
			Solid waste disposal report	1.6.7														
			Contractor Hazardous Material	1.11														
			Inventory Log															

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		02220N	SD-06 Test Reports															
			Toxic Characteristic Leaching	1.9.2														
			Procedure (TCLP)															
			SD-07 Certificates															
			Demolition plan	1.9.1														
			Notifications	1.4.1														
		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	1.2.2.3														
			Certificates															
			Work Site Decontamination	1.2.2.4														
			Certificates															
			Treatment and Disposal	1.2.2.5														
			Certificates															
		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														
		02315N	SD-06 Test Reports															
			Borrow Site Testing	1.5														
			Common fill	3.11.2.1														
			Select fill	3.11.2.2														

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		02315N	Topsoil	2.1.2														
			Density tests	3.11.2.3														
			SD-07 Certificates															
			Excavation and handling work	1.3.1														
			plan															
			Dewatering work plan	3.2.1														
		02525N	SD-02 Shop Drawings															
			Well construction	1.6.1														
			SD-03 Product Data															
			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														

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		02742N	SD-06 Test Reports															
			Subbase material density	3.2														
			Subbase and aggregate base course	3.7.1														
			Bituminous Concrete Courses Test	3.7.2														
			SD-07 Certificates															
			Aggregate base	2.2														
			Subbase materials	2.1														
			Tack coat	2.6														
			Bituminous concrete	2.3														
		02821N	SD-02 Shop Drawings															
			Gates	2.1.2														
			Post spacing	3.2.1														
			Location of gate, corner, end, and pull posts	3.2.1														
			SD-03 Product Data															
			Chain-link fencing	2.1														
			Accessories	2.1.4														
			SD-06 Test Reports															
			Weight in ounces for zinc coating	1.4.1														
			Chemical composition and thickness of aluminum alloy coating	1.4.1														
			SD-07 Certificates															
			Fabric	2.1.1														
			Posts	2.1.3														

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		02821N	Braces	2.1.3														
			Framing	2.1.2														
			Tension wires	3.2.4														
			Gates	2.1.2														
			Padlocks	2.1.7														
			SD-08 Manufacturer's Instructions															
			Fence	3.2														

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. Hersey 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 01115N "General Paragraphs (Remedial Action Contracts)."

1.3.3 Work Outside Regular Hours

In accordance with Section 01115N "General Paragraphs (Remedial Action Contracts)."

1.3.4 Utility Cutovers and Interruptions

In accordance with Section 01115N "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 power 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 NAVSURFWARCEN 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 IHDIV-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 plan.

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 --

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

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD QSMEL	(2000) Quality Systems Manual for Environmental Laboratories

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 and environmental 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 and environmental testing laboratories performing work for Navy construction contracts must be accredited by one of the laboratory accreditation authorities. The construction materials testing 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 and Environmental Testing Laboratory Requirements

Provide independent construction materials and environmental testing laboratories 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 environmental and Hazardous Materials Testing shall meet the requirements of OSHA and EPA.

f. Construction materials 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

Construction materials 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 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).

Environmental testing laboratory accreditation authorities are the Department of Defense (DOD) National Environmental Laboratory Accreditation Program (NELAP), EPA's National Environmental Laboratory Accreditation Conference (NELAC), and the State of Maryland. The environmental testing laboratory accreditation authorities are subject to the approval of the Contracting Officer. The environmental testing laboratory's quality systems program shall be prepared and implemented in accordance with DOD QSMEL.

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 No., 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 No. 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 No. is a cross reference to the Preparatory Phase Checklist. An example of the Index No. 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 No. is a cross reference to the Initial Phase Checklist. An example of the Index No. 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

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PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION	DATE
Enter Spec Section # Here	Enter Date (DD/MMM/YY)

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
Enter Cnt# Here	Enter DFOW Here	Enter Sched Act ID Here	Enter Index# Here

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: YES ☐ NO ☐

NAME	POSITION	COMPANY/GOVERNMENT

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES ☐ NO ☐

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____

ARE ALL MATERIALS ON HAND? YES ☐ NO ☐

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 ☐ NO ☐

IF NO, WHAT ACTION IS TAKEN? _____

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS. _____

DISCUSS PROCEDURE FOR ACCOMPUSHING 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 ☐ NO ☐ 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

SPEC SECTION	DATE
Enter Spec Section # Here	Enter Date (DD/MMM/YY)

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
Enter Cnt# Here	Enter DFOW Here	Enter Sched Act ID Here	Enter Index# Here

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES ☐ NO ☐

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 ☐ NO ☐

WILL THE INIITAL WORK BE CONSIDERED AS A SAMPLE? YES ☐ NO ☐

(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

QC MANAGER DATE

GOVERNMENT QUALITY ASSURANCE (QA) REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	Enter Date (DD/MMM/Y
REPORT NO	Enter Report # Here

CONTRACT NO.	TITLE AND LOCATION
Enter Cnt# Here	Enter Title and Location of Construction Contract Here

Status

WORKING?	YES	NO	IF NO, WHY NOT:
	☐	☐	

WEATHER CONDITIONS:

Check Points

	YES	NO	REMARKS:
SUPERINTENDENT ON SITE	☐	☐	
QC MANAGER ON SITE	☐	☐	
QC REPORTS CURRENT	☐	☐	
AS-BUILTS CURRENT	☐	☐	
SUBMITTALS APPROVED FOR FOR ONGOING WORK	☐	☐	
DEFICIENCY LIST REVIEWED	☐	☐	

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 PREFORMED TODAY? YES ☐ NO ☐

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

Schedule Activity No.	Definable Feature of Work	Index #

INITIAL

WAS INITIAL PHASE WORK PREFORMED TODAY? YES ☐ NO ☐

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 ☐ NO ☐

WORK COMPLIES WITH SAFETY REQUIREMENTS? YES ☐ NO ☐

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)

Schedule Activity No.	Description

REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

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

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

CONTRACT NO: Enter Cnt# Here	TITLE AND LOCATION: Enter Title and Location of Construction Contract Here	DATE: Enter Date (DD/MMM/Y^	
		REPORT NO: Enter Report # Here	
CONTRACTOR: Enter The Contractor's Company Name Here	SUPERINTENDENT: Enter Superintendent's Name Here		
AM WEATHER: Enter AM Weather Data Here	PM WEATHER: Enter PM Weather Data Here	MAX TEMP (F): Enter Max Temp Here	MIN TEMP (F): Enter Min Temp Here

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

JOB SAFETY					
	WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☐ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	
	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☐ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	
	WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☐ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	
	WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☐ NO		

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☐ SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (Incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS

CONTRACTOR/SUPERINTENDENT _____ DATE _____

REWORK ITEMS LIST

Contract No. and Title: Enter Contract # and Title Here

Contractor: Enter Contractor's Company Name Here

NUMBER	DATE IDENTIFIED	DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

TESTING PLAN AND LOG

CONTRACT NUMBER			PROJECT TITLE AND LOCATION							CONTRACTOR	
Enter Contract # Here			Enter Contract Title and Location Here							Enter Contractor's Company Name Here	
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		DATE COMPLETED	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OFF SITE			

4296/4 (S[illegible])

SHEET 1

SECTION 01525

SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Related Sections

a. Section 01115N, "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 02315N, "Excavation and Fill"

f. Section 02525N, "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 facilities 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 (EFA) 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 01115N, "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 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 01115N, "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 shall 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 02315N, "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 01115N, "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 01115N, "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

Contractor 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's 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, shall be left in place and so identified for continued customer use.

2.2 CONFINED SPACE SIGNANGE

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-isocynates, 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, wherever 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 divide. 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 in excavations, 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 shall 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 ENGFORM 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 --

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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	(1986) 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 (IHDIV-NSWC)

IHDIV-NSWC 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, shrubs, 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 (HW) 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 (HM) 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 is 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 rational 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 (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 IHDIV-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 IHDIV-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 01115N, "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) and COMAR 26.13;

(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 02315N, "Excavation and Fill."

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 IHDIV-NSWC 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:

Contract Number	_____	Contractor	_____
Haz/Waste POC	_____	Telephone Number	_____
Type of Waste	_____	Source of Waste	_____
Emergency POC	_____	Telephone Number	_____

Location of the Site: _____
(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 #41
(2) Controlled by ROICC
(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 IHDIV-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 # 41
(2) Controlled by ROICC
(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 compatable 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 112) 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 IHDIV-NSWC 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 and 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 --

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SECTION 02220N

SITE DEMOLITION

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 A10.6	(1990) Demolition Operations

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 261	Identification and Listing of Hazardous Waste

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. Remove rubbish and debris from the project site; do not allow accumulations. Store materials that cannot be removed daily in areas specified by the Contracting Officer.

1.3 SUBMITTALS

Submit the following in accordance with Section C of the basic contract.

SD-06 Test Reports

Toxic Characteristic Leaching Procedure (TCLP)

SD-07 Certificates

Demolition plan

Submit proposed salvage, demolition and removal procedures to the ROICC NTR for approval before work is started.

Notifications

1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, station, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6.

1.4.1 Notifications

Furnish timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 261. Notify the Contracting Officer in writing 10 days prior to the commencement of work.

1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of debris.

1.6 PROTECTION

1.6.1 Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the Contracting Officer prior to beginning such work.

1.6.2 Existing Work

Protect existing work which is to remain in place, be reused, or remain the property of the Government. Repair items which are to remain, which are to be salvaged, and which are damaged during performance of the work to their original condition, or replace with new. Do not overload pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement must have Contracting Officer approval.

1.6.3 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.

1.7 BURNING

Burning will not be permitted.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer.

1.9 QUALITY ASSURANCE

1.9.1 Required Data for Demolition Plan

The Demolition Plan shall include procedures for removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Provide as part of paragraph "Work Plan" of Section 01115N, "General Paragraphs (Remedial Action Contracts)."

1.9.2 Required Data

Submit reports from Toxic Characteristic Leaching Procedure (TCLP) tests of

composite debris.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

3.1.1 Structures

Remove indicated existing structures as indicated.

3.1.2 Utilities and Related Equipment

Remove existing utilities, as indicated and uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Contracting Officer. Remove meters and related equipment and deliver to a location in accordance with instructions of the Contracting Officer. If utility lines are encountered that are not shown on drawings, contact the Contracting Officer for further instructions.

3.1.3 Railroad

Remove rail, ties and ballast as indicated. Clean rails within contaminated areas and stockpile cleaned rails at ROICC designated location for salvage by others. Dispose ties and ballast at an approved disposal facility in accordance with Section 02223, "Transportation and Disposal of Contaminated Material."

3.1.4 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

a. Holes and depressions caused by previous physical damage or left as a result of removals in existing masonry walls to remain shall be completely filled with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.

3.2 EARTHWORK

Excavation and backfilling shall be in accordance with Section 02315N, "Excavation and Fill."

3.3 DISPOSITION OF MATERIAL

3.3.1 Testing of Debris

Perform TCLP tests, in accordance with 40 CFR 261, and any other characterization sampling and analysis required by the treatment, storage,

and disposal (TSD) facility. Dispose of the debris in accordance with the TSD facilities requirements.

3.3.2 Reuse of Materials and Equipment

Remove and store materials and equipment to be reused or relocated to prevent damage, and reinstall as the work progresses.

3.3.3 Salvaged Materials and Equipment

Remove materials and equipment that are indicated to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site(s) as directed by the ROICC.

3.4 CLEANUP

3.4.1 Debris and Rubbish

Remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets or adjacent areas. Clean up spillage from pavements, streets and adjacent areas.

-- 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 treatment, storage, and disposal (TSD) facility. Analyses for contaminated material to be taken to an off-site TSD facility shall conform to local, state, and federal criteria as well as to the requirements of the TSD 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 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 concrete pad cleaning, excavations, storage areas, and decontamination facilities shall be sampled at a frequency as required by the TSD 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. Liquids containing PCBs shall be disposed off-site. Analyses for contaminated liquid to be taken to an off-site TSD facility shall conform to local, state, and federal criteria as well as to the requirements of the TSD 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 MDE.

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 --

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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 (IHDIV-NSWC)

IHDIV-NSWC 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 the basic 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 shall 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 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 IHDIV-NSWC GIS-DG 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 file 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 or 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 or 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 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 IHDIV-NSWC GIS-DG.

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 IHDIV-NSWC GIS-DG.

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 IHDIV-NSWC GIS-DG. 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 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 --

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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 PW 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 DESCREPENCIES 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 ASBUILT 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 XFMER	13		0	4	3	
PLANIMETERIC FEATURES	14		0	4	7	new items shown on gis planimeteric file
POLE INCL GUY	15		0	4	1	
POLE MOUNTED XFMER	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,
JG 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
AIR	1	—A—	0	2	5	
LEC PRIMARY LINE	2	—EPL—	0	2	4	
ELEC SECONDARY LINE	3	—ESL—	0	2	5	
FIRE 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 XFMER	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 XFMER	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, -
UG PRIMARY	28	—UGP—	3	2	4	
G. 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"

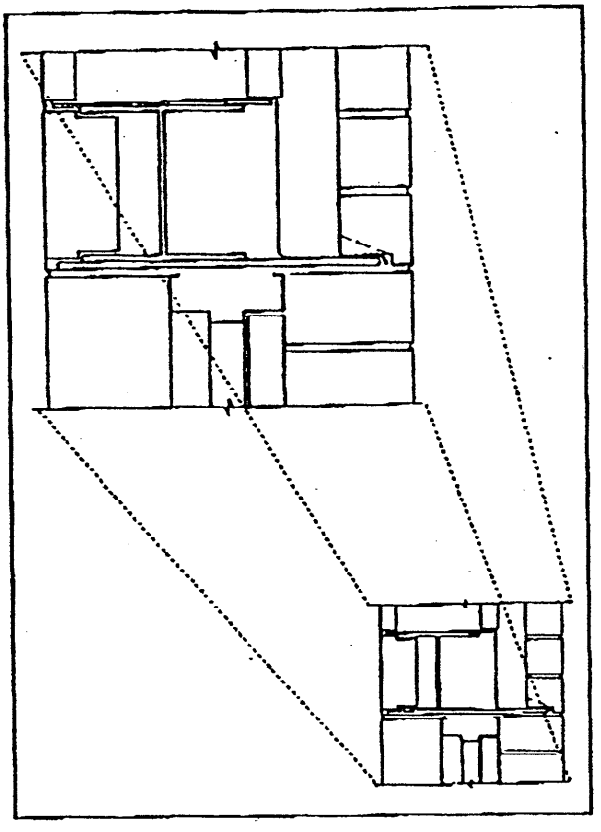

Figure 1. Step 1: draw the detail at full size, then scale per Table 1

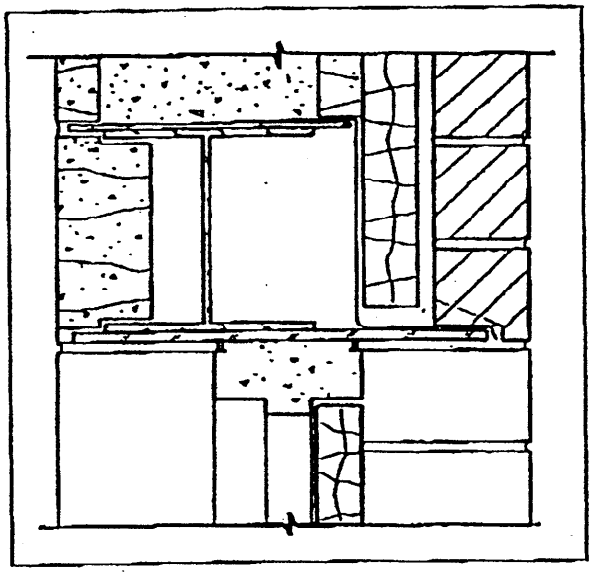

Figure 2. Step 2: add any hatching and patterning to detail

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.	~~1.80~~ 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.

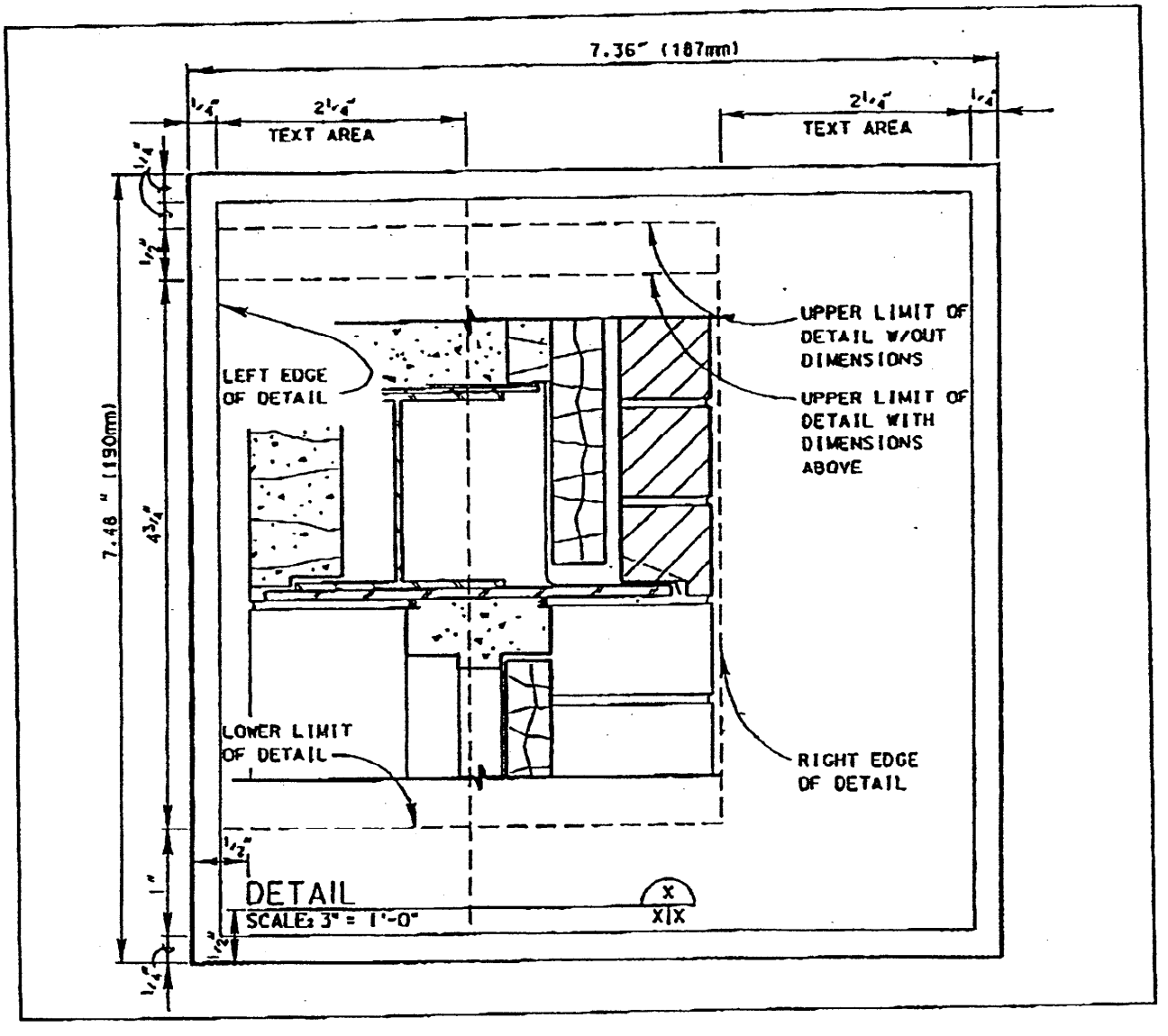

Figure 3. Step 3: position the layout.cel/dwg over the detail and add text, dimensions, leader lines, titles, and line terminators

Table 2
Layer Assignments

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

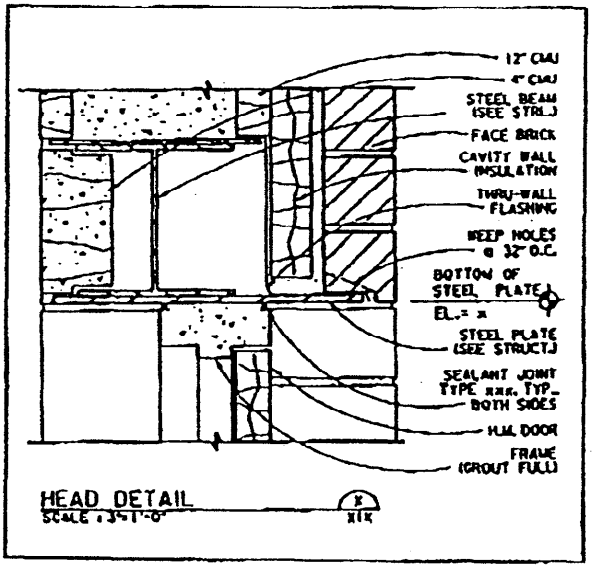

Figure 4. Step 4: remove layout.cel/block to complete

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."

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.

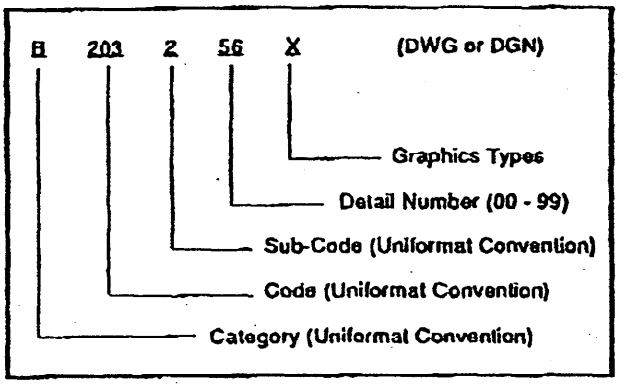

Figure 5. Naming convention. Note: A full listing of Uniformat catagories and codes is outlined in Section 5, Index of Details

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 02315N

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; R 1998) 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 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m))
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 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
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

U.S. DEPARTMENT OF AGRICULTURE (USDA)

USDA FSA	(January 1985) Federal Seed Act Rules and Regulations of the Secretary of Agriculture

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	(1986) Evaluating Solid Waste (Physical/Chemical Methods)
EPA 600/4-79-020	(1983) Methods for 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 Contracting Officer. Where term "Administration" is used, it shall mean Government.

1.2.3 Contaminated Soil Removal

Soil and waste located in the indicated areas may be contaminated with PCBs, PAHs and inorganics (metals) above the Preliminary Remediation Goals (PRGs). The Navy has requested and the ROD requires the removal of the contaminated soil, as indicated for off-site disposal as contaminated material. Excavated contaminated soil is to be dewatered on-site, when required, for transportation and disposal as a solid material.

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.

1.2.6 Stand of Turf

95 percent ground cover of the established species.

1.2.7 Pesticide

Pesticide means soil fumigants, herbicides, insecticides, and fungicides.

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

Topsoil

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 01115N, "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 off-site disposal.

f. Storage methods and locations for liquid and solid contaminated material.

g. Decontamination procedures.

h. Spill contingency plan.

1.4 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 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 provided 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.

1.5 REQUIREMENTS FOR OFF SITE SOIL

Soils and aggregates 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.

1.5.1 Seed Protection

Protect from drying out and from contamination during delivery, on-site storage, and handling.

1.5.2 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.

1.5.3 Pesticide Delivery

Deliver to the site in original unopened containers with legible label indicating EPA registration number and manufacturer's registered uses.

1.5.4 Storage

1.5.4.1 Lime, Fertilizer, and Mulch Storage

Store in dry locations away from contaminants.

1.5.4.2 Pesticides Storage

Do not store with other landscape materials.

1.5.4.3 Seed, Fertilizer and Lime Storage

Store in cool, dry locations away from contaminants.

1.5.4.4 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.

1.6 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.6.1 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.

1.6.2 Restrictions

Do not plant when ground is frozen, snow covered, or when air temperature exceeds 95 degrees F.

1.6.3 Seed

Apply seed within twenty four hours after seed bed preparation.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound 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

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.

Test for USDA classification, organic content, pH, soluble salts, nitrogen, phosphorous, and potassium by a recognized commercial laboratory.

2.1.3 Select Fill

ASTM D 2487, classification SM, SC, or ML with a maximum particle size of 3 inches.

2.1.4 Coarse Aggregate

MD SHA CM, Section 901, Bank Run Gravel, Graded Aggregate, or equivalent clean free-draining coarse aggregate subject to approval of the ROICC NTR.

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
Gray:	Compressed Air

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.

2.5 pH ADJUSTERS

Lime as indicated.

2.6 FERTILIZER

Requirements for temporary and permanent seeding as indicated.

2.7 SOIL CONDITIONERS

MDE SESC, Section 21 for permissible soil conditioners or as otherwise specified.

2.8 SURFACE TOPDRESSING

Mulches as indicated.

2.9 SEEDS

2.9.1 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.

2.9.2 Composition

MDE SESC Section 20 or as otherwise specified.

2.9.3 Seed Mixture

2.9.3.1 Permanent Seed Mixture

As indicated.

2.9.3.2 Temporary Seed Mixture

As indicated.

2.10 PESTICIDES AND FERTILIZERS

All pesticides and fertilizers proposed for use must be approved by the Contracting Officer prior to application.

2.10.1 Pesticide Ingredients

Use herbicides containing the only active ingredient of glyphosate.

2.11 WATER

Suitable quality for irrigation.

2.12 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.

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 at an approved facility.

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 exposed subgrade with six passes of a 15-ton, pneumatic-tired roller or equivalent subject to approval of the ROICC NTR. Operate the equipment in a systematic manner to ensure the number of passes 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 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 groundwater 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 feet below the working level or to the depth required to provide a safe excavation, stable working surface, stable side slopes, and to permit verification sampling, when required. Perform all dewatering 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 for assistance in locating existing 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. Refill excavations cut below indicated depth with common fill material and compact to 95 percent of ASTM D 698 maximum density unless otherwise indicated.

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 area 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.

3.4.3 Coarse Aggregate Placement

Provide for depth interval where it is impractical to assure the water level is maintained in accordance with paragraph entitled "Dewatering" subject to approval of the ROICC NTR. Place in 1-foot lifts.

3.5 BURIED WARNING AND IDENTIFICATION TAPE

Provide buried utility lines with utility identification tape. Bury tape 12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of subgrade.

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 it's 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 dry 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 and areas outside the 5 foot line of the structure to 85 percent of ASTM D 698.

3.8.2 Common Fill and Select Fill

Compact to 95 percent of ASTM D 698 unless otherwise indicated.

3.8.3 Paved Areas

Compact top 12 inches of subgrades to 97 percent of ASTM D 1557. Compact MD SHA graded aggregate base to a minimum of 97 percent of ASTM D 1557 or 70 percent relative density in accordance with ASTM D 4253 and ASTM D 4254.

Compact bituminous concrete pavement materials in accordance with Section 02742N, "Pavement With A Bituminous Concrete Surface."

3.8.4 Coarse Aggregate Fill Areas

Compact coarse aggregate with bucket of hydraulic excavator subject to the approval of the ROICC NTR.

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 Vegetated Areas

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.

3.9.3 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 ROICC NTR. 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 ROICC NTR. Remove debris and stones larger than one inch in any dimension remaining on the surface after tillage. Correct irregularities in finished surfaces to eliminate depressions. Protect finished topsoil areas from damage by vehicular or pedestrian traffic.

3.9.3.1 pH Adjuster Application Rates

Apply pH adjuster at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.9.3.2 Soil Conditioner Application Rates

Apply topsoil conditioners at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.9.3.3 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the topsoil as indicated.

3.9.4 Seeding

3.9.4.1 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 ROICC NTR stating the special conditions and proposed variance. Apply seed within twenty four hours after seedbed preparation. Sow seed by approved sowing equipment as indicated.

3.9.4.2 Seed Application Method

As indicated.

3.9.4.3 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.

3.9.4.4 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.

3.9.4.5 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 wetted without run-off. During the germination process, seed is to be kept actively growing and not allowed to dry out.

3.9.5 Protection of Turf Areas

Immediately after turfing, protect area against traffic and other use.

3.9.6 Restoration

Restore to original condition existing turf areas which have been damaged during turf installation operations.

3.9.7 Maintenance

Maintenance shall begin immediately after planting. Seeded areas shall be protected and maintained until formal acceptance by the ROICC NTR. Maintenance shall consist of watering activities and other necessary operations adequate to ensure the survival of the planted materials and seeded areas for the duration of the maintenance period, as specified in MDE SESC Section 20.

3.9.8 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.10 DISPOSITION OF SURPLUS MATERIAL

Remove from Government property surplus or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber.

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 relations, as applicable.

3.11.2.2 Select Fill Testing

Test select 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; and ASTM D 698 for moisture density relations, 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 common and select fills each lift at randomly selected locations every 2500 square feet and a minimum of 3 tests per lift per area.

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SECTION 02525N

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 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 01115N, "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 a locking cap and of the same material as the protective outer casing.

2.7.2 At-Grade Completions

Provide galvanized steel vault box, 12 inch diameter, with watertight frame and cast iron bolt downcover. Vault shall support H-20 loading for traffic areas. The frame shall be 6 inches deep, and shall be set in a concrete collar a minimum of 8 inches thick, and extending 4 inches beyond the edge of the frame in all directions. Frame and concrete collar shall be set flush with the level of the existing pavement. Locking well cap shall be provided on top of the well riser, which will terminate inside the vault as indicated.

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 d rilling, 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 the 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 each borehole. 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 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 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, centralizers 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 3 hours. 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 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 --

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SECTION 02742N

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 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m))
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
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

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

Subbase and aggregate base course

Bituminous Concrete Courses Test

SD-07 Certificates

Aggregate base materials

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, and bituminous concrete wearing (surface) course for scrap yard entrance as indicated; and aggregate base course for gravel paved road as indicated. 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 Aggregate Base Course

A gravel or crushed stone course immediately below the bituminous concrete binder course.

1.4.4 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.

1.4.5 Bituminous Concrete Wearing Course

The top traffic-bearing layer of bituminous concrete pavement. It is referred to as a surface course in the specified reference documents.

1.4.6 Tack Coat

A light application of bituminous material applied to an existing bituminous surface, Portland cement concrete 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 AGGREGATE BASE COURSE MATERIALS

Conform to the paragraph entitled "Subbase Materials."

2.3 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.

2.4 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.

2.5 WOVEN GEOTEXTILE

MD SHA CM Section 921.09, Maryland application class ST.

2.6 TACK COAT MATERIALS

MD SHA CM Section 904.05, emulsified asphalt.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

Prepare a subgrade and cut the existing pavement in accordance with Section 02315N, "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 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 AGGREGATE BASE COURSE CONSTRUCTION

Conform to the paragraph entitled "Subbase Construction."

3.4 BITUMINOUS CONCRETE BINDER (BASE) COURSE CONSTRUCTION

MD SHA CM Section 504.

3.5 BITUMINOUS CONCRETE WEARING (SURFACE) COURSE CONSTRUCTION

MD SHA CM Section 504.

3.6 TACK COAT APPLICATION

MD SHA CM Section 504.03.04. Apply to the vertical cut surfaces of bituminous concrete pavement, to the top of the bituminous binder (base) course, to the top of concrete surfaces, and as indicated.

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.

3.7 FIELD TESTING

3.7.1 Subbase and Aggregate Base Courses

3.7.1.1 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 and the base courses are constructed in more than one layer.

3.7.1.2 Density Tests

ASTM D 2922, as follows: one test per 100 square yards, with a minimum of three tests.

3.7.1.3 Thickness Tests

Measure the thickness of the subbase and the base course at intervals such that there will be a depth measurement for at least each 100 square yards of complete subbase and base courses, with a minimum of three tests. Make a depth measurement with test holes at least 3 inches in diameter through the subbase and base courses. Alternatively determine subbase and base course thicknesses using survey control. 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.

3.7.2 Bituminous Concrete Courses Test

3.7.2.1 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.

3.7.2.2 Density

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.

3.7.2.3 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.

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SECTION 02821N

CHAIN LINK FENCES AND GATES

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 94	(1996) Ready-Mixed Concrete
ASTM F 883	(1997) Padlocks

FEDERAL SPECIFICATIONS (FS)

FS RR-F-191	(Rev. K) Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories) (General Specification)
FS RR-F-191/1	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Fabric) (Detail Specification)
FS RR-F-191/2	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Gates) (Detail Specification)
FS RR-F-191/3	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces) (Detail Specification)
FS RR-F-191/4	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Accessories) (Detail Specification)

1.2 SUBMITTALS

Submit the following in accordance with Section C of the basic contract

SD-02 Shop Drawings

Gates

Post spacing

Location of gate, corner, end, and pull posts

SD-03 Product Data

Chain-link fencing components

Accessories

SD-06 Test Reports

Weight in ounces for zinc coating

Chemical composition and thickness of aluminum alloy coating

SD-07 Certificates

Fabric

Posts

Braces

Framing

Tension wires

Gates

Padlocks

SD-08 Manufacturer's Instructions

Fence

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver materials to site in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact.

1.4 QUALITY ASSURANCE

1.4.1 Required Report Data

Submit reports of listing of chain-link fencing and accessories regarding Weight in ounces for zinc coating, and chemical composition and thickness of aluminum alloy coating.

PART 2 PRODUCTS

2.1 CHAIN-LINK FENCING AND ACCESSORIES

FS RR-F-191 and detailed specifications as referenced and other requirements as specified.

2.1.1 Fabric

Salvage existing fabric for reuse subject to ROICC NTR approval.

FS RR-F-191/1; Type I, zinc-coated steel, 9 gage, or Type II, aluminum-coated steel, 9 gage. Mesh size, 2 inches. Provide selvage knuckled at one selvage and twisted and barbed at the others. Height of fabric, as indicated.

2.1.2 Gates

FS RR-F-191/2; Type II, double swing. Shape and size of gate frame as

indicated. Framing and bracing members, round of steel alloy. Steel member finish, zinc-coated or aluminum-coated steel. Gate frames and braces of minimum sizes listed in FS RR-F-191/3 for each Class and Grade except that steel pipe frames shall be 1.90 inches od, 0.120 inches minimum wall thickness. Gate fabric, as specified for fencing fabric. Barbed wire top on gate, as specified herein. Coating for steel latches, stops, hinges, keepers, and accessories, galvanized. Gate latches, plunger bar type. Gate leaves more than 8 feet wide shall have intermediate members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces. Attach gate fabric to gate frame in accordance with manufacturer's standards, except that welding will not be permitted. Arrange padlocking latches to be accessible from both sides of gate, regardless of latching arrangement.

2.1.3 Posts and Braces

FS RR-F-191/3 line posts; Class 1, steel pipe, Grade A. End, corner, and pull posts; Class 1, steel pipe, Grade A. Braces; Class 1, steel pipe, Grade A, in minimum sizes listed in FS RR-F-191/3 for each class and grade.

2.1.4 Fencing Accessories

FS RR-F-191/4. Provide wire ties constructed of the same material as the fencing fabric.

2.1.5 Concrete

ASTM C 94, using 3/4 inch maximum-size aggregate, and having minimum compressive strength of 3000 psi at 28 days.

2.1.6 Grout

Provide grout of proportions one part Portland cement to three parts clean, well-graded sand and a minimum amount of water to produce a workable mix.

2.1.7 Padlocks

ASTM F 883, with chain.

PART 3 EXECUTION

3.1 SITE PREPARATION

3.1.1 Clearing and Grading

Clear fence line of trees, brush, and other obstacles to install fencing. Establish a graded, compacted fence line prior to fencing installation. Compact fill used to establish fence line.

3.1.2 Excavation

Excavate to dimensions indicated for concrete-embedded items. Clear post holes of loose material. Dispose of waste material at an approved off-site disposal facility.

3.2 FENCE INSTALLATION

Install fence on prepared surfaces to line and grade indicated. Secure

fastening and hinge hardware in place to fence framework by peening or welding. Allow for proper operation of components. Coat peened or welded areas with a repair coating matching original coating. Install fence in accordance with fence manufacturer's written installation instructions except as modified herein.

3.2.1 Post Spacing

Provide line posts spaced equidistantly apart, not exceeding 10 feet on center. Provide gate posts spaced as necessary for size of gate openings. Do not exceed 500 feet on straight runs between braced posts. Provide corner or pull posts, with bracing in both directions, for changes in direction of 15 degrees or more, or for abrupt changes in grade. Provide drawings showing location of gate, corner, end, and pull posts.

3.2.2 Post Setting

Set posts plumb. Allow concrete and grout to cure a minimum of 72 hours before performing other work on posts.

3.2.2.1 Earth and Bedrock

Provide concrete bases of dimensions indicated. Compact concrete to eliminate voids, and finish to a dome shape.

3.2.2.2 Concrete Slabs and Walls

Set posts into zinc-coated sleeves, set in concrete slab or wall, to a minimum depth of 12 inches. Fill sleeve joint with nonshrink grout, or other approved material.

3.2.3 Bracing

Brace gate, corner, end, and pull posts to nearest post with a horizontal brace used as a compression member, placed at least 12 inches below top of fence, and a diagonal truss rod and truss tightener used as a tension member.

3.2.4 Top and Bottom Tension Wires

Install top and bottom tension wires before installing chain-link fabric, and pull wires taut. Place top and bottom tension wires within 8 inches of respective fabric line.

3.2.5 Fabric

Pull fabric taut and secure fabric to top wire and bottom wire, close to both sides of each post and at maximum intervals of 24 inches on center. Secure fabric to posts using stretcher bars, ties or clips spaced 15 inches on center, or by integrally weaving to integral fastening loops of end, corner, pull, and gate posts for full length of each post. Install fabric on opposite side of posts from area being secured. Install fabric so that bottom of fabric is 1 inch above ground level.

3.3 ACCESSORIES INSTALLATION

3.3.1 Post Caps

Install post caps as recommended by the manufacturer.

3.3.2 Supporting Arms

Install supporting arms as recommended by manufacturer. In addition to manufacturer's standard connections, permanently secure supporting arms to posts. Studs driven by low-velocity powder-actuated tools may be used with steel, wrought iron, ductile iron, or malleable iron. Do not use studs driven by powder-actuated tools with gray iron or other material that will fracture.

3.3.3 Barbed Wire

Install barbed wire on supporting arms above fence posts. Extend each end member of gate frames sufficiently above top member to carry three strands of barbed wire in horizontal alignment with barbed wire strands on the fence. Pull each strand taut and securely fasten each strand to each supporting arm or extended member. Secure wires in accordance with fence manufacturer's recommendations.

3.3.4 Gates

Install swing gates to swing through 180 degrees from closed to open.

3.3.5 Padlocks

Provide padlocks for gate openings and provide chains that are securely attached to gate or gate posts. Provide padlocks keyed alike, and provide two keys for each padlock.

3.4 SECURITY

Install new security fencing, remove existing security fencing, and perform related work to provide continuous security for facility. Schedule and fully coordinate work with Contracting Officer and cognizant Security Officer.

3.5 CLEANUP

Remove waste fencing materials and other debris from the station.

-- End of Section --

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