N62269.AR.000364
NAWC WARMINSTER
5090.3a

WORK PLAN
FOR
VARIOUS SOURCE REMOVAL SITES
AT
NAVAL AIR WARFARE CENTER
WARMINISTER, PENNSYVANIA

Prepared For:

NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY
LESTER PENNSYLVANIA 19113

CONTRACT NO. N62472-94-D-0398
DELIVERY ORDER NO. 0018

June 21, 1996

Prepared by:

FOSTER WHEELER ENVIRONMENTAL CORPORATION
2300 LINCOLN HIGHWAY
ONE OXFORD VALLEY - SUITE 200
LANGHORNE, PENNSYLVANIA 19047-1829

NV/96-152

(109)

Prepare in quintuplicate (original and 4 copies)

CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
NORTHNAVFACENGCOM 4335/3 (Rev. 6/80)

CONTROL NO. 2C

CONTRACT NO.	DELIVERY ORDER #	ACTIVITY LOCATION
N62472-94-D-0398	0018	Warminster, PA

PROJECT TITLE:
Various Remedial Action at NAWC

FROM:	DATE
Foster Wheeler Environmental Corp. - Program QCM: Akram Aziz	June 21, 1996
TO:	DATE
P. Briegel (5 copies)	June 21, 1996

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

COPY TO:

[X] ROICC E. Beatty (2 copies) [ ] DESIGNER [X] OTHERS (5 copies)

SIGNATURE AND DATE 6/21/96

FROM: DESIGNER	DATE
TO: ROICC	DATE

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

COPY TO:

[ ] ROICC [ ] DESIGNER

SIGNATURE AND DATE

FROM: ROICC	DATE
TO: CONTRACTOR	DATE

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

COPY TO:

[ ] ROICC [ ] OTHER

FOR COMMANDING OFFICER, NORTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
2C	SD-18, Records	A. Aziz			
	Final Work Plan				

MISC\96-184.DOC

TABLE OF CONTENTS

Section		Page
1.0	**INTRODUCTION**	**1**
2.0	**SITE DESCRIPTION**	**1**
2.1	PROJECT LOCATION AND DESCRIPTIONS	1
2.1.1	Site 4 (North Runway Landfill)	4
3.0	**SCOPE OF WORK**	**4**
3.1	GENERAL SCOPE	4
3.2	SITE 4	4
3.2.1	Pre-Mobilization Surveying and Sampling	6
3.2.2	Mobilization and Site Preparation	8
3.2.3	Excavation and Backfilling	16
3.2.4	Restoration	18
3.2.5	Demobilization	19
4.0	**WASTE REMOVAL PLAN**	**19**
4.1	WASTE ANALYSIS/CLASSIFICATION	19
4.2	DOCUMENTATION	20
4.3	TRANSPORTATION	20
4.4	DISPOSAL	20
5.0	**FIELD SAMPLING AND ANALYSIS PLAN**	**20**
5.1	SAMPLING PROCEDURES	21
5.1.1	Sampling Objectives	21
5.1.2	Sample Turnaround Time	26
5.1.3	Sample Tracking System	27
5.2	QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)	27
5.2.1	QA/QC Samples	28
5.2.2	Sample Shipping and Packaging	28
5.2.3	Laboratory Data Reporting	29
5.2.4	Records	30
6.0	**HEALTH AND SAFETY REQUIREMENTS**	**30**
7.0	**ENVIRONMENTAL PROTECTION AND REGULATORY COMPLIANCE**	**31**
7.1	AIR POLLUTION CONTROL	31

TABLE OF CONTENTS

Section **Page**

7.2 STORM WATER AND EROSION CONTROL ---------- 31
7.2.1 Introduction ---------- 31
7.2.2 Site 4 ---------- 32
7.3 WASTE MANAGEMENT ---------- 34
7.3.1 Solid Waste Management ---------- 34
7.3.2 Decontamination Water Management ---------- 37
7.4 TRANSPORTATION ---------- 38
7.5 DISPOSAL ---------- 39
7.6 EMERGENCY RESPONSE AND SPILL CONTROL ---------- 40

8.0 PROJECT MANAGEMENT ---------- 41
8.1 PROJECT SCHEDULE ---------- 41
8.2 PROJECT STAFFING PLAN ---------- 41
8.2.1 Project Superintendent ---------- 44
8.2.2 Site Health and Safety Officer ---------- 44
8.2.3 Quality Control Manager ---------- 44
8.3 MEETINGS ---------- 44
8.3.1 Pre-Construction Meeting ---------- 44
8.3.2 Construction Meeting ---------- 45
8.3.3 Daily Safety Meeting ---------- 45
8.3.4 Problem or Work Deficiency Meetings ---------- 45

9.0 QUALITY ASSURANCE/QUALITY CONTROL ---------- 46
9.1 PERSONAL TRAINING REQUIREMENTS ---------- 46
9.2 INSPECTION AND AUDIT PROCEDURES ---------- 46
9.2.1 Preparatory Inspection ---------- 46
9.2.2 Completion Inspection ---------- 46
9.2.3 Audit Procedures ---------- 47
9.3 CHANGE AND NON-CONFORMANCES ---------- 47
9.3.1 Changes in Project Plans ---------- 47
9.3.2 Non-Conformances and Resolutions ---------- 47
9.4 SUBMITTALS ---------- 48
9.4.1 Submittal Register ---------- 48
9.4.2 Reviewing, Certifying, Approving Authority ---------- 49
9.5 REPORTING AND DOCUMENTATION ---------- 49
9.5.1 Daily Reports ---------- 49
9.5.2 Photographic Documentation ---------- 49
9.5.3 Operations Record ---------- 50
9.5.4 As-Built Drawings ---------- 50
9.6 TESTING AND INSPECTION ---------- 51
9.6.1 Production Testing ---------- 51

LIST OF FIGURES

Figure		Page
2-1	Facility Location Map	2
2-2	Facility Layout Map	3
2-3	Site 4 Location Map	5
3-1	Proposed Soil Boring Location Map	7
3-2	Site 4 Proposed Remediation Layout	10
3-3	Construction Haul Road	11
3-4	Decontamination Pad Specifications	13
3-5	Proposed Soil Stockpile Staging Area	14
3-6	Soil Stockpile Staging Area Cross-Section	15
7-1	Filter Fabric Fence Installation Details	33
8-1	Project Schedule	42
8-2	Project Organization Chart	43

LIST OF TABLES

Table		Page
5-1	Sample Collection and Analytical Protocol Information	22
9-1	Materials Testing Requirements	52

LIST OF APPENDICES

Appendix A: Standard Operating Procedures for Surface Soil Sampling, Subsurface Soil Sampling, Air Sampling, and Decontamination Procedures

Appendix B: Resumes of Key Personnel

Appendix C: Submittal Register

1.0 INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) has been contracted by the Northern Division, Naval Facilities Engineering Command to provide various remedial actions at the Naval Air Warfare Center located in Warminster, Pennsylvania (NAWC Warminster). This Work Plan has been prepared to satisfy requirements of Remedial Action Contract Number N62472-94-D-0398, Delivery Order #0018 for Various Source Removal Sites. This Work Plan presently addresses Site 4. As additional information concerning the remaining sites becomes available, Addendum's to this Work Plan will be submitted.

2.0 SITE DESCRIPTION

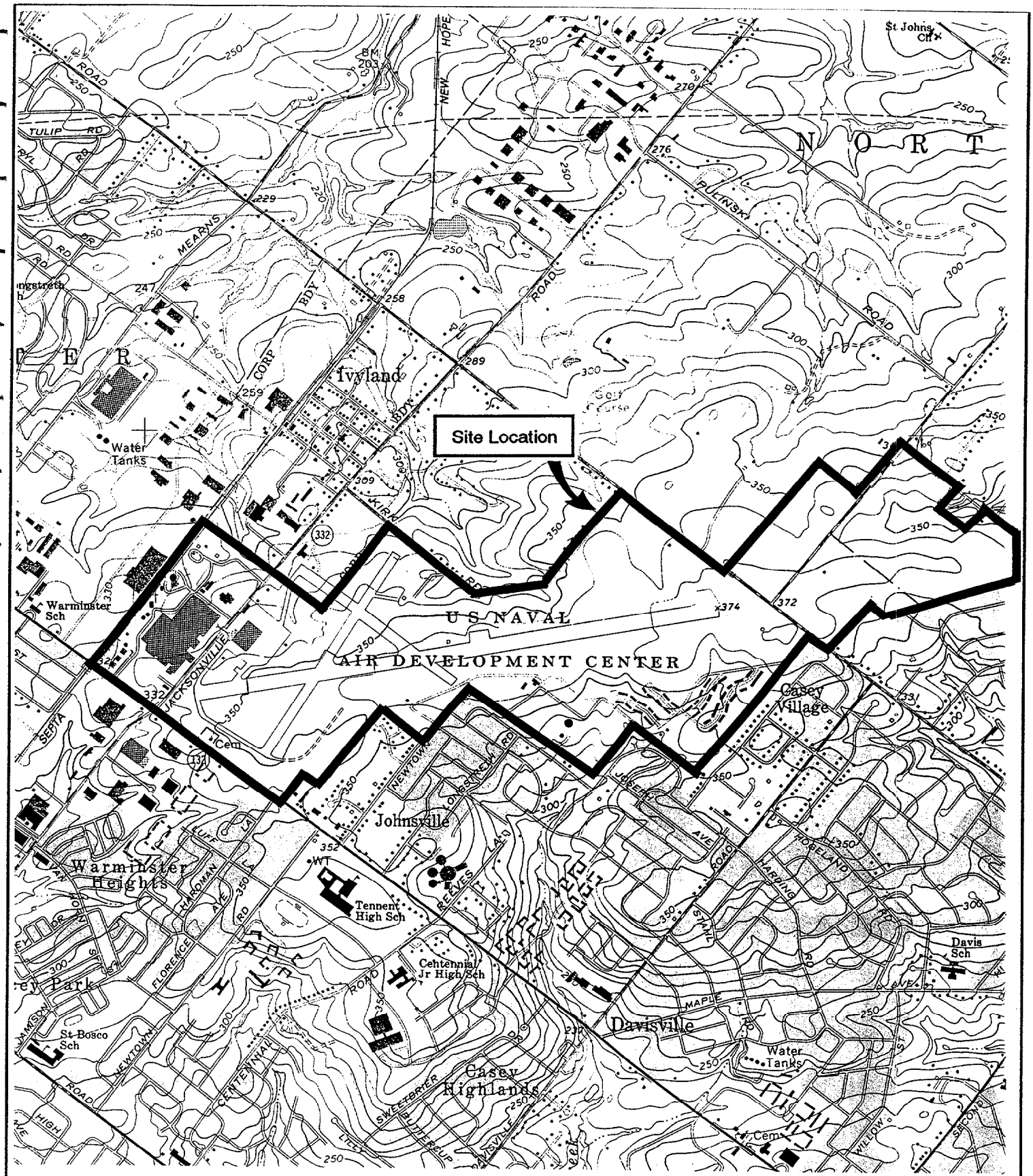
2.1 PROJECT LOCATION AND DESCRIPTIONS

NAWC Warminster is located approximately 28 miles northeast of Philadelphia, primarily in Warminster Township, Bucks County, Pennsylvania, as shown in Figure 2-1. The facility lies in a populated suburban area surrounded by private homes, various commercial/industrial activities, and a golf course. On-base areas include various buildings and other complexes connected by paved roads, runways and ramp areas, mowed fields, and a small wooded area, as shown in Figure 2-2. The total area of NAWC Warminster facility is approximately 840 acres.

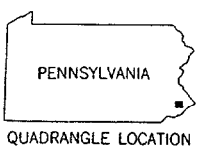
To date, at least eight sites on the NAWC Warminster property have been identified as sites used for disposal of wastes containing hazardous substances. The location of each site is shown in Figure 2-2. All eight sites are located within the facility boundaries and include the following:

- Three waste burn and disposal pits (Sites 1, 3 and 6);
- Two sludge disposal pit areas (Sites 2 and 7);
- Two landfills (Sites 4 and 5); and,
- One fire training area (Site 8).

Historically, wastes at the facility were generated during aircraft maintenance and repair, pest control, fire fighting training, machine and plating shop operations, spray painting, and various materials research and testing activities. Wastes from these processes included paints, solvents, sludges from industrial wastewater treatment, waste oils, construction and demolition debris, office trash, general refuse and other forms of solid waste.



Source: U.S.G.S. (7.5 Min.) Quadrangle Map, Hatboro, PA



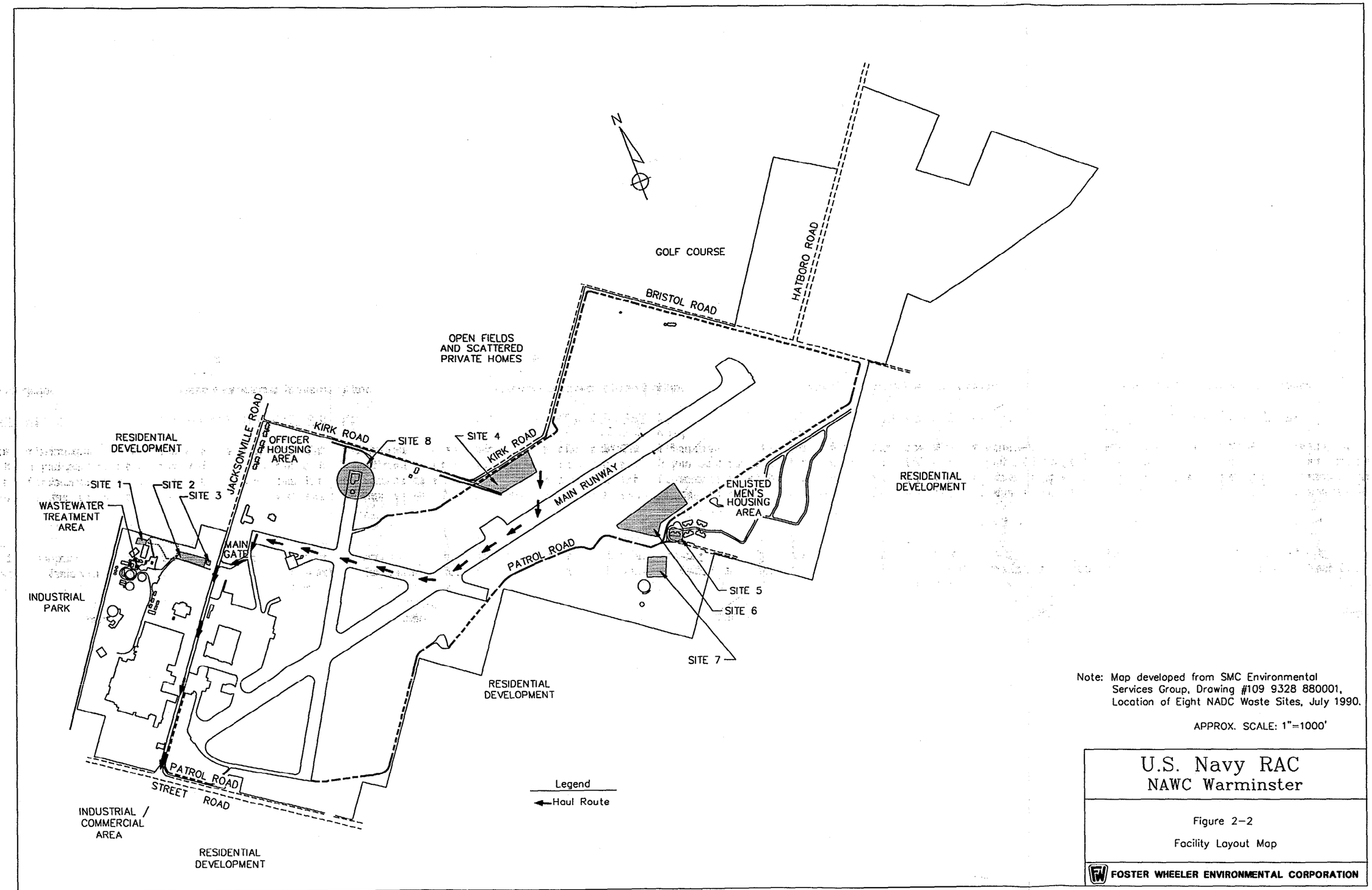
QUADRANGLE LOCATION

SCALE 1:24000

U.S. Navy RAC
NAWC, Warminster, PA

Figure 2-1
Facility Location Map

FOSTER WHEELER ENVIRONMENTAL CORPORATION



Note: Map developed from SMC Environmental Services Group, Drawing #109 9328 880001, Location of Eight NADC Waste Sites, July 1990.

APPROX. SCALE: 1"=1000'

U.S. Navy RAC
NAWC Warminster

Figure 2–2

Facility Layout Map

FOSTER WHEELER ENVIRONMENTAL CORPORATION

navyrac\layout.dwg

2.1.1 Site 4 (North Runway Landfill)

Site 4 is a grassy area covering 7 acres just north of the main runway along Kirk Road and south of Patrol Road less than 100 feet from the property boundary. The site is located at the approximate mid-point of the runway. The location of Site 4 is shown on Figure 2-3.

This site reportedly was operated from 1966 to 1970. Several trenches on the site were used to dispose of non-industrial solid waste, paints, waste oils, waste metals, construction debris, solvents and sewage sludge from the sewage treatment plant. It is not known if wastes were segregated prior to disposal or whether wastes were placed randomly into each trench. Several off-base residences are present within 200 feet of Site 4.

3.0 SCOPE OF WORK

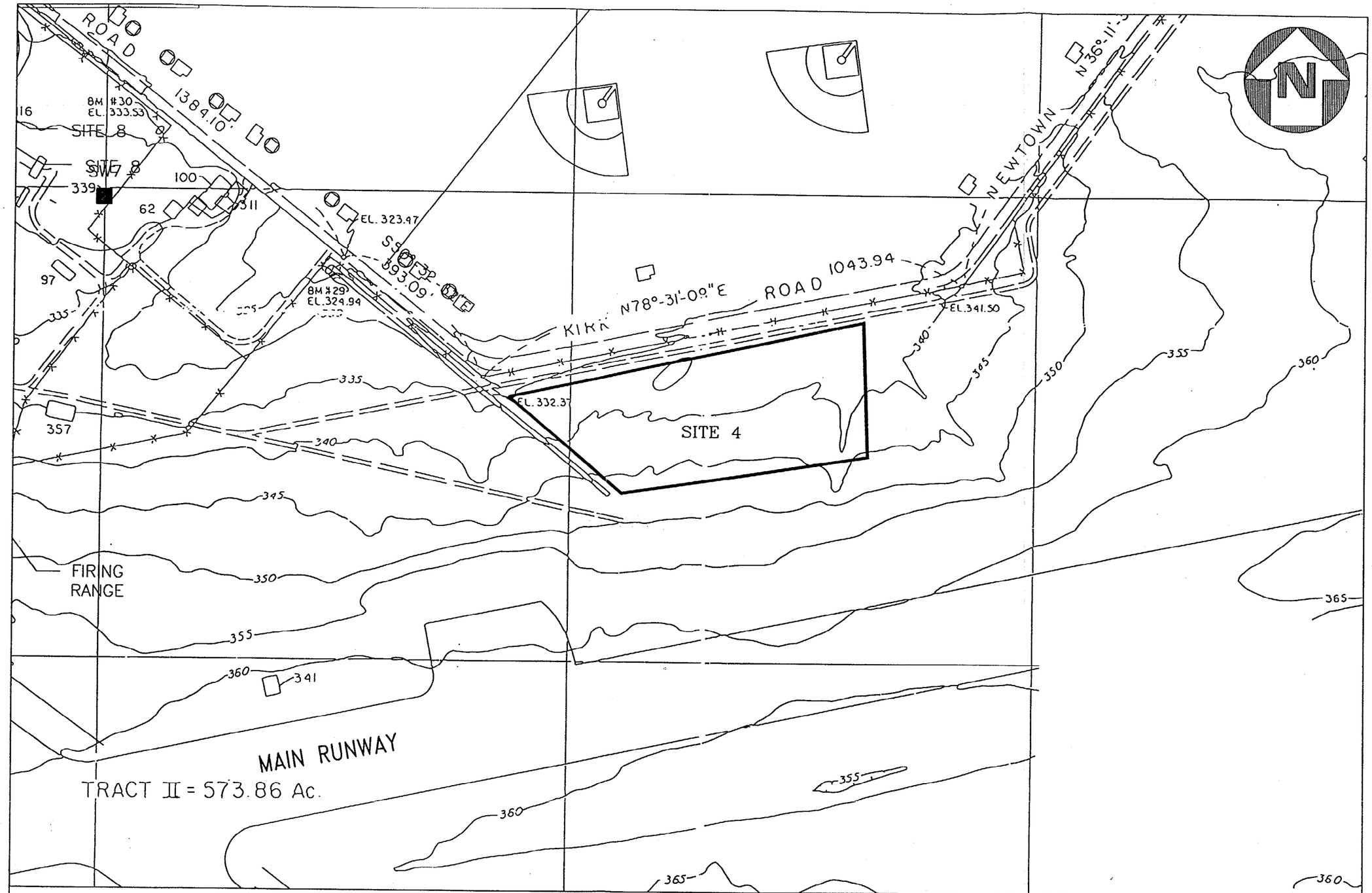
3.1 GENERAL SCOPE

The general scope of work will be the remediation of waste and contaminated soil at NAWC Warminster. Foster Wheeler Environmental will provide supervision, labor, equipment and materials required to perform removal activities in accordance with applicable regulations. Foster Wheeler Environmental will also provide construction quality control and health and safety personnel. The sites will require the excavation, transportation and disposal of waste and contaminated soils to off-site facilities. An overview of the tasks by site are provided below.

3.2 SITE 4

Remediation of Site 4 will include the following activities.

- Pre-Mobilization surveying and sampling, via drilling, of the areas to be remediated.
- Mobilizing equipment and facilities to the site and preparing the area for remediation including installing erosion controls, haul road, decontamination pad and soil stockpile area. In addition, preparing for perimeter air monitoring.
- Excavating and backfilling the trenches including the following: excavating and staging topsoil, excavating and disposing solid wastes and debris, backfilling and compacting the trenches and decontaminating all equipment and vehicles before leaving site.
- Restoring the site.
- Demobilizing all equipment, personnel and supplies at the completion of the project.



Note:
Map developed from Haliburton NUS Corporation, Engineering Evaluation/Cost Analysis for Site 4 (North Runway Landfill), NAWC, Warminster, PA, Site 4 Features, July, 1995.

0 300
SCALE IN FEET

warmnst\sitewarm.dwg

U.S. Navy RAC
NAWC Warminster

Figure 2-3
Site 4 Location Map

FOSTER WHEELER ENVIRONMENTAL CORPORATION

00109C.022

Health and Safety levels of protection requirements for project activities are provided in the site-specific Health and Safety Plan.

3.2.1 Pre-Mobilization Surveying and Sampling

The following sections discuss the pre-mobilization tasks planned as part of the Site 4 remediation.

Surveying

Surveyors will be subcontracted by Foster Wheeler Environmental to perform the initial demarcation of the areas to be remediated. Prior to sampling activities, the surveyors will locate and mark the extent of each trench from previous coordinates and traverse points determined during the site characterization for the Engineering Evaluation/Cost Analysis for Site 4 (Halliburton NUS Corp., July 1995). All located points will have documentation tracing them back to an existing property corner or bench mark. This documentation will be available for review upon request.

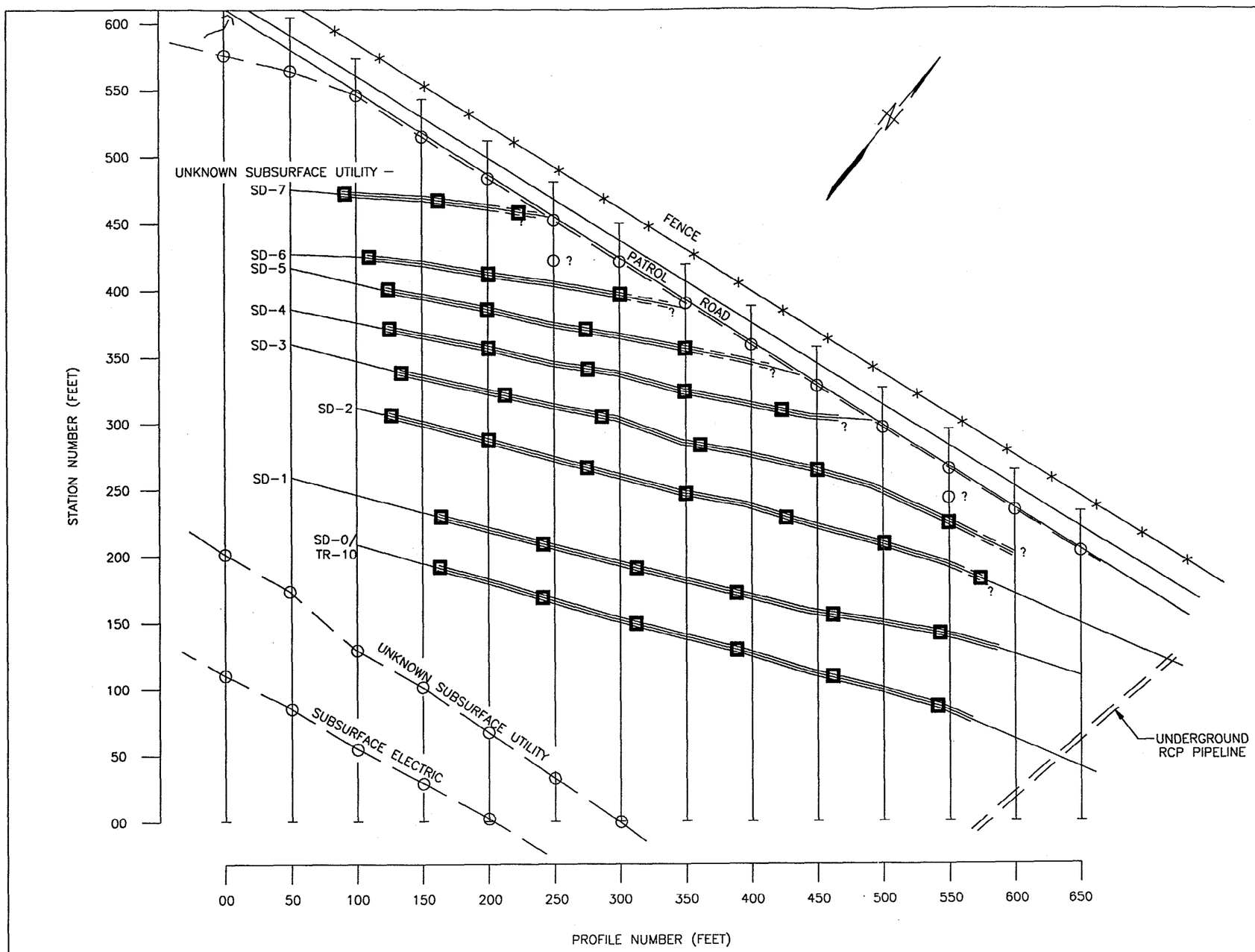
The underground utilities will be located to prevent damaging them with excavation equipment. Either Navy personnel or Foster Wheeler Environmental's survey subcontractor personnel will locate existing utilities based on existing documentation. If information is unavailable, a geophysical survey of the area will need to be performed.

Soil Borings

A drilling contractor will be subcontracted by Foster Wheeler Environmental to perform soil boring advancement and to decontaminate the boring equipment including building a temporary decontamination pad.

The decontamination of all drilling equipment, including appropriate portions of the drill rig, augers, drill casing, rods, tools, drilling fluid portable sumps, etc., will be performed prior to arrival at the site. At the site, equipment will again be steam cleaned and collected prior to commencing drilling. In addition, the rear of the drill rig, all down-hole equipment and split spoons used for sampling will be steam cleaned between site locations. All decontamination water will be captured and temporarily stored in 55-gallon drums. The water will be properly disposed at the end of the project.

Forty (40) soil borings will be advanced via a hollow stem auger to collect composite samples for pre-characterization of waste/soils for off-site disposal. See Figure 3-1 for approximate boring locations. Samples will not be collected until the initial top soil layer is penetrated approximately 6 to 12 inches below grade. Continuous split-spoon sampling, using 3-inch carbon steel spoons, will be performed at 2-foot intervals until the contaminated material (both waste and soil) is no longer encountered, approximately 6 to 8 feet below grade. Boring termination will be based on visual observations and screening with an organic vapor analyzer (OVA) or photoionization detector (PID). After



LEGEND

SD-1	SURFACE DEPRESSION 1
	PROFILE LINE
	PROBABLE TRENCH
	POSSIBLE TRENCH
ϕ ?	POSSIBLE EM ANOMALY
	PROPOSED SOIL BORING LOCATION

TRENCH CONTENTS

TRENCH	CONTENTS
SD-7	GENERAL REFUSE
SD-6	GENERAL REFUSE
SD-5	GENERAL REFUSE
SD-4	GENERAL REFUSE
SD-3	GENERAL REFUSE
SD-2	GENERAL REFUSE
SD-1	GENERAL REFUSE & CONTRUCTION DEMOLITION DEBRIS
SD-0/TR-10	CONSTRUCTION DEMOLITION DEBRIS

EXCEPTION

TRENCH SD-2 CONTAINS AN AREA WITH NEITHER REFUSE NOR CONTRUCTION DEMOLITION DEBRIS.

Note: Map developed from Haliburton NUS Corporation, Engineering Evaluation/Cost Analysis for Site 4 (North Runway Landfill), NAWC, Warminster, PA, Site 4 Contents of Trenches, July, 1995.

0 80 160
SCALE IN FEET

U.S. Navy RAC
NAWC Warminster

Figure 3-1
Site 4 - Proposed Soil Boring Location Map

FOSTER WHEELER ENVIRONMENTAL CORPORATION

00109027

boring completion, the samples collected from each boring will be composited for analyses. Additional borings may be required if analytical results show the material to be hazardous.

All split spoons used during the boring process for sampling will be decontaminated via steam cleaning before being used again, along with any other equipment which comes into contact with the contaminated material. Additional decontamination will be performed on the split-spoons prior to their reuse. Decontamination water will be collected into drums and disposed with decontamination water generated during remedial activities.

Sampling

Pre-mobilization sampling will be conducted in accordance with Section 5.0 of this Work Plan. Samples will be sent to an approved Navy or Army Corps of Engineers laboratory for analysis. After all sample analytical results are received, a pre-remediation sampling report will be submitted. This report will provide data summary tables, data interpretation, conclusions and recommendations.

3.2.2 Mobilization and Site Preparation

Mobilization and site preparation will consist of mobilization of the following items and services to site: equipment, office and support trailers, utility hook-up, and preparation of the site for initiation of excavation activities. Activities performed prior to arriving on-site will include the following: coordination of labor resources; procurement of surveying, drilling, laboratory and transportation and disposal services; and, the procurement of materials, equipment and supplies related to the remediation effort. Craft labor will be hired, as needed, from the local union halls.

The specific requirements for site preparation for the NAWC Warminster Site 4 project are provided in the following sections.

Temporary Construction Facilities and Utilities

The office trailer, storage trailer and shower trailer will be placed in an area centrally located to the different remedial sites located around the NAWC Warminster facility. The exact location will be confirmed with the Navy ROICC personnel. Key factors in selecting the proposed location for the trailers included the following:

- A nearby power source (120 amp, 240 volt, single phase);
- A level (preferably paved) surface with enough open space to fit the trailers;
- A secure area away from NAWC Warminster operations;
- A nearby phone line; and
- A nearby open faucet or continuous, clean water source.

All electrical and phone installations will meet all OSHA, NEC and Navy construction standards, NFGS-16011L. OSHA, Federal and Navy (NFGS-01500J) standards will also be followed for safety and documentation maintained at these temporary facilities.

Supplies such as a trash dumpster, water coolers, fax machine, computer, etc. will be rented on an as needed basis for the support area.

Erosion Control

Prior to the construction activities, erosion and sediment control measures will be implemented as shown in Figure 3-2. These controls will include the following:

- Installation of silt fence along the down gradient side of Site 4 along Patrol Road;
- Installation of silt fence around storm drains at the western end of the site;
- Construction of earthen berm up gradient of Site 4;
- Construction of a lined and bermed soil stockpile area;
- Dust control measures via water spraying of exposed soil areas;
- Construction of a temporary haul road consisting of stone; and,
- Provisions (i.e., high pressure water wash) will be made to prevent construction vehicles from tracking excess dirt and mud off-site.

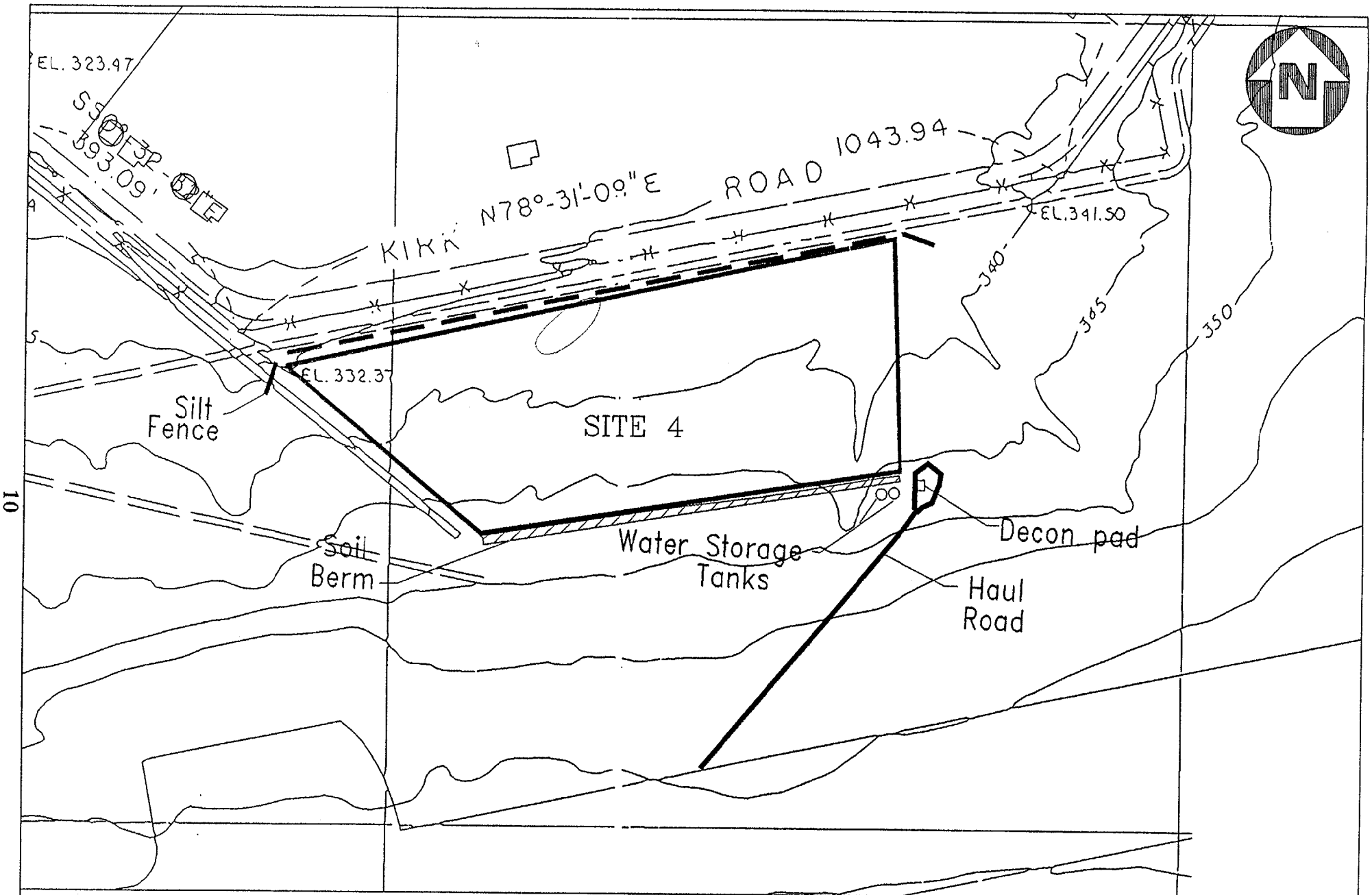
Foster Wheeler Environmental will have a pick-up truck with a water tank and a gravity fed sprinkler system drive through the accessible areas of the site to control dust. A pump and hose will also be available on the truck to wet down areas out of reach of the sprinkler system.

Foster Wheeler Environmental will maintain these controls for the duration of the project. A more detailed plan for erosion and surface water control is provided in Section 7.0 of this Work Plan.

Construction Entrance/Haul Roads

Access to the site will be through gate 33, off Jacksonville Road. Construction traffic will use existing facility roads and runways to get close to Site 4 (see Figure 2-2). A temporary gravel haul road will be constructed from the runway to Site 4. Sufficient signage or site maps will direct truck traffic from Jacksonville Road to Site 4.

Topsoil will be stripped from an area approximately 600 feet long and 12 feet wide. Enough 2-inch to 3-inch gravel will be delivered to the site to cover the stripped area. Upon completion of remedial activities, the road will be left in place. A detail of the construction road is included as Figure 3-3.



Note:
Map developed from Haliburton NUS Corporation, Engineering Evaluation/Cost Analysis for Site 4 (North Runway Landfill), NAWC, Warminster, PA, Site 4 Features, July, 1995.

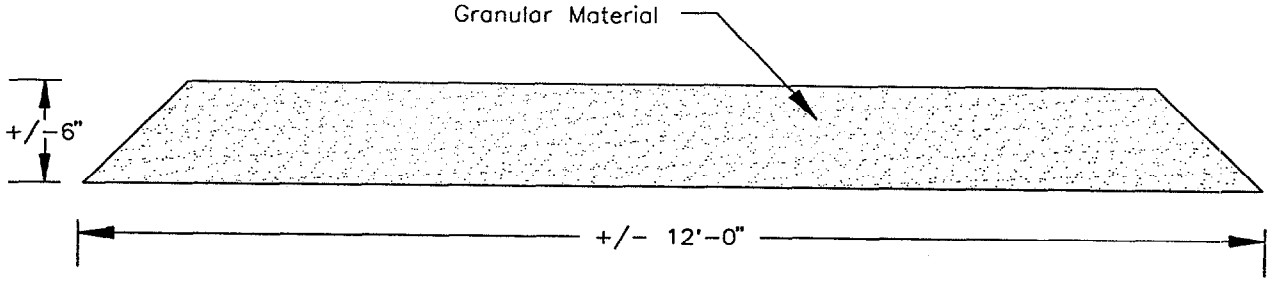
0 300
SCALE IN FEET

U.S. Navy RAC
NAWC Warminster

Figure 3-2
Site 4 Location Map

FOSTER WHEELER ENVIRONMENTAL CORPORATION

warmnst\sitewarm.dwg



Detail

Stabilized Construction Haul Road
(NTS)

U.S. Navy RAC
NAWC Warminster, PA

Figure 3-3

Construction Haul Road

navyrac\fig3-3.dwg

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Decontamination Pad

A temporary decontamination pad will be built at Site 4 to contain contamination removed from all trucks and equipment leaving the remediation area. The approximate location of the pad is shown as part of Figure 3-2.

The area will be stripped and graded so that the area will be smooth and allow water to collect into one corner. A 15-foot long by 10-foot wide by 6 inch high metal pan will be placed on the graded area. Two sumps, one-foot square by one-foot deep, will be located in the pad with pumps to transfer any collected water into storage containers. Compacted fill material will be used to build a 10% slope up to the edge of the decontamination pad to allow equipment and trucks to drive into the pad to be cleaned. A design diagram for the pad is provided as Figure 3-4.

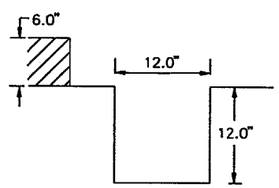
Soil Stockpile Areas

Stockpile areas will be utilized for the staging of topsoil and any possible hazardous material removed from the trenches. The locations of the top soil area is shown in Figure 3-2. If a staging area is needed to store suspected hazardous material, supplies will be available on-site to build this area. The staging area will be near the decontamination pad. The exact location will be determined during field operations, at the time it is needed.

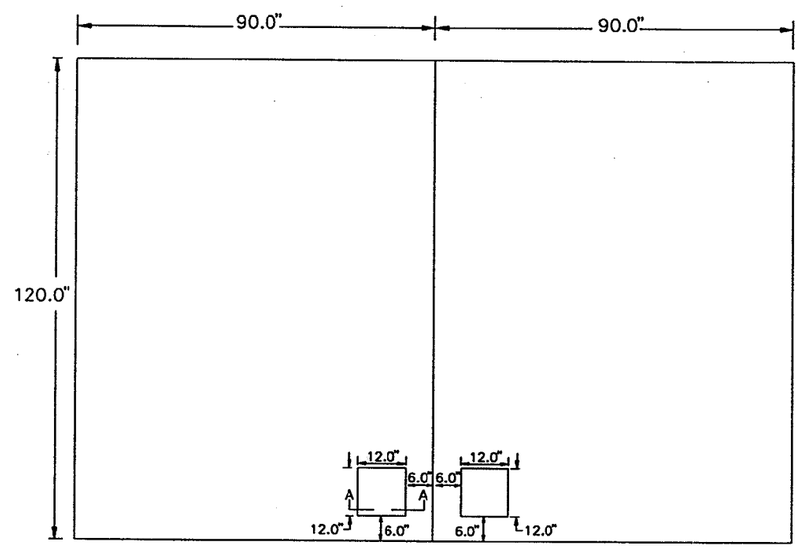
One hundred feet of at least 20-foot wide plastic sheeting will be laid out up gradient to the trenches. The top 6 inches of soil will be removed from the planned excavation area and placed on the plastic. The plastic will be folded over the soil and secured. The topsoil and plastic will act as a barrier to divert surface water from the excavation.

If necessary, a cell of ample size to store any suspected hazardous material removed from every trench will be built, since several weeks may lapse between the time samples are collected, and analytical results and all required approvals for disposal are received. Sufficient room will be provided within the cell to allow for equipment to dump loads and to work the stockpile.

The top six (6) inches of soil within the cell area will be stripped and used to berm all four sides of the suspected hazardous material staging area with the exception of the entrance/exit opening located on the down gradient side of the slope. A HDPE plastic membrane will be installed over the entire staging area and will extend up and over the topsoil berm, as shown on Figures 3-5 and 3-6. The cell will be sloped to create a low point where accumulated storm water run-off will be collected and transferred to a storage vessel. All materials stored in this area will be covered with plastic to minimize stormwater runoff and would blow dust from the piles. At the direction of the Navy, collected water will either be disposed off-site or treated and discharged on-site.

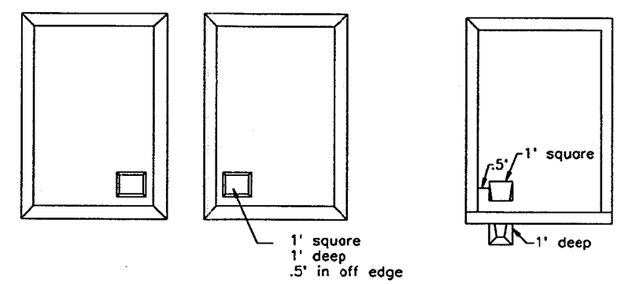


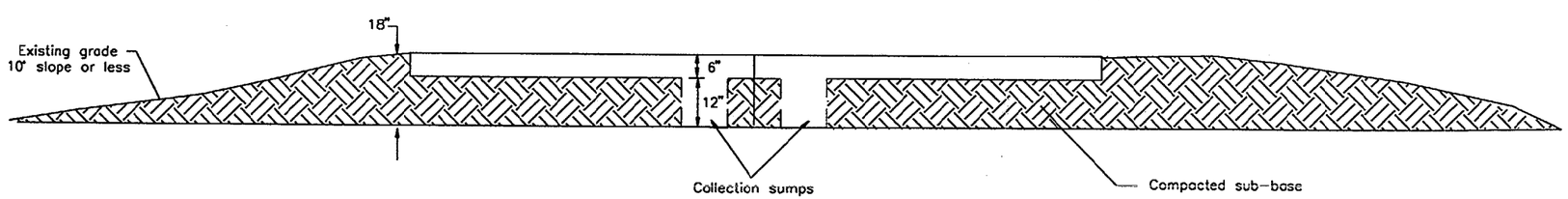
Section A–A



2 Portable Heavy Equipment Wash Pans

- Each pan shall have four lifting eylets
- Each pan is 10'W x 15'L x .5' D
- Each pan has one water collection sump constructed to be 1'L x 1'W x 1'D
- Each sump will be constructed on opposing edges (one in the right hand corner, one in the left hand corner)
- The bottoms shall be constructed of 3/8" carbon steel
- The side walls & sumps shall be constructed of 1/4" carbon steel





U.S. Navy RAC
NAWC Warminster, PA

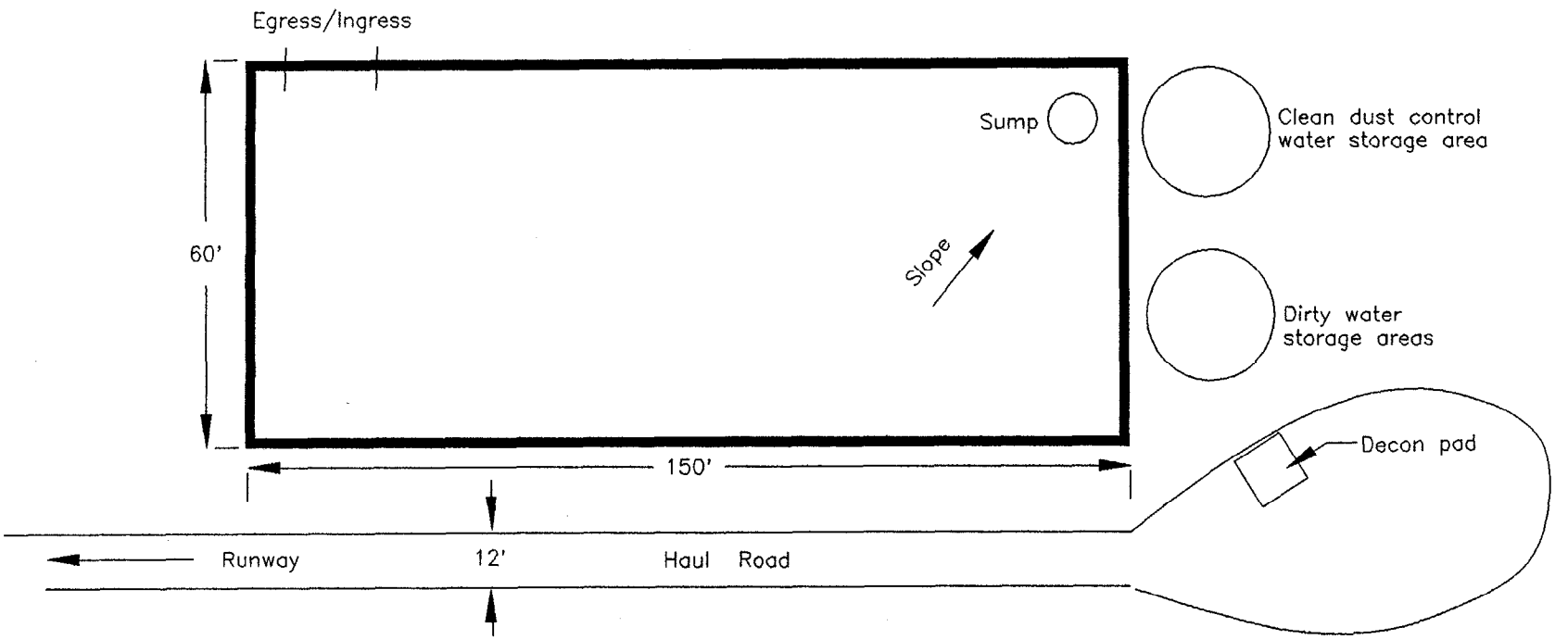
Figure 3–4

Decontamination Pad Specifications

FOSTER WHEELER ENVIRONMENTAL CORPORATION

navyrac\fig3–4.dwg

00109C.047



Stockpile Area
(NTS)

Note: Stock pile area will only be constructed if potentially hazardous materials are encountered during excavation.

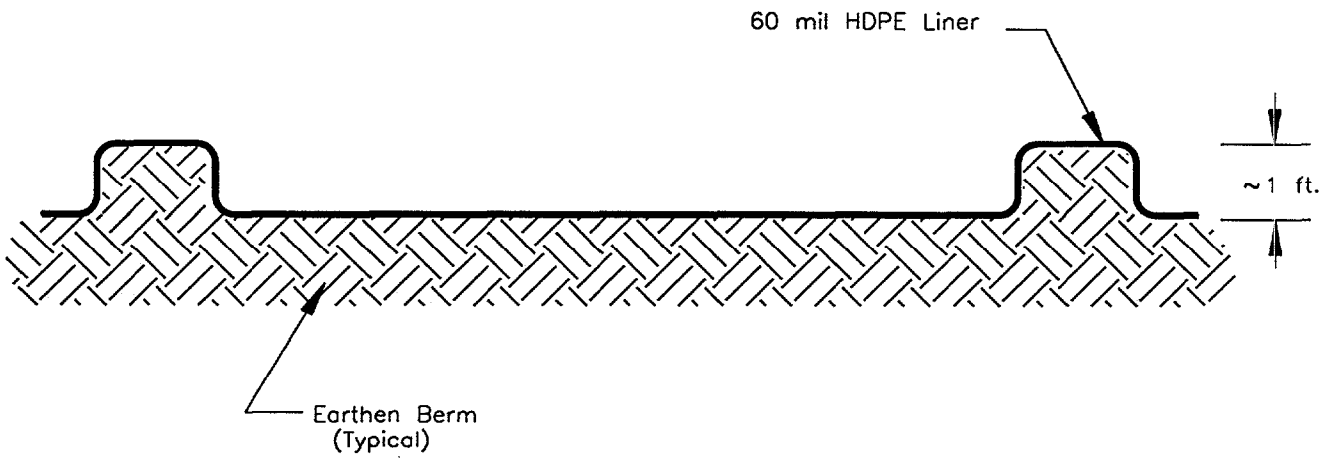
U.S. Navy RAC
NAWC Warminster, PA

Figure 3-5

Site 4 – Proposed Soil Stockpile Staging Area

FOSTER WHEELER ENVIRONMENTAL CORPORATION

navyrac\fig3-5.dwg



Section

Soil Stockpile Staging Area

(NTS)

U.S. Navy RAC
NAWC Warminster, PA

Figure 3-6

Soil Stockpile Staging Area
Cross-Section

FOSTER WHEELER ENVIRONMENTAL CORPORATION

navyrac\fig3-6.dwg

Perimeter Air Monitoring

In order to monitor for potential off-site migration of contaminants, ambient air samples will be collected to evaluate the presence, magnitude, and extent of ambient air contamination caused by remedial activities at the Site 4 (North Runway Landfill) location.

Representative ambient air samples (24-hour) will be collected from four locations and one collocation around the perimeter of the site and analyzed for Total Suspended Particulate (TSP) and metals. The exact locations of the air samplers will be determined in the field.

An automated battery powered portable meteorological station will be used to monitor on-site wind speed, wind direction, and ambient temperature. All data will be recorded at two second intervals and recorded on strip charts. The data will then be hand digitized from the strip charts as hourly averages. The meteorological station location will be determined in the field.

Additionally, a wedge type or cumulative rain gauge will be installed on-site to measure precipitation. Hourly atmospheric pressure data will be obtained from the Naval Air Station at Willow Grove, PA.

3.2.3 Excavation and Backfilling

Excavating and backfilling will be performed in accordance with Navy specifications, NFGS-02225. Approximately 8,000 cubic yards of soil and waste material will be excavated from the trenches.

Following the excavation and staging of the topsoil, trenches will be excavated in the following sequence to avoid cave-ins and allow trucks better access for loading: Trench 7, Trench 5, Trench 3, Trench 1, Trench 6, Trench 4, Trench 2 and Trench 0. The backfilling of each trench will occur upon receipt of soil analytical results which confirm that the limits of excavation meet the cleanup criteria for chemicals of potential concern (COPCs).

Confirmatory, post-excavation sampling will be performed by other Navy contractors. The cleanup criteria established for Site 4 are provided below.

Chemicals of Concern	Cleanup Levels (mg/kg)
Benz(a)anthracene	6.0
Benzo(a)pyrene	0.6
Benzo(b)fluoranthene	6.0
Aroclor 1248	3.5
Trichloroethene	400
Barium	5,000

Underground utilities are not anticipated with the area of excavation; however, Navy facility personnel will locate the utilities or provide documents identifying underground utilities that are located along the perimeter of the excavated area. These utilities will be staked prior to pre-mobilization sampling activities. The following sections describe the excavation and backfilling activities associated with Site 4.

Excavation and Staging of Top Soil

Topsoil (0" - 6") will be stripped and stockpiled on plastic sheeting, up gradient of the trenches as mentioned in Section 3.2.2, Soil Stockpile Areas. Following completion of excavating and backfilling the trenches, the top soil may be re-used as final cover. The reuse is dependent upon confirmatory sampling by a Navy third party contractor. If the material is not confirmed clean one week prior to restoration, top soil from off-site sources will be used.

Excavation and Removal of Solid Waste/Debris

Excavator(s) will be used to remove contaminated material from the trenches and direct loaded into dump trucks. The expected depth of excavation is 4 to 5.5 feet of cover material and waste. The estimated 8,000 cubic yards of soil and contaminated material will have been previously delineated as being non-hazardous or hazardous during the pre-mobilization sampling. The soil and material will be continuously field screened with an OVA or PID and visually observed as it is removed from the trenches to further determine the presence of possible hazardous material. If potentially contaminated material is encountered during excavation, the material will be staged in a separate stock pile area for proper waste characterization. If pre-mobilization sampling identifies areas of hazardous materials, further delineation will be performed to further derine this area for direct loadout. Dump trucks will not receive mixed loads.

Foster Wheeler Environmental will place orange plastic fencing around the active trenches to prevent trucks from driving too close to the trenches during direct load-out of the material. The equipment operators will exercise care in loading the trailers to keep areas outside the fence free of contaminated materials; therefore, disposal trucks will have minimal contact with contaminated materials. Truck drivers will remain outside the marked trench area.

Excavation will continue until native soil is observed or no contamination is visible in the excavation, both horizontal and vertical. When all the material and contaminated soil are removed based on visual observation and PID readings, confirmation sampling will be performed.

Backfill and Compaction

A third party Navy subcontractor will conduct the post-excavation confirmatory sampling. Upon receipt of post-excavation confirmation sample results indicating the limits of the excavation are below cleanup levels, the trench will be backfilled and compacted with common fill. Certified clean fill material from off-site sources will be used. The vendor will provide certification which will meet PADEP Document 258-2182-773. The common fill will be compacted to 85% of maximum density as determined by a standard proctor test (ASTM D698). Fill will be compacted in less than 12 inch lifts. After initial field testing (ASTM D2922) demonstrates the method of compaction is demonstrating 85% of maximum density, no further testing is required provided the same method of compaction is continued.

Equipment and Truck Decontamination

High pressure water spray, brushes and shovels will be located at the decontamination pad near the staging area to rid trucks of mud and dirt. A laborer will use a shovel and brushes to remove any gross material from the equipment. A final rinse will then be performed with a steam pressure washer to remove any additional debris. A final inspection will be performed by the Site Health and Safety Officer or the Project Superintendent before releasing the truck or equipment. All decontamination work will be performed in accordance with safety requirements dictated by the site-specific Health and Safety Plan.

Solid material will be cleaned off the decontamination pad as needed, or at a minimum of the end of each workday, and placed into a dump truck leaving the site. Decontamination water will be transferred to labeled 55-gallon drums or to a poly tank and stored in an appropriate area until the water is approved for disposal.

3.2.4 Restoration

Restoration of Site 4 will include final grading and hydro-seeding. After backfilling with the topsoil and compacting the trenches, the operators will grade and level the area with equipment that has been previously decontaminated. Final grading will match existing contours on the site. After completing the final grading, all areas where vegetation was disturbed during the remedial action will be hydroseeded with a mix of commercially available lawn seed for sunny areas. The area will be monitored and maintained by Foster Wheeler Environmental until the grass has been mowed three times.

3.2.5 Demobilization

All excavation equipment used during Site 4 activities will be demobilized unless it may be utilized as part of any future work, which would be mobilizing within a reasonable time schedule. The plastic from the stockpiled soil areas will be disposed as part of the last shipment of waste removed from site. Support zone equipment and personnel will remain until notice is given by the Navy to demobilize.

4.0 WASTE REMOVAL PLAN

This section addresses the handling of the various waste in streams that will be generated from on-site remedial activities. These materials include both non-hazardous and hazardous waste. Foster Wheeler Environmental will coordinate all disposal activities with the designated NAWC Warminster facility Transportation and Disposal Coordinator (T&D Coordinator). The designated Navy representative will be required to sign all bills of lading, manifests, land ban forms or other forms of paperwork required by regulations and the disposal facility.

4.1 WASTE ANALYSIS/CLASSIFICATION

As minimal analytical testing results have been provided, Foster Wheeler Environmental assumes that part of the 8,000 cubic yards of waste will be classified non-RCRA hazardous and suitable for Subtitle D landfill and that part of the waste will be classified RCRA hazardous and require Subtitle C landfill. Foster Wheeler Environmental will submit 40 samples for laboratory analyses to classify the waste materials for disposal as part of the pre-mobilization sampling.

Non-hazardous debris will include, in addition to the waste material from the excavation determined to be non-hazardous, office and support zone trash and PPE. Areas of non-hazardous material will be kept separate from all hazardous material, and clearly marked and /or labeled. Proper handling and storage requirements will be maintained during the extent of the project.

If hazardous wastes are found on site in concentrations above land disposal regulations, other treatment technologies may be needed. These include incineration and chemical/physical treatment.

As part of the equipment decontamination, an unknown volume of water will be generated which will need to be disposed. The water will be stored as non-hazardous and tested for constituents of concern by the subcontractor. Storage of the water will most likely be in drums; however, if larger quantities of water are generated, a poly tank will be utilized.

4.2 DOCUMENTATION

Proper documentation will accompany all shipments of non-hazardous waste including bills of lading, any weigh tickets and any required analytical information. The Navy will receive a copy of all paperwork generated from shipments of waste.

All hazardous waste leaving the NAWC Warminster facility will be properly manifested with any additional paperwork also accompanying the shipment. The designated Navy representative will need to sign all documents. Foster Wheeler Environmental will fill out all manifests and accompanying paperwork prior to the Navy representative receiving these documents for signature.

4.3 TRANSPORTATION

Foster Wheeler Environmental will include all transportation services as part of the disposal subcontract.

Waste streams will be consolidated as bulk shipments whenever possible to reduce transportation costs. All solid material leaving site will be tarped by the truck driver to prevent material from falling out or blowing off the trailers. Hazardous loads leaving site will also be lined to reduce contaminating the trailer. All transporters will have proper permits for the material which they are hauling, and will be required to meet all DOT requirements and regulations regarding weight and placarding. Foster Wheeler Environmental will oversee all transportation activities to help ensure DOT requirements are met before the transporters leave the facility.

4.4 DISPOSAL

A subcontractor will be used for transportation and disposal of all waste from Site 4. Foster Wheeler Environmental will award the subcontract following proper competitive procurement procedures. Information, including the name, address, EPA ID number, point of contact and phone number will be provided to the Navy upon award of the subcontract.

5.0 FIELD SAMPLING AND ANALYSIS PLAN

The remedial action to be performed at the NAWC Warminster facility requires field sampling and analysis data for the decision making process. Post-excavation, confirmatory sampling will be performed by other Navy contractors and will not be addressed in this section. The types of sample per site are described below.

Site 4

Two types of sampling will be performed as part of the Site 4 remediation, Pre-Mobilization and Perimeter Air Monitoring. Pre-Mobilization samples include waste characterization sampling for the trenches. Perimeter Air Monitoring samples will include samples collected from the perimeter of the site for dust migration.

5.1 SAMPLING PROCEDURES

Standard operating procedures for collection of soil samples and decontamination of sampling equipment are provided in Appendix A. This Field Sampling and Analysis Plan describes the program which insures that the chemical data meet the Navy Installation Restoration Laboratory Quality Assurance Guide: Interim Guidance Document, Naval Facilities Engineering Service Center, 1996 requirements for completeness, precision, accuracy, representativeness, comparability, dependability, and legal defensibility. Labeling and packing procedures are discussed in the following sections.

5.1.1 Sampling Objectives

Site 4

Data generated by implementation of the field sampling and analysis plan will be used for the following purposes:

- To characterize waste streams for off-site disposal; and
- To monitor the site boundary for air emissions from the remedial activities.

Table 5-1 presents the analytical testing requirements, as well as the analytical methodology, bottleware and allowable holding times for the sample analysis. The actual locations of the samples will be marked on a drawing, and a description of the sample material and location will be submitted to the Navy with the analytical results. Personnel air monitoring, equipment, personnel decontamination and other health and safety related issues are discussed in the HASP.

Pre-Mobilization Sample Strategy

Forty (40) soil boring samples will be obtained for full TCLP, pH, PCB screening, ignitability, reactivity, oil and grease, and paint filter test analysis of the trenches to represent a section of trench. The boring locations will be spaced at approximately one per every 200 cubic yards of material or one per every 75 linear feet. One composite sample will be collected for each boring below the top soil. Additional samples may be required if any of the soil and material is characterized as being hazardous. At a minimum, at least one boring would be advanced on either side of the boring where hazardous material waste is detected midway between the two adjacent borings.

TABLE 5-1
NAVAL AIR WARFARE CENTER
WARMINSTER, PA (DO #0018)
SITE 4 - NORTH RUNWAY LANDFILL
SAMPLE COLLECTION AND ANALYTICAL PROTOCOL INFORMATION
(Page 1 of 4)

Location/ Objective	Sample Type/ Matrix	Sample Quantity	Parameters	Sample Container	Sample Preservative	Analytical Method	Method Detection Limit	Holding Times
SITE 4 - NORTH RUNWAY LANDFILL								
Site S4 - Profile Samples	Waste Characteri-zation (soils)	40	TCLP Volatile Organics (VOAs)	(1) 8oz glass jar	Cool to 4°C	Extract as per zero headspace extraction in Method 1311. Analyze as per Method 8240B (SW 846)	Compound-specific (0.2-100 mg/L)	14 days extract 14 days analyze
			TCLP Semi-volatiles (SVOAs)	(1) 8oz glass jar	Cool to 4°C	TCLP extraction as per Method 1311. Analyze as per Method 8270B (SW 846) **	Compound-specific (0.008-400 mg/L)	7 days extract 7 days analyze
			TCLP Metals Analysis, plus coppeer, nickel and zinc	(1) 8oz glass jar	Cool to 4°C	TCLP extraction as per Method 1311. Analyze as per Method 7000 Series (SW-846)	Analyte-specific (0.2-100 mg/L)	6 months
			TCLP Pesticides	(1) 8 oz glass jar	Cool to 4°C	TCLP extraction as per Method 1311. Analyze as per Method 8080 (SW-846)	Compound-specific (0.008-10.0 mg/L)	7 days to extraction 40 days to analysis
			TCLP Herbicides	(1) 8 oz glass jar	Cool to 4°C	TCLP extraction as per Method 1311. Analyze as per Method 8150 (SW-846)	Analyte-specific (1.0-100 mg/L)	7 days to extraction 40 days to analysis
			PCB	(1) 8oz glass jar	Cool to 4°C	Method 8080 (SW846)	Compound-specific (33-67 ug/kg)	7 days extract 40 days analyze
			pH	(1) 4 oz. glass jar		Method 9040,9045 (SW846)		Analyze immediately
			Ignitability	(1) 4 oz. glass jar		Method 1010 (SW 846)		7 days

TABLE 5-1
NAVAL AIR WARFARE CENTER
WARMINSTER, PA (DO #0018)
SITE 4 - NORTH RUNWAY LANDFILL
SAMPLE COLLECTION AND ANALYTICAL PROTOCOL INFORMATION
(Page 2 of 4)

Location/ Objective	Sample Type/ Matrix	Sample Quantity	Parameters	Sample Container	Sample Preservative	Analytical Method	Method Detection Limit	Holding Times
			Reactivity	(1) 4 oz. glass jar	Cool to 4°C	Method 7.3.3.2,7.3.3.4 (SW846)		7 days
			Oil and Grease	(1) 8oz glass jar w/Teflon-lined cap	Cool to 4°C	Method 418.1	10 ug/kg 30,000 ug/kg haz waste	7 days extract 7 days analyze
			Paint filter test	(1) 4 oz. glass jar	Cool to 4°C	Method 9095		
			Total Solids	(1) 4 oz glass jar	Cool to 4°C	Method 160.3 (SW-846)		7 days
			Total Volatile Solids	(1) 4 oz glass jar	Cool to 4°C	Method 160.4 (SW-846)		7 days
			Chemical Oxygen Demand	(1) 4- oz glass jar	Cool to 4°C	ASTM water leachate extraction as per Method D3957. Analyze as per Method 410.4 (EPA 600)	3 mg/L	
			Total Solids	(1) 4 oz glass jar	Cool to 4°C	ASTM water leachate extraction as per Method D3957. Analyze as per Method 160.3 (SW-846)		7 days
			Oil and Grease	(1) 4 oz glass jar	Cool to 4°C	ASTM water leachate extraction as per Method D3957. Analyze as per Method 413.1 (EPA 600)	5 ug/L	7 days
			Ammonia-N	(1) 4-oz glass jar	Cool to 4°C	ASTM water leachate extraction as per Method D3957. Analyze as per Method 305.2 (EPA 600)		28 days

TABLE 5-1
NAVAL AIR WARFARE CENTER
WARMINSTER, PA (DO #0018)
SITE 4 - NORTH RUNWAY LANDFILL
SAMPLE COLLECTION AND ANALYTICAL PROTOCOL INFORMATION
(Page 3 of 4)

Location/ Objective	Sample Type/ Matrix	Sample Quantity	Parameters	Sample Container	Sample Preservative	Analytical Method	Method Detection Limit	Holding Times
Site S4- Surface/ Decntamination Water	Waste Characteri-zation (water)	2	TCL Volatile Organics (VOAs)	(3) 40 mL amber VOA vial	Cool to 4°C; pH < 2 w/ HCl	Analyze as per Method 624*	Compound-specific (5-10 ug/L)	14 days extract 14 days analyze
			TCL Semi-Volatile Organics	(2) 1 L amber glass jar	Cool to 4°C	Method 625*	Compound-specific (0.05-25 ug/L)	5 days extract; 40 days analyze
			TAL Metals Analysis	(1) 1 L plastic jar	Cool to 4°C; pH > 2 w/ HNO_3	Analyze as per Method 200 Series*	Analyte-specific (0.2-5000 ug/L)	6 months; 28 days for Hg
			PCBs	(2) 1 L amber glass jar	Cool to 4°C	Method 608*	Compound-specific (1-2 ug/L)	7 days extract 40 days analyze
			pH	(1) 500 mL plastic jar		Method 150*		Analyze immediately
			TSS/TDS	(1) 500 mL plastic jar	Cool to 4°C	Methods 160.2/160.1*		7 days
Site S4 - Perimeter Air Samples	Dust	60	Barium Beryllium Cadmium Lead Manganese Nickel	(1) 47 mm fiber/quartz filter	N/A	Method 7300 (NIOSH)	1.0 ug 0.1 ug 0.2 ug 2.0 ug 0.1 ug 1.0 ug	N/A
			Total Suspended Particulate (TSP) Analysis	(1) 47 mm fiber/quartz filter		Modified 7191 (NIOSH)	240 ug	N/A
Air Samples (Blank)	Dust	6	Total Suspended Particulate (TSP) Analysis	(1) 47 mm fiber/quartz filter		Modified 7191 (NIOSH)	240 ug	N/A
			Barium Beryllium Cadmium Lead Manganese Nickel	(1) 47 mm fiber/quartz filter	N/A	Method 7300 (NIOSH)	1.0 ug 0.1 ug 0.2 ug 2.0 ug 0.1 ug 1.0 ug	N/A

TABLE 5-1
NAVAL AIR WARFARE CENTER
WARMINSTER, PA (DO #0018)
SITE 4 - NORTH RUNWAY LANDFILL
SAMPLE COLLECTION AND ANALYTICAL PROTOCOL INFORMATION
(Page 4 of 4)

Notes:

1. QC/QA samples are not required for the waste characterization sampling.
2. The number in parentheses in the "sample container column" denotes the number of containers needed.
3. Method abbreviations:
   SW-846 - Test Methods for Evaluating Solid Waste, OSWER, November 1986, revised January 1995.
4. Detection limits for soil samples may vary due to percent moisture. The limits listed for soil are based on wet weight.
5. All holding times listed are from Verified Time of Sample Receipt (VTSR) by the laboratory unless noted otherwise.
6. * = All analytical performed in accordance of EPA Water/Waste Water Methods, 600/4-79-020, 3/83.
7. ** = After TCLP extraction, pH will be obtained by Method 9040, 9045 (SW-846).

Perimeter Air Monitoring Sample Strategy

Engineering controls will mitigate fugitive dust emissions during excavation activities. The air sampling program is designed to obtain periodic confirmation air samples to monitor off-site dust migration from remediation activities. TSP/ metals were selected as indicator contaminants. Samples will be collected three times per week for four weeks at four locations with collocated samplers at one location. The location of the samplers will be determined in the field. Field blanks will be collected at a rate of one per every ten samples.

Total Suspended Particulates (TSP) sampling will be conducted using AIRMETRICS MiniVol Portable Survey Samplers. These samplers are portable, battery operated, and can be suspended from a bracket mounted on a variety of structures (final mounting determination will be made in the field). Ambient air is pumped through a 47 mm filter at a rate of 5 liters per minute. At the end of each sampling period, the filter assembly and battery pack are removed and replaced for the next sampling period. Sampling periods will be 24-hours in duration. The air samples will be analyzed for gravimetric weight (TSP) and/or the presence of pre-determined target metals. The target metals include barium, beryllium, cadmium, lead, manganese, and nickel.

Air sampling results will be validated, reduced, and tabulated. Results will be evaluated to determine the magnitude of site perimeter air contamination.

5.1.2 Sample Turnaround Time

Site 4

For waste characterization and stockpile samples, a facsimile copy of the preliminary data results shall be submitted to Foster Wheeler Environmental within 72 hours from the verified time of sample receipt (VTSR) by the laboratory. The complete hard copy data package containing all of the sample data shall be submitted within 7 days from the VTSR. For air samples, a 24-hour turnaround time will be required for the first week of samples and a 7-day turnaround for the remaining samples for a facsimile copy of the preliminary data results from the VTSR. The complete hard copy data package containing all of the sample data will be submitted within 14 days from the VTSR.

The laboratory must notify Foster Wheeler Environmental by telephone regarding any problems and conditions that will affect the timeliness of analyses and data reporting. In particular, the laboratory will notify Foster Wheeler Environmental in advance regarding sample data that will be delivered late and will specify the estimated delivery date.

If a required deliverable is late, due directly to the subcontractor, or indirectly to the subcontractor's designated commercial delivery carrier, the following financial penalties will be applied as follows:

- One day late - 25% reduction
- Three days late - 50% reduction
- Five or more days late - 90% reduction

The only exception allowed to this policy will be for deliverables due on Saturdays. In this instance, the Sunday immediately following the Saturday due date will not be counted in the assessment of liquidated damages for late deliverables.

5.1.3 Sample Tracking System

The objective of the sample identification system is to provide a framework for developing sample numbers that are unique to that sample, and convey information regarding sample type that will enable data users to easily identify sample locations. The procedures outlined in this section are consistent with the USEPA Compendium of Superfund Field Operations Methods- EPA 540 P-87001.

Each sample will be designated by an alpha-numeric code which will identify the site, matrix sampled, and contain a sequential sample number. The site code will be the initials for the site name such as: Site 1 (S1), Site 2 (S2), Site 3 (S3), Site 4 (S4), Site 6 (S6) and Site 8 (S8). Location types will be identified by a two-letter code, while each matrix sampling location will be identified by a four-character code.

FIRST SEGMENT	SECOND SEGMENT	
AN	**AA**	**XXXX**
Site	Sample Type	Specific Location

Symbol Definition: A= Alphabetic N= Numeric XX=Alphabetic or Numeric

Sample Type: WC = Waste Characterization FB = Field Blank
PA = Perimeter Air Sample ER = Equipment Rinsate

For example, the first waste characterization sample collected for Site 4 Trench 3 would be labeled S4-WCT301.

5.2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

All sampling procedures and quality control/quality assurance (QA/QC) requirements will be consistent with those described in the Navy Installation Restoration Laboratory Quality Assurance Guide: Interim Guidance Document, Naval Facilities Engineering Service Center, 1996 NEESA 20.2-47B, revised June 1988. The laboratory will therefore submit a Laboratory Analysis Quality Assurance (QA) Plan in accordance with the requirements specified in the document referenced above.

In order to meet the data quality objectives of Delivery Order 0018, Foster Wheeler Environmental Corporation and its contracted laboratory will use a reduced deliverable data package equivalent to the Navy's Level C analytical quality assurance/quality control data package level as described in Table 7.6 of the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-47-B, revised June 1988.

Although a Level C equivalent data package will be required from the laboratory, data validation will not be performed on the analytical package unless requested by the Navy.

5.2.1 QA/QC Samples

Waste Characterization Samples

QA/QC samples are not required for waste characterization sampling.

Air Samples

Field blank samples will be submitted to the laboratory with each set of samples. The blank samples will be handled in the identical manner as the samples except that they will not have sample air drawn through them.

Duplicate samples will be collected using the collocated samplers on-site and will be analyzed by the laboratory using the same methodology as the other samples. Duplicate samples will be collected during each sampling period.

5.2.2 Sample Shipping and Packaging

Samples will be packaged and shipped according to the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, revised June 1988. Chain-of-Custody forms, sample labels, custody seals, and other sample documents will be completed as specified in the above reference manual. All entries will be made in permanent ink. If errors are made when completing any of these forms, the error will be crossed out with a single line, initialed, and dated by the sampler.

Each sample will be labeled with the following information:

- Site Name
- Field Identification or sample station number
- Date and time of sample collection
- Designation as a grab or composite sample
- Sample type (matrix)
- The signature of the sampler

- Sample preservation and preservative used
- The general types of analyses to be conducted.

Each environmental sample will be properly identified and sealed in a polyethylene (PE) bag. The bag will then be placed in a fiberboard cooler which has also been lined with a large polyethylene (PE) bag. The samples will be packed with sufficient ice (sealed in PE bags) to cool the samples to 4° C. Enough non-combustible adsorbent cushioning material will be used to minimize the possibility of container breakage. The large PE bag in the cooler will be sealed and the container closed. Custody seals and nylon strapping tape will be affixed to the cooler. All samples will be shipped within 24 hours of collection via a common carrier. All sample coolers and samples will be shipped in accordance with Pennsylvania Department of Transportation (DOT) requirements and regulations.

A Chain-of-Custody (COC) record will be used to record the custody of the samples, and will accompany the samples at all times. The following information will be contained on the COC record:

- Project name;
- Signature of samplers;
- Sampling station number, date and time of collection, grab or composite;
- Designation;
- Signatures of individuals involved in the sample transfer (i.e., relinquishing and accepting the samples);
- Sample matrix;
- Types of analysis to be conducted; and,
- Sample preservation and preservatives used.

5.2.3 Laboratory Data Reporting

As a minimum, laboratory reports presenting data will contain the following:

- Title of the project;
- Date report was prepared;
- Name, address and telephone number of the contractor;
- Sample identification numbers;
- Type of sample (waste pile WP/surface soil SS);
- Date on which analysis was performed;
- Any special observations, circumstances or comments which may be relevant for interpretation of the data; and,
- The signature of the laboratory manager.

Each parameter tested will include: name of parameter, EPA or other approved testing procedure references, detection limits, results of analysis, and the unit of the reported results.

The laboratory will be provided the requirements for Data set deliverables for Level C QA as outlined in Table 7.6 of the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, revised June 1988.

5.2.4 Records

Field Sampling and Monitoring Records

Records of field activities, which will support the integrity of the samples and field monitoring, will be entered in a bound logbook with numbered pages. The records will be dated and signed or otherwise authenticated on the day of entry. The logbook will document vital information, such as sample source, sampling methods, sample conditions, and field measurements. Any problems encountered and the corrective actions taken in the field will be documented in the logbook.

The Project Superintendent or Site Health and Safety Officer will keep a site logbook which summarizes the daily sampling and monitoring activities. The logbook will address any specific problems that arose during the day, final resolutions, and their impact on the outcome of the field investigation.

Laboratory Records

In addition to the Level C QA data set deliverables, the laboratory will maintain record, that will contain, at a minimum, the following information:

- Copies of relevant analyst notebook pages;
- Copies of relevant instrument logs;
- Raw instrument outputs (chromatograms, ion spectra, absorbency value, etc.);
- QC Charts;
- Documentation of Corrective Actions;
- Chain-of-Custody information;
- Automated data processing system output and/or calculations;
- Calibration data;
- Blank, spike and spike duplicate results.

6.0 HEALTH AND SAFETY REQUIREMENTS

The site-specific Health and Safety Plan (HASP) preceded this Work Plan and was forwarded as a separate submittal on April 12, 1996. Comments regarding the site-specific HASP were received May 1, 1996 from the Navy. Foster Wheeler Environmental is currently addressing these comments.

7.0 ENVIRONMENTAL PROTECTION AND REGULATORY COMPLIANCE

Activities associated with the completion of this project will be conducted in accordance with requirements of Delivery Order 0018. This Environmental Protection Plan fulfills the requirement identified in Part 4.0, Environmental Requirements, of the RAC, as well as the requirement identified in the Foster Wheeler Environmental Regulatory Compliance Policies and Procedures.

No environmental permits will be required for the these cleanup activities. However, compliance with applicable Federal and state environmental and construction regulations will be required. Discussion of applicable regulations and standards follows.

7.1 AIR POLLUTION CONTROL

Fugitive dust emissions may result from project operations. Consequently, the most manageable control technology will be used to control dust emissions. This will include keeping surfaces adequately wet during removal activities and covering soil stockpiles and waste hauling vehicles to prevent fugitive dust emissions. Additional controls are identified in Section 4.10 of the RAC. To assure compliance with state air pollution control requirements, all project activities will be conducted in compliance with Subpart C, Article III, Air Resources, of Title 25, Environmental Resources, Chapters 121 and 123, of the Pennsylvania regulations.

7.2 STORM WATER AND EROSION CONTROL

This section contains information about remedial activities that will require erosion and sedimentation control. Descriptions of all remediation activities can be found in Section 3.0 of this Work Plan.

7.2.1 Introduction

Construction activities for the various NAWC Warminster sites that may impact runoff requiring erosion and sedimentation controls include the following:

- Site preparation
- Excavation and load-out
- Soil staging activities
- Hauling activities
- Site restoration

Maintenance of the erosion and sedimentation controls during the project will be performed by Foster Wheeler Environmental. All controls will be inspected daily, as well as after each storm event. Inspection will be documented in writing in the project file.

7.2.2 Site 4

Site Preparation

The first task associated with site preparation is the construction of a silt fence in the areas indicated on the site map. The silt fence will be installed as shown on Figure 7-1.

Silt fence will be utilized as a temporary erosion and sedimentation control around the project areas as indicated on Figure 3-2. Silt fence will also be placed as necessary to accommodate site conditions at the direction of the Project Superintendent and/or Delivery Order Manager. The silt fence will be inspected and maintained throughout the course of the project.

The grate over the storm drains in the vicinity of Site 4 will be covered with plastic sheeting. A silt fence will be installed around the storm drain to prevent silt run off into the drain.

Other activities that will take place during the site preparation phase are construction of the soil stockpile area and construction of the temporary construction haul roads.

Excavation and Load-Out

A silt fence will be installed down gradient of the excavation activities on Site 4. The silt will parallel the trenches and will be located inside the facility grounds next to Patrol Road.

Dust control measures consisting of water spray will be implemented as necessary during excavation and other activities that generate dust.

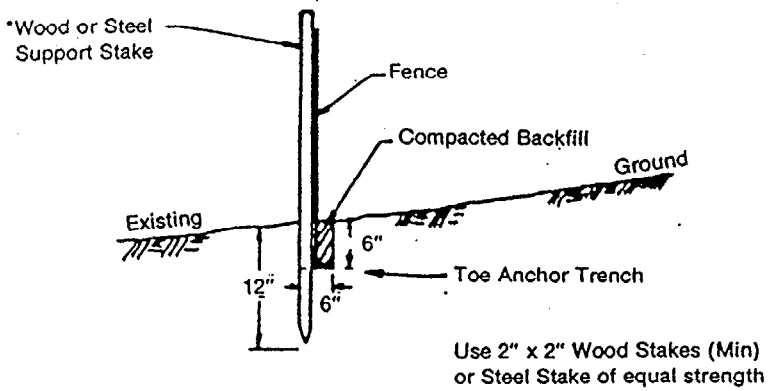
Soil will be directly loaded from the excavations onto the trucks to minimize the amount of open trenches and to reduce the amount of exposed soil.

Stockpile Staging Activities

The stockpile area will be located as indicated on the site map. This area will be used to stockpile excavated soil. The soil stockpile area will be constructed prior to excavation.

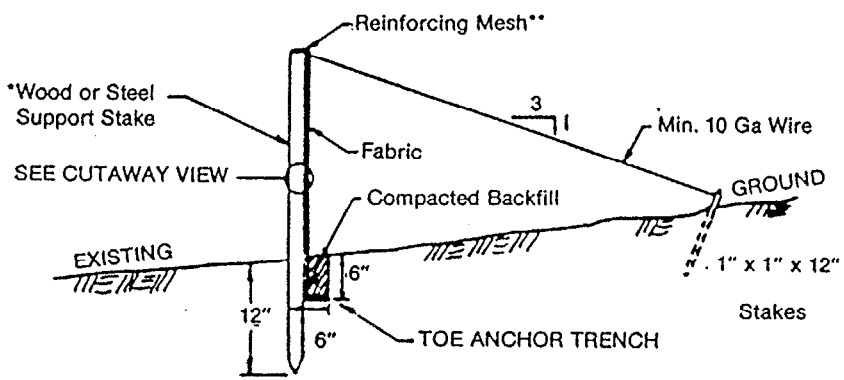
The stockpile area will be lined with 60 mil HDPE liner on which excavated soil will be placed. The liner will extend over the berm and beyond straw bales positioned around the perimeter of the stockpile area. The berm will help retain sediment and water inside the staging area. Additionally, plastic sheeting will be placed over the stockpiled soil within

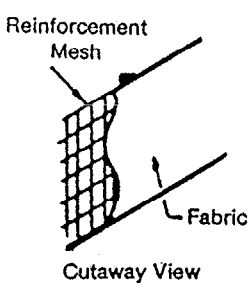
Filter Fabrics Fence Installation Details



*SPACING OF SUPPORT STAKES @ 8' MAX.

Standard Section 18" Min. Fence Height





**MESH: Either Industrial Polypropolene or Steel mesh w/Max 6" Opening = 1" - Min. 14 Ga.

* SPACING OF SUPPORT STAKES @ 8" MAX.

Reinforced Section 30" Min. Fence Height

FILTER FABRIC FENCE (SILT FENCE)

INSTALLATION:

(1) A trench will be plowed or otherwise excavated to the required depth with little, if any, disturbance to the downslope side of the trench. The bottom of the trench and the fence top will be placed at level grade.

(2) Support stakes will be driven to the 12" minimum depth below the existing ground surface, at 8' maximum intervals.

(3) Stretch and fasten fabric to the upslope side of the support stakes (if a reinforced section, fasten reinforcement mesh prior to fastening the fabric).

(4) Where ends of fabric come together, they will be overlapped, folded and stapled to prevent sediment bypass.

(5) The toe anchor will be backfilled and compacted to a density equal to surrounding soils.

(6) if constructing a reinforced section, attach guy wires to support stakes. Provisions should be made for easy loosening and removal of guy wires to allow for access to perform maintenance work.

MAINTENANCE:

(1) The fence installation should be inspected after every precipitation event and weekly. Any necessary repairs will be made immediately.

(2) Accumulated sediments will be removed as required to keep the fence functional. In all cases remove deposits where accumulations reach 1/2 the above ground height of the fence.

(3) All undercutting or erosion of the toe anchor will be repaired immediately with compacted backfill materials.

RESTRICTIONS:

(1) The formation of concentrated flows on the drainage slope above a filter fabric fence installation is not permitted. If concentrated flows do occur, direct slope stabilization measures must be employed to prevent such conditions.

(2) Filter fabric fences will not be placed in any area of concentrated flows such as ditches, swales, channels, etc.

(3) Filter fabric fences will not be used in areas where rock or rocky soils prevent the full and uniform anchoring of the fence toe.

(4) Filter fabric material will not be placed across the entrance to pipes or culverts and will not be wrapped around the principal spillway structures of sediment traps or basins.

U.S. Navy RAC
NAWC Warminster, PA

Figure 7-1
Filter Fabric Fence
Installation Details

FOSTER WHEELER ENVIRONMENTAL CORPORATION

the cell and secured using straw bales. Any water runoff will be transferred to a storage vessel.

The stockpile areas will be maintained throughout the course of the project. This includes maintaining the berm and liners. Additionally, work inside the area (i.e. earth moving activities) will be performed to maintain the integrity of the berm and liners.

Dust control measures consisting of water spray will be implemented as necessary during stockpile activities.

Hauling Activities

All waste disposal trucks will utilize the stabilized construction roads consisting of 6 inches of compacted gravel. A decontamination pad will be located in the vicinity of the stockpile area to rid trucks of dirt/mud and prevent material from being tracked off-site.

Site Restoration

Upon completion of remedial tasks associated with this project the site will be restored to its original conditions. Disturbed areas will be re-vegetated and re-planted as necessary to establish pre-construction conditions.

Silt fence will be installed on the up gradient side of the re-seeded and re-vegetated areas at Site 4 to prevent channeling or erosion caused by storm run-off.

Removal of the silt fence will be the final task associated with restoration activities and will only be done after vegetative cover has been established.

7.3 WASTE MANAGEMENT

Under federal law, solid wastes must be characterized to determine if they are regulated under the Resource Conservation and Recovery Act (RCRA). Federal regulations pertaining to identification and listing of hazardous wastes are contained in Title 40, Part 261 (40 CFR 261) and Pennsylvania regulations are found in 25 PA Code 261. Accordingly, a solid waste is a RCRA hazardous waste if it appears on the lists of "RCRA listed wastes", is mixed with or contains a listed waste, or exhibits one of the RCRA hazardous characteristics (ignitability, reactivity, corrosivity, or toxicity).

7.3.1 Solid Waste Management

Hazardous Waste

RCRA regulated hazardous wastes, if present will be placed into appropriate DOT approved containers for disposal. FWENC will prepare Waste Profiles, Hazardous Waste Manifests, LDR Notification Forms and othershipping documentation for Navy review

and signature prior to off-site disposal. Copies of certified weight tickets , TSDF signed manifests and all disposal documentation documents will be forwarded to the Foster Wheeler Project Manager .

If on-site storage of hazardous wastes is required, the proposed hazardous waste storage area will meet generator requirements for less than 90 day storage of hazardous waste as per 40 CFR 262.34:

- All stored hazardous wastes will be removed from the project site for off-site disposal within 90 days of first being accumulated .

- Each container will be marked with the date on which the accumulation period begins.

- All hazardous waste storage areas will be marked with signs stating "Hazardous Waste"

- For waste containers containing free liquids , the container storage areas will have a containment system capable of collecting and holding spills , leaks and precipitation. The containment system shall have an impervious base underlying the containers which is free of leaks, gaps or cracks. The capacity will be sufficient to contain the entire volume of the largest container or 10 % of the entire volume of all of the containers whichever is largest. Run on into the containment system will be prevented .Spilled or leaked waste and accumulated precipitation will be removed from the containment system in as timely a manner as necessary to prevent overflow of the containment system.

- For waste containers which do not contain free liquids, a secondary containment system will not be provided, however the storage area will be designed and operated to drain and remove liquid resulting from precipitation or the containers will be elevated and removed from contact with accumulated precipitation.

- Containers holding reactive or ignitable waste will be stored at least 50 feet (15 meters) from the property line.

- Each container of hazardous waste will be marked and labeled in accordance with US DOT requirements under 40 CFR 172.

- Hazardous Waste Containers will meet US DOT requirements under 40 CFR Parts 173, 178, and 179.

- Each container of hazardous waste of 110 gallons or less will be marked in accordance with US DOT requirements under 49 CFR 173.204 with the following:

HAZARDOUS WASTE-FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. If found contact the nearest police or public safety authority or the Environmental Protection Agency.

Generator name and Address _____
Manifest Document Number _____

- Waste will be placed in containers in good condition. If container begins to leak, the contents will be transferred from the defective container into a good container.
- The containers used will be made of or lined with a material that does not react with and is compatible with the waste.
- The containers shall remain closed during storage except when waste is added to or removed from the container.
- The containers will not be opened, stored, or handled in a manner which will cause the container to leak.
- The containers will be labeled to accurately identify their contents.
- The storage area and containers will be inspected at least weekly to identify leaks and/or deterioration. Inspection reports will be documented in writing.
- Incompatible wastes will not be placed within the same container or in an unwashed container that previously held an incompatible waste or material.
- A container holding a waste that is incompatible with other wastes or materials will be segregated from the other materials or protected by means of a an impermeable dike, wall, berm or other devise
- Upon project closure, all hazardous waste and hazardous waste residues will be removed from the containment system. The containment system will be decontaminated and all wastes will be disposed off-site at a permitted disposal facility.
- Appropriate hazardous training is provided to site personnel as per 40 CFR 265.16
- A Contingnecy Plan will be developed to handle any fire, spill ,or emergency and appropriate emergency response equipment (spill cleanup materials, fire protection equipment, communication devices and alarms to notify workers of an emergency are) will be present as required under 40 CFR 265 Subparts C & D .

Hazardous wastes will be removed during this project. They will be managed in accordance with the storage and disposal provisions of federal and state regulations and the NAWC Warminster hazardous waste management plan. Therefore, following identification and classification of the waste materials, an assessment will be made of the applicability of other state and federal hazardous waste regulations. Pennsylvania regulations applicable to the conduct of this project are contained in Subpart D, Article III, Hazardous Waste Management, of Title 25 of the Pennsylvania regulations, and include Chapter 261, Criteria, Identification, and Listing of Hazardous Wastes, Chapter 262, Generators of Hazardous Waste, and Chapter 263, Transportation of Hazardous Waste. Applicable federal regulations are contained in 40 CFR Parts 260-268.

If not done previously by the Navy, a Notification of Hazardous Waste Activity, as required by 40 CFR 261.41, will be transmitted to the EPA. Waste manifests and shipping papers will be prepared for all hazardous wastes generated during this project. Waste codes and EPA ID numbers necessary for preparing these documents will be provided by the Navy. Final determination of waste classifications will be based on Pre-Mobilization Sampling and Analysis, as described in Section 5.0 of the Work Plan.

Decontamination of personnel and equipment will be conducted according to procedures outlined in the site-specific Health and Safety Plan.

On-site management of hazardous/toxic waste must comply with the specific requirements detailed in other site documents, such as the site-specific Health and Safety Plan. Removal operations for soil, waste material, and debris will be conducted under the worker protection provisions of regulations promulgated by the Occupational Safety and Health Administration (OSHA) in 29 CFR Parts 1910 and 1926.

Non-Hazardous Wastes

Waste materials that are determined to be non-hazardous will be managed in compliance with Subpart C, Article I, Chapter 75, Solid Waste Management; Article VIII, Chapters 271, Municipal Waste Management, 277, Construction/Demolition Waste Landfills, and 287, Residual Waste, of Title 25 of the Pennsylvania regulations; and applicable local regulations.

7.3.2 Decontamination Water Management

Generation of decontamination water will be kept to a minimum to reduce the overall handling and storage problems, and also to lower disposal costs. All decontamination water from equipment cleaning will be collected and disposed at a TSDF approved by Foster Wheeler Environmental and the Navy unless approved for discharge to the ground. Storage of the water will be done in accordance with Navy, State and Federal regulations when applicable.

7.4 TRANSPORTATION

To ensure safe transport of the waste, only transporters who have demonstrated competence and the required license and permits for transporting waste will be used. Foster Wheeler Environmental policies and procedures for subcontracting will be followed. Transporter EPA/State Identification Numbers will be kept in project and compliance files. All trucks will be covered to prevent fugitive releases of material during transport; trucks transporting hazardous wastes will also be lined. All trucks leaving the site will be inspected prior to their departure by Foster Wheeler Environmental personnel to ensure that the hauler displays the appropriate placards and has covered the material.

Hazardous material must be properly classed, described, packaged, marked, labeled and in condition for shipment as required by 49 CFR 171.

Waste that does not exhibit one of the nine DOT hazard class characteristics (i.e., explosive, flammable, poison, combustible, etc.) is not regulated under DOT rules for the transportation of hazardous material. If waste is suspected to be hazardous, then it must be shipped under the suspected hazard class. If a particular hazard class is unable to be determined, then the soil or water may be shipped under one of the following hazard classes:

Shipping Name	Hazard Class	ID Number	Packing Group	Label
Environmentally hazardous substances, liquid, n.o.s.	9	UN3082	III	CLASS 9
Environmentally hazardous substances, solid, n.o.s.	9	UN3077	III	CLASS 9

When using either one of these "n.o.s." (not otherwise specified) shipping names, at least two technical names must follow (i.e., "Environmentally hazardous substances, liquid, n.o.s. [Benzene and Acetone]").

The shipping name, identification number, packing group, instructions, cautions, weights, EPA waste code numbers and consignee/consignor designations must be marked on packages for shipment. Labeling provides information regarding the DOT hazard class. The DOT hazardous label to be placed on material will depend upon the waste characteristics. Once the waste is characterized, reference should be made to the Hazardous Materials Table in 49 CFR 172.101 to determine the appropriate label. The package (or drum) must be marked and labeled as specified in 49 CFR 172.301.

The person offering hazardous material for shipment must offer placards (49 CFR 172.506). Any quantity of material listed in Table 1 of the regulations must be placarded. However, if there is less than 1,000 lb. of a Table 2 material, no placard is required. A Class 9 placard is not required for domestic shipments, only for international shipments. If a placard is

required, the label referenced above must be affixed on each side and each end of the vehicle(s).

Hazardous material shipping papers must have the following description of the hazardous material, in the following order:

- Letters "RQ" if a DOT reportable quantity is encountered in a container;
- Proper shipping name;
- Hazard class or division;
- Identification number;
- Packaging group;
- Total quantity (must appear either before or after the above information);
- Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class or following the basic description (e.g., "Flammable liquids, n.o.s. [contains xylene and benzene], 3 UN1993, PG II").

Other required information includes:

- Generator, TSDF and transporter EPA identification numbers;
- EPA waste codes;
- Emergency Response Guidebook numbers;
- 24-hour emergency response number, supplied by the generator and answered by a knowledgeable person;
- Signatures; and,
- Shipper's certification.

7.5 DISPOSAL

Each waste stream generated during this project will be evaluated to ensure that it meets the waste acceptance criteria and packaging requirements for the proposed treatment, storage, and disposal (TSD) facilities prior to transport. Hazardous/toxic waste will be transported off-site to a Navy approved, permitted hazardous waste landfill.

If subcontracted by Foster Wheeler Environmental, the disposal facility must be approved under Foster Wheeler Environmental Subcontracting Procedures which require that the disposal facility:

- Is in compliance with RCRA or other applicable federal and state laws;
- Is not releasing any hazardous wastes, hazardous constituents or hazardous substances;
- Meets minimum technology requirements; and
- All releases, including environmentally significant releases at non-receiving units, at the facility must be addressed by a corrective action program.

The facility must demonstrate a properly designed system, and must presently operate (and historically have operated) in a manner that controls the types of materials accepted for disposal. Invoices will be returned by the landfill operators verifying that the waste was received and properly disposed.

Foster Wheeler Environmental will be responsible for preparation of the waste disposal manifests. The manifests will be reviewed and signed by the Navy as shipper and generator of the waste. Manifests will be carried by the transporters and must include the following:

- The generator's name, mailing address, site address if different from the mailing address, and phone number;
- The generator's EPA I.D. number;
- The hauler (or haulers) name, phone number;
- The hauler (or haulers) EPA I.D. number;
- The treatment, storage or disposal facility's name, address, and telephone number (designated facility);
- The treatment, storage, or disposal facility's EPA I.D. number;
- The name, type, and quantity of hazardous waste being shipped (proper DOT shipping name, hazard class, and I.D. number);
- Special handling instructions and any other information required on the form to be supplied by the generator;
- When shipping hazardous waste to a waste reuse facility, the generator must enter the waste reuse facility I.D. number in section G;
- The proper codes that accurately describe the shipment of hazardous waste; and
- Any additional TSDF required information, profile numbers, authorization, etc. Will be entered onto the manifest in accordance with individual TSDF requirements.

Before allowing the manifested waste to leave the property, a Navy representative must:

- Sign the manifest certification by hand;
- Obtain the handwritten signature of the initial hauler and date of acceptance on the manifest;
- Retain one copy for the Navy's records;
- Mail one copy each to the TSDF's and generator's state regulatory agency; and,
- Give the remaining copies of the manifest form to the hauler.

7.6 EMERGENCY RESPONSE AND SPILL CONTROL

An emergency response section is included as a part of the site-specific Health and Safety Plan (HASP). This plan is designed to prevent the spread of contaminants to adjacent, populated areas and to delineate contingency procedures to be used in the event of injuries

to employees or other site-related accidents. Off-site contamination could occur as a result of an accidental release or spillage of contaminated materials. The emergency response section includes the procedures which will be used to mitigate the harmful effects of such a release as well as rescue and first-aid services to be rendered.

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

Spills and releases will be reported according to procedures outlined by the Navy, the site-specific Health and Safety Plan, and the Foster Wheeler Environmental Procedures on Reporting Spills and Releases RC-6. The Spill/Release Coordinator (Project Superintendent) will contact the company Regulatory Affairs Advisor who will determine whether any spills/releases are reportable and provide guidance on reporting procedures.

8.0 PROJECT MANAGEMENT

The project management team will be responsible for all technical and administrative aspects of the remediation project. Included among the team's responsibilities are scheduling, staffing, data management, supervision of Foster Wheeler Environmental personnel and subcontractors, document control, project meetings, and reporting.

Subcontractors used by Foster Wheeler Environmental for this project will be expected to follow all project plans submitted as part of the NAWC Warminster project. Failure by a subcontractor to meet these requirements may result in their immediate termination from the project.

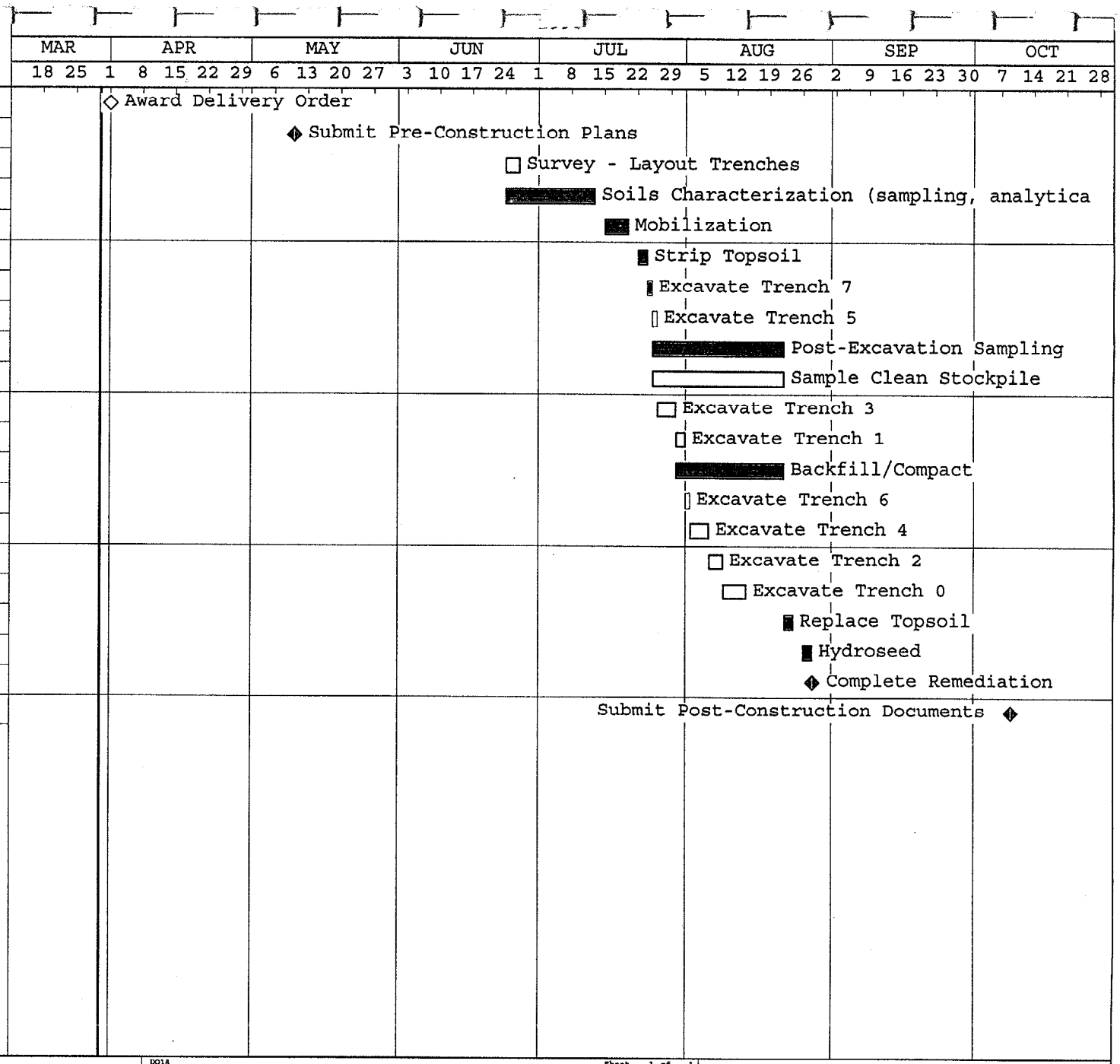
8.1 PROJECT SCHEDULE

Figure 8-1 depicts the integrated project schedule. Pre-Mobilization Sampling will occur after Navy approval of the HASP and the Work Plan. General mobilization will not occur until after the analytical results for the Pre-Mobilization Sampling are received from the laboratory.

8.2 PROJECT STAFFING PLAN

Figure 8-2 depicts the project organization chart. This chart has been organized to depict technical and administrative functions as well as lines of communication and reporting for the project. The on-site project staff will include a Project Superintendent and a Site Health and Safety Officer. Resumes for the identified staff are located in the Work Plan as Appendix B. Craft staffing is discussed in Section 3.2.2 of the Work Plan.

EARLY START	EARLY FINISH	REM DUR	
1APR96		0	Award Delivery Order
10MAY96		0	Submit Pre-Construction Plans
24JUN96	26JUN96	3	Survey - Layout Trenches
24JUN96	12JUL96	15	Soils Characterization (sampling, analytica
15JUL96	19JUL96	5	Mobilization
22JUL96	23JUL96	2	Strip Topsoil
24JUL96	24JUL96	1	Excavate Trench 7
25JUL96	25JUL96	1	Excavate Trench 5
25JUL96	21AUG96	20	Post-Excavation Sampling
25JUL96	21AUG96	20	Sample Clean Stockpile
26JUL96	29JUL96	2	Excavate Trench 3
30JUL96	31JUL96	2	Excavate Trench 1
30JUL96	21AUG96	17	Backfill/Compact
1AUG96	1AUG96	1	Excavate Trench 6
2AUG96	5AUG96	2	Excavate Trench 4
6AUG96	8AUG96	3	Excavate Trench 2
9AUG96	13AUG96	3	Excavate Trench 0
22AUG96	23AUG96	2	Replace Topsoil
26AUG96	27AUG96	2	Hydroseed
28AUG96		0	Complete Remediation
9OCT96		0	Submit Post-Construction Documents



Plot Date 20JUN96
Data Date 30MAR96
Project Start 30MAR96
Project Finish 8OCT96

(c) Primavera Systems, Inc.

Activity Bar/Early Dates
Critical Activity
Progress Bar
Milestone/Flag Activity

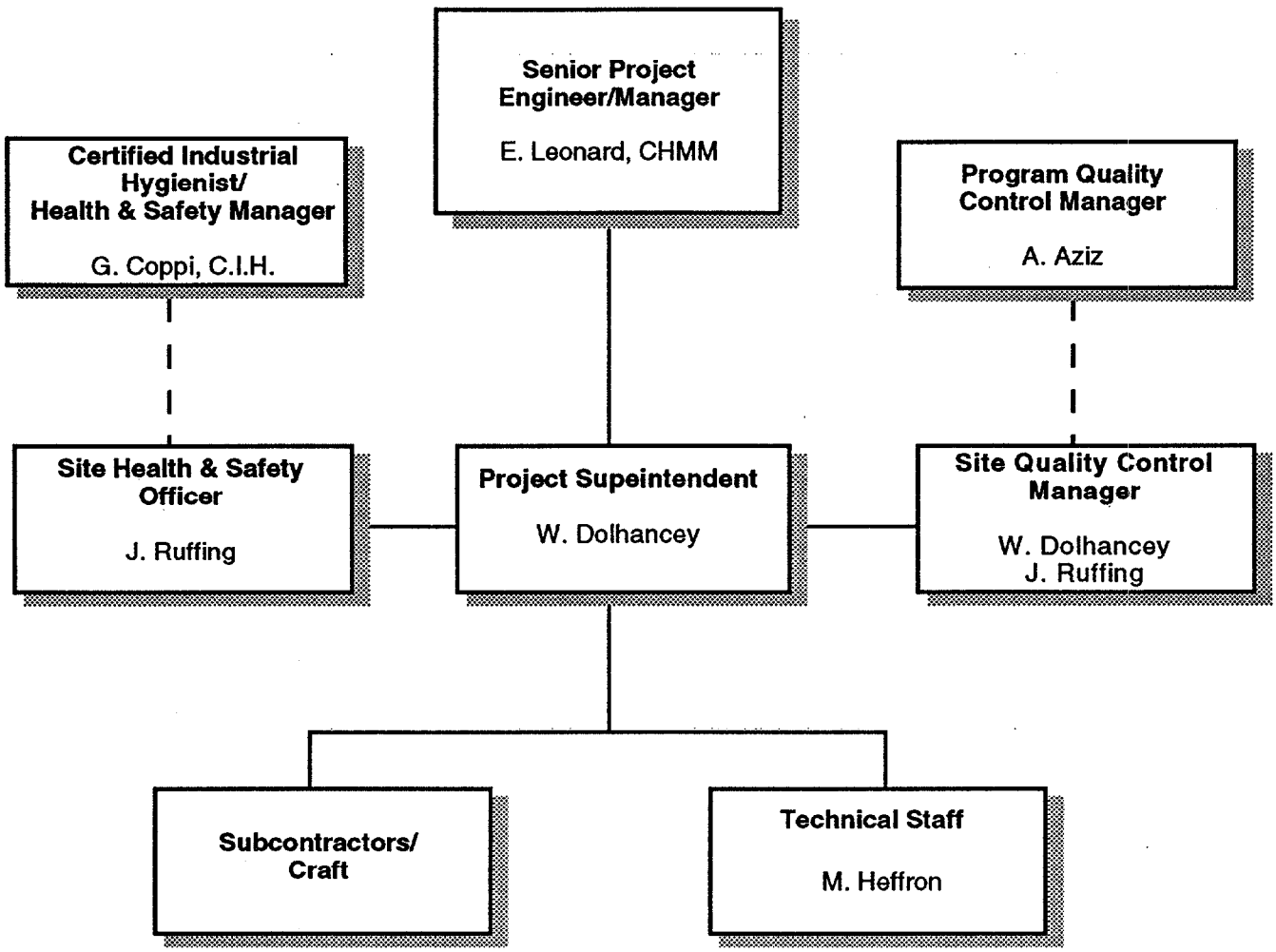
D018

Sheet 1 of 1

FOSTER WHEELER ENVIRONMENTAL CORP.
D.O. #18 - WARMINSTER NAWC SITE 04
PRELIMINARY SCHEDULE
FIGURE 8-1

Date	Revision	Checked	Approved

Figure 8-2
NAWC Warminster, PA
Project Organization Chart



Notes:

1- Mr. Ruffing will be the SHSO during the premobilization surveying and sampling phase. A seperate SHSO will be designated during the remediation phase.

2- Site QC will be performed by Mr. Ruffing during the premobilization and sampling phase, and Mr. Dolhancey during the remediation phase.

8.2.1 Project Superintendent

This individual will be Foster Wheeler Environmental's lead on-site. The Project Superintendent (PS) will interface with the Navy's Resident Officer In Charge Of Construction (ROICC). The PS will coordinate all daily site operations and ensure implementation of the Site-Specific Health and Safety Plan. The PS will complete on-site QC responsibilities and will communicate with the Quality Control Manager and Project Manager.

8.2.2 Site Health and Safety Officer

This individual will assist the PS in the enforcement of the Health and Safety Plan, air monitoring, training, and coordination of medical surveillance for all site personnel. The SHSO has a direct reporting line to the PS and a communication line to the program Health and Safety Manager. The SHSO also has "stop work" authority if unsafe conditions arise.

8.2.3 Quality Control Manager

The Quality Control Manager (QCM) is responsible for ensuring that all work is performed with the contract and delivery order specifications. The QCM reviews and approves submittals before delivery to the Navy and maintains the submittal register (Appendix C).

8.3 MEETINGS

Construction meetings as required by the contract, daily safety meetings and weekly progress meetings with on-site subcontractors when applicable will be implemented.

8.3.1 Pre-Construction Meeting

A Pre-Construction Meeting will be held before the start of each specific task associated with Delivery Order 0018 to discuss coordination and logistical problems which may present themselves during the project. Those likely to attend the meeting will include the following Foster Wheeler Environmental and Navy personnel:

Foster Wheeler Environmental Personnel

- Delivery Order Manager
- Project Superintendent
- Site Health and Safety Officer
- Key Subcontractor Personnel

NAWC Warminster Personnel

- ROICC
- Facility T & D Coordinator
- Key Third Party Sampling Contractor Personnel

Meeting minutes will be kept by Foster Wheeler Environmental personnel and submitted as part of the daily report.

8.3.2 Construction Meeting

After mobilization and the start of construction, the Project Superintendent will conduct a meeting every two weeks. Notification to the Navy will be provided 48 hours in advance of each meeting; minutes will be prepared and distributed within two working days. The following agenda will be followed:

- Review minutes of previous meeting
- Review schedule and the status of work
- Review the status of submittals
- Preview two week look ahead
- Resolve QC and production problems
- Review/resolve health and safety issues

8.3.3 Daily Safety Meeting

Prior to starting work, a daily safety meeting will be conducted by the SHSO or PS. All of the day's planned activities will be reviewed with particular attention focused on PPE and risk. All personnel are required to attend the meeting. An attendance signature sheet will provide documentation of attendance. Additional information is provided in the health and safety plan.

8.3.4 Problem or Work Deficiency Meetings

A special meeting may be held if a major problem or deficiency is discovered or found to be likely to occur. The meeting will be attended by the Project Superintendent, SHSO, Subcontractor's lead person, the ROICC and any other relevant individuals deemed necessary. The purpose of the meeting will be to define and resolve the potential problems or deficiencies as follows;

- Define and discuss the problem or deficiency;
- Review alternative solutions and the effects on the schedule; and,
- Resolve the matter and implement a plan to correct it.

The minutes will be issued by Foster Wheeler Environmental personnel and distributed to those attending the meeting.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

At the Navy's request, the Project Superintendent will provide on-site QA/QC support and will interface with the Quality Control Manager. Documented physical inspections, direct air monitoring results and confirmatory laboratory analytical results will document the work is performed in accordance with the project plans. All subcontractors will conform to and participate in the QA/QC program described within this document. Foster Wheeler will direct and maintain overall execution of the QA/QC program; and, will manage and coordinate subcontractors in a manner which maintains project QA/QC requirements. A full QC Plan was submitted under a separate cover.

9.1 PERSONAL TRAINING REQUIREMENTS

Training requirements for personnel working on this project are identified in the site-specific Health and Safety Plan.

9.2 INSPECTION AND AUDIT PROCEDURES

9.2.1 Preparatory Inspection

A preparatory inspection will be performed at each major definable stage of remediation. A preparatory inspection will typically include the following activities:

- Review of the Work Plans, AHAHs, and Standard Operating Procedures;
- Examination of the particular work area to ascertain that all preliminary work, allowing the next phase of work to occur, has been performed;
- Verification of all field dimensions;
- Physical examination of material, i.e., common fill, topsoil and equipment to verify their presence in sufficient quantities and conformance to submittals and work plans; and
- Verification of proper manifest or bill of lading and acceptance of waste by disposal facility.

The Delivery Order Manager will be kept advised of inspection results. Deficient work activities may demand a more rigorous schedule of reinspection, continuous inspection or a work stop order until resolution has been achieved. Deficiencies and the results of follow-up inspections will be documented on the appropriate inspection sheet.

9.2.2 Completion Inspection

The Project Superintendent and SHSO will jointly conduct a completion inspection at the completion of all work or any increment of work as established by the work plans and Standard Operating Procedures. Any punchlist items will be reviewed to ascertain that all items have been completed and corrected. The Navy may elect to accompany the

inspection team or perform supplemental QA inspections. Any observations of non-conformance noted will be processed by the Project Superintendent and resolved in a timely manner, and as needed, identified in a final punchlist. Final inspection items may include compaction testing, material conformance and installation, final grades achieved, grass growth, receipt of disposal manifests, weight slips and others.

9.2.3 Audit Procedures

Site personnel should contact the Site Superintendent if approached by regulatory agency personnel. The Project Superintendent will immediately contact the Delivery Order Manager who will in turn notify the Foster Wheeler Environmental Regulatory Affairs Advisor (RAA). All Foster Wheeler Environmental personnel shall follow the Corporate Compliance Procedures for Environmental Inspections by Regulatory Agencies.

Any outside party requesting access to inspect the site should be referred to the Project Superintendent, who will initiate the appropriate notification of the Delivery Order Manager, the Navy ROICC, and the RAA. Foster Wheeler Environmental personnel or their subcontractors will not grant site access or answer questions for unauthorized personnel.

9.3 CHANGE AND NON-CONFORMANCES

9.3.1 Changes in Project Plans

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

A Field Change Request (FCR) form is generated by project field staff in response to these changes. The FCR is processed by the Project Superintendent in accordance with established Foster Wheeler Environmental engineering procedures. FCRs will be reviewed and approved by the Navy. Once approved, the FCR acts to supersede the pertinent sections of the Work Plan.

9.3.2 Non-Conformances and Resolutions

It is possible that non-conforming conditions will arise during project field activities. Such conditions are defined as activities which potentially do not conform to the Work Plan. Non-conforming conditions could involve ongoing or completed work. The steps by the Project Superintendent or any site staff member to address a potential non-conformance would involve the following, in the order listed:

- The potential non-conformance is verbally brought to the attention of the project staff involved, and then, if needed, is documented in the form of a Performance Evaluation Report (PER). The PER identifies the possibility of a non-conformance, to be addressed and resolved by the DOM and Project Superintendent.

- If the PER is determined to be a non-conformance, then a Non-conformance Report (NCR) will be issued. The QA Officer will be informed, and the Delivery Order Manager and Project Superintendent will immediately address the NCR. These individuals will work to resolve the issue expeditiously to avoid impacting worker and public health and safety.

- If overall project safety or technical integrity is at risk, then additional discussions with the SHSO and higher levels of the Foster Wheeler Environmental chain-of-command will take place, as needed, involving the QA Officer, Project Health and Safety Officer and Project Sponsor.

A written response to the NCR must be made within seven (7) days, unless otherwise agreed to by all parties. The mechanism for response will be an FCR.

If proposed corrective actions are deemed insufficient by the QA Officer, or corrective action cannot be reached, or results of prior work are indeterminate, and significant project environmental or health and safety consequences are anticipated, work may then need to be halted by issuing a Stop-Work Order. However, this step would involve only those affected portions of site work, and would be invoked only for reasons of protecting worker safety and overall technical integrity of the project. A stop-work order should only be issued after all reasonable efforts at resolution have been exhausted through the Foster Wheeler Environmental chain-of-command.

9.4 SUBMITTALS

During the project planning stage, Foster Wheeler Environmental will outline all submittals in the Submittal Register which is required to support the delivery order.

9.4.1 Submittal Register

As part of the pre-construction submittals, a submittal register will be completed for review and approval by the Navy. The Quality Control Manager will maintain the submittal register. The project submittal register is included as Appendix C of this Work Plan.

9.4.2 Reviewing, Certifying, Approving Authority

The Quality Control organization will be responsible for reviewing and certifying that submittals are in compliance with the contract requirements. The approving authority will be Mr. Akram Aziz, Quality Control Manager (QCM). The Project Superintendent will interface with the QCM to make sure submittals are submitted to all required Navy personnel. All submittals will be accompanied by a transmittal form which will identify the submittal package and provide a unique tracking number. The proposed transmittal form is included as Figure 9.1.

9.5 REPORTING AND DOCUMENTATION

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

9.5.1 Daily Reports

As part of the QA/QC requirements, the Project Superintendent will be required to submit a daily production report for the previous days activities to the ROICC office. The report will include all the previous days activities, health and safety incidents, QC review of project and any other relevant events which occurred the previous day. Copies of transportation or sampling documentation occurring that day will also be attached as part of the report. This report will be submitted within 24 hours of the activities.

9.5.2 Photographic Documentation

Still 35mm color photographs will be taken periodically to record pre-construction, construction progress, and postconstruction conditions. Preconstruction photographs will depict the entire site and those off-site facilities which are susceptible to damage from construction activities (e.g., egress roads). Progress photographs will be taken from these same locations, if possible, so that each sequence of photographs will be taken from the same perspective. Progress photographs will be taken periodically to show significant milestone events, unique operations or non-conformance events.

Each set of photographs taken will be recorded in a photograph log with the following information:

- Date photograph was taken;
- Initials of photographer; and
- Description of view shown on photograph.

9.5.3 Operations Record

All inspections and testing activities performed will be documented with appropriate forms which address each work activity inspected by the Project Superintendent according to established acceptance criteria. The Project Superintendent will maintain current records of quality control operations, activities and test performed, including the work of subcontractors and suppliers. These records will include factual evidence of required quality control activities including the following:

- Work performed daily, giving location, description and by whom.
- Results of test and/or quality control activities performed with results and references to specifications/plan requirements. The control phases involved per definable feature of work will be identified (e.g., preparatory, completion). Any deficiencies, along with corrective action, will be noted.
- Material received with statement as to its acceptability and storage.
- Submittals reviewed, with contract reference, by whom and action taken.
- Results, instructions and/or corrective actions taken as a result of specific job safety evaluation.
- Any instruction given or received, conflicts in plans or specifications and status of resolution.
- Subcontractor's verification statements and certifications.
- Completed Field Change Requests.
- PERs and NCRs.
- QC Daily Log.
- Photographic Log.
- All measurements performed on the excavations.

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

9.5.4 As-Built Drawings

During the course of work, the Project Superintendent will complete as-built markups on-site layout drawings. As-built drawings will contain limits of the excavated areas and depths. Confirmatory sample locations conducted during the termination survey on soils will also be indicated.

9.6 TESTS AND INSPECTIONS

9.6.1 Production Testing

Table 9-1 presents a representative listing of QC/QA test requirements and frequencies associated with geotechnical activities, which are conducted under the direction of site construction staff.

TABLE 9-1
NAVAL AIR WARFARE CENTER
WARMINSTER, PA - DO #0018
MATERIAL TESTING REQUIREMENTS

Material to be Tested	*Parameter to be Tested*	*Test Methodology*	*Frequency*
Fill Source Testing	Compaction Characteristics	ASTM D698	One test for each source
In-situ Placement	In-place field density	ASTM D2922	One test per lift to demonstrate method of compaction is 85% of maximum density. After initial testing demonstrates acceptable density, no further testing will be required, provided the same method of compaction is utilized.

APPENDIX A

STANDARD OPERATING PROCEDURES FOR SURFACE SOIL SAMPLING, SUBSURFACE SOIL SAMPLING AIR SAMPLING AND DECONTAMINATION PROCEDURES

APPENDIX A
STANDARD OPERATING PROCEDURES
for
SURFACE SOIL SAMPLING, SUBSURFACE SOIL SAMPLING, AIR SAMPLING AND DECONTAMINATION PROCEDURES

SURFACE SOIL SAMPLING

Surface Soil Sampling Procedures

Surface soil samples will be obtained using a dedicated, disposable, stainless steel scoop, spoon or trowel to avoid cross contamination and minimize decontamination of sampling equipment. The following procedures apply to the collection of surface soils from a depth of 0-6 inches using a stainless steel scoop, spoon or trowel:

1. Wear protective gear as specified in the Health and Safety Plan. Samplers will don new sampling gloves prior to sampling at each new location.
2. Use a dedicated stainless steel scoop/spoon/trowel to scrape away surficial organic material (grass, leaves, etc.)
3. Obtain soil sample using the scoop/spoon/trowel by scooping soil from the surface to 3 inches below the surface.
4. Empty contents of the scoop/spoon/trowel into a dedicated stainless steel pan.
5. Fill volatile sample bottles immediately so as not to compromise sample integrity.
6. Homogenize soil in the pan using a dedicated utensil and transfer samples into the appropriate containers. Homogenization will be completed as per the following procedure:

   After collection of the volatile sample(s), the soil in the pan will be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The soil will be quartered and moved to the four corners of the pan. Each corner will then be mixed individually, and when completed be rolled to the center of the pan and mixed once again.

7. Fill appropriate sample containers with homogenized materials randomly selected.
8. Place analytical samples in cooler and chill with ice. Samples will be shipped within 24 hours to the designated laboratory.
9. Fill out field logbook, custody seals, labels, and Chain-of-Custody forms.

SUBSURFACE SOIL SAMPLING

Subsurface Soil Sampling Procedure

Subsurface soil samples are defined as samples collected from a depth greater than 0.5 feet. For subsurface soil sampling, the following procedures will be used:

1. Wear appropriate health and safety equipment as specified in the site-specific HASP.
2. Drill a borehole to the desired sampling depth.
3. Drive a carbon steel split-spoon sampler into the undisturbed soil which is to be sampled. A decontaminated split-spoon sampler will be used for each sample collected for chemical analyses.

4. Bring the sampler to the surface and remove both ends and one-half of the split-spoon so that the recovered soil rests in the remaining half of the barrel. Place the split-spoon on clean polyethylene sheeting.
5. Fill the sample containers with soil using stainless steel spatulas or spoons. VOA samples are to be taken as discrete grab samples. These will be taken immediately from the entire length of the split-spoon (as appropriate, and properly packaged. Solid samples for all other chemical analyses must be homogenized in decontaminated stainless steel bowls with stainless steel utensils prior to being put into containers. Appropriately label each sample container.
6. Place the analytical samples in a sample cooler and chill to 4°C.
7. Complete the necessary sampling paperwork (e.g., sample labels, custody seals, chain-of-custody forms, etc.) for the analytical samples. Record sample information in the field logbook.

Shallow Subsurface Soil Sampling Procedure

Shallow subsurface soil samples are defined as samples collected from a depth greater than 0.5 feet using a stainless steel hand auger. For shallow subsurface soil sampling, the following procedures will be used.

1. Collect the surface soil sample (i.e., 0-0.5 feet) following the steps outlined above.
2. Use a decontaminated hand driven stainless steel bucket auger.
3. Begin turning the auger with a clockwise direction and continue until the desired sampling depth (i.e., 0.5-1.5 feet) is obtained (this would be achieved in a minimum of one attempt since the hand auger bucket is 1 foot long).
4. Fill the sample containers with soil using stainless steel spatulas or spoons. VOA samples are to be taken as discrete grab samples. These will be taken immediately from the entire length of the split-spoon (as appropriate, and properly packaged. Solid samples for all other chemical analyses must be homogenized in decontaminated stainless steel bowls with stainless steel utensils prior to being put into containers. Appropriately label each sample container.
5. Place the analytical samples in a sample cooler and chill to 4°C.
6. Complete the necessary sampling paperwork (e.g., sample labels, custody seals, chain-of-custody forms, etc.) for the analytical samples. Record sample information in the field logbook.

AIR SAMPLING

Meteorological Station

Setup

1. Set up meteorological tower in a grassy area away from obstructions.
2. Guy the tower legs and place sandbags on them for additional stability.
3. Using the clamps provided attach the blue box containing the data logger to the tower.
4. Using the knuckle assemblies and hex keys provided install the crossarm. Install it in an east-west orientation and make sure that it is level.
5. Install the wind vane, anemometer, and temperature sensors. Make sure all sensors are perpendicular to the crossarm. Set the wind vane to true north. Use appropriate temperature scale (on temperature card).
6. Attach sensor cables from the data logger to each sensor. Use cable ties to attach cables to the tower and the crossarm.
7. Place a 12 volt deep cycle marine battery in a weather protective container.
8. Using one red and one black 14 gauge wire connect the battery to the data logger.
9. Install the pressure sensitive chart paper. Label the chart with the following information: date/time (EST), operator's name, site name/job name, parameters recorded.

10. Turn power switch to DC.
11. Remove the set screw on the wind vane prior to operation.

Operation

1. Upon arrival at the site, make a general inspection of the area. Note any irregularities to the sampler and the surrounding area. If the irregularities are major contact the Project Manager. If the conditions are satisfactory, continue with the following steps.
2. Turn the power switch on.
3. Make sure all red switches on the sensor cards are in the down position and that the recorder is cycling through all of the data channels.
4. The meteorological monitoring system is very reliable and requires little operator attention. However, it should be inspected during each site visit to verify that values being recorded are representative of actual conditions. Estimate the value of each parameter and compare it to the indication from the data logger.
5. Initial the chart and indicate the date and time on the chart during each site visit.

Air Samplers

Set-up

1. The air sampler should be positioned with the intake upward and located in an unobstructed area at least 30 cm from any obstacle to air flow.
2. The sampler cradle is designed to mount onto a standard 1 1/4 inch antenna mast or comparable metal tubing. The mast should be strapped securely to some other suitable structure - pole, fence post, etc.
3. Before transporting the sampler to the field perform a laboratory check to determine if it is operational. Turn the sampler on and observe the motor performance. Check all tubing for crimps, cracks, or breaks. Conduct a flow check with a "dummy" filter in place to emulate the load against the sampler pump.
4. Initially, and after every seventh sample, the impaction stage should be cleaned and regreased. This frequency should be increased or decreased depending on the ambient loadings and degree of soiling observed on the impaction stage.

Installing Filters

Contact with and handling of all filters should be limited to the edges of the filters. Forceps should be used for filter handling. Unexposed filters must never be bent or folded. Use the pre-weighed filters in the same numbered sequence in which they arrived.

1. Select a filter and remove cover from petri slide.
2. Using forceps, install the new filter onto the filter support grid, taking care not to shred or damage the edges of the filter.
3. Replace the slip ring, lining up the notches on the ring with the holder so that the ring does not move.
4. Replace preseparator adapter and screw down snugly.
5. Place an identifying tag on the filter holder so that the ID of the filter mounted in the holder is known.
6. Place a clean plastic bag over the top of the preseparator adapter inlet and push the rain cap snugly into place over the bag.
7. Place the entire clean filter assembly into a second plastic bag, or other case, for transporting to the site. It is best to keep the filter assembly in a vertical position until installed on the sampler.

Changing/Installing Battery Pack on Sampler

1. Place charged battery pack beside sampler.
2. Unclasp two side latches at base of sampler.
3. Lift sampler off used battery pack and place sampler on charged battery pack. Note: The pin on the sampler closest to a side clip inserts into the odd cplored receptacle on the battery pack.
4. Reclamp the two side latches.

Sampling Procedure

1. Carefully transport the sampler to the field site.
2. Place sampler on a firm level surface.
3. Remove the clean filter assembly from the plastic transport bag and attach at quick-connect.
4. Record the number of the clean filter assembly on the Field Data Sheet and also record the battery ID.
5. Unscrew either cap of bail assembly bar and remove bail assembly.
6. Lift pump and timer assembly out of the 6" diameter top cap and rest on the edge of the sampler casing, taking care not to pull the connecting wire loose, or jar the pump hose fittings. Hold the top cap and do NOT grasp the center of the circuit board.
7. To obtain the beginning flow rate, press the ON/AUTO/OFF button to start the pump. On the LCD display, the horizontal bar should move to "ON".
8. If the rotameter, which should be in the vertical position, indicates zero or a very low reading, check for restrictions in the tubing, or improperly seated screw fittings between the pump and the rotameter.
9. Check that air is moving throught the filter assembly by removing the rain cap and placing palm (or heavy mil plastic bag) over the flow nozzle. The rotameter should drop to zero. If the rotameter does not reach zero but reads less than two hundred ml/min, this is adequate. If the rotameter does not drop, check that the quick-connect which attaches the sampling module to the air inlet is securely connected. Check all filter holder joints and hose connections. Verify that the filter assembly is not leaking air from below the filter.
10. Using the flow adjustment control, set the rotameter flow within specifications for the project temperature and pressure conditions as indicated by the sticker attached to the rotameter during calibration.
11. Press the ON/AUTO/OFF button twice to stop the pump.
12. Press the ON/AUTO/OFF button to set the timer to "Auto" mode. The sampler must be in Auto mode before the operator leaves.
13. Place pump and timer assembly back into sampler body. Replace bail assembly.
14. Raise the sampler to the cradle as vertically as possible.

Recovery and Preparation of Sampler

1. Remove the sampler from the cradle as vertically as possible.
2. Place the sampler on a firm level surface.
3. Unscrew either cap of the bail assembly bar and remove the bar.
4. Lift pump and timer assembly out by the top cap and rest on the edge of the sampler body, taking care not to pull the connecting wire loose. Hold the top cap.
5. Verify correct time and day of week on time LCD.
6. Record elapsed time as shown on the elapsed time accumulator.

7. Obtain ending flow rate:
   Press the ON/AUTO/OFF button twice to start the pump.
   With the rotameter in a vertical position, record flow rate to the nearest 10th of l/min.
   Press the ON/AUTO/OFF button twice to stop the pump.
8. Place pump and timer assembly into the sampler body. Replace bail assembly.

Removal of Filter

1. In the laboratory (clean room or staging area) unscrew the filter holder ring from the top of the exposed filter assembly.
2. Locate petri slide with filter number which matches the number on the side of the filter holder. This is the original petri slide in which the filter came.
3. Unscrew the preseparator adapter from the filter assembly. Lift off the anti-twist ring from the base.
4. Using forceps, carefully remove the exposed filter from the support grid, place it into its original petri slide, and replace the lid.
5. Remove old ID tag from filter base and discard.
6. Cover petri slide and place in safe place for storage.

DECONTAMINATION

Decontamination Procedures

This procedure is applicable for any equipment that will be used to collect a sample for chemical analysis. Whenever feasible, field equipment will be pre-cleaned (using this procedure at an equipment maintenance area, wrapped in aluminum foil, and dedicated to a particular sampling point. Laboratory and field decontamination of equipment used for collection of soil samples will be as follows:

1. Alconox detergent wash
2. Potable water rinse
3. Nitric acid rinse (10% solution using ultra pure grade acid)
4. Distilled/deionized water rinse
5. Pesticide grade acetone rinse
6. Distilled/deionized water rinse
7. Air dry

APPENDIX B

RESUMES OF KEY PEOPLE

Taxpayer Identification Number: 752512450 Solicitation Number: N62472-94-R-0398

PERSONNEL EXPERIENCE FORM

Name: Akram I. Aziz **Job Title:** Quality Control Supervisor

Proposed Project Title Quality Control Manager

Years Experience With This Firm 4 **With Other Firms** 6

Education (Degrees, year, specialization)
B.S., 1986, Civil Engineering

Active Registration (Year First Registered & Discipline)

Health & Safety Training, Course(s) & Date(s)
40-Hour OSHA Health and Safety Training for Hazardous Waste Training, 1991
8-Hour OSHA Health and Safety Hazardous Waste Refresher, current

Compliance to RFP Requirements	
Requirements	Experience
Degree in Civil Engineering or Construction Management program	Yes. BS in Civil Engineering
Three Years managing CQC programs	Yes. Ten years experience in managing CQC programs.

Experience and Qualifications: Mr. Aziz has ten years of experience in managing and performing quality assurance engineering activities for environmental and industrial applications. He has performed QA audits, surveillance and QC inspection for compliance with agency regulations and in-house standards.

USACE-Philadelphia, Bridgeport Rental and Oil Services (BROS) Site, New Jersey, Quality Control System Manager - Provides and maintains an effective quality control program. Ensures, through audits or surveillance, conformance of all items of work to applicable specifications or drawings, and identifies safety deficiencies. Reviews and modifies or corrects as needed all submittals for approval. Maintains project records as required by the contract or statute. Supervises QC inspectors.

Sterling Drug Project, Pennsylvania, Quality Control Engineer - Interacted with client and contractor to perform testing and inspection for the construction of the research complex. Reviewed field quality assurance/quality control reports, laboratory test results and vendor surveillance reports. Responsible for record maintenance and document control. Updated job specifications, shop drawings and architectural drawings. Prepared and analyzed routine quality control charts. Submitted daily reports and scheduled manpower requirements. Provided technical support to the field team, utilizing job specifications, ASTM, ACI and AWS standards, and Pennsylvania DOT requirements.

He has been responsible for the testing and inspection of concrete (normal and steel reinforced); structural fill placement and compaction testing utilizing the sand cone method and the nuclear density gauge; soil borings and classification; piles installation; and utilities installations.

Use or disclosure of the data contained on this sheet is subject to the restriction on the title page of this proposal or quotation

Recycled Paper

Akram I. Aziz. Experience and Qualifications (continued)

Participated in environmental field sampling work related to groundwater monitoring and soil sampling. Familiar with use of field instruments for environmental monitoring. Projects include Hudson County Correctional Facility, South Kearny, NJ; Squibb Chemical Development Plant, North Brunswick, NJ; Millville Municipal Airport, Millville, NJ; Hackensack Water Crossing (Transcontinental Gas Company), Hackensack, NJ; and Devon State Road (PENN DOT), Chester County, PA.

Designed and inspected shallow and deep foundation and retaining structures, reinforced concrete analyses and design, and steel structures. Projects included design and inspection for the construction of a 40-story hotel and construction of the waste water pipelines for the greater Alexandria area.

I am fully committed and available to serve as the Quality Control Manager for the NORDIV RAC at the Langhorne, PA PMO.

By: Akram Aziz Date: 9/29/94

PERSONNEL EXPERIENCE FORM

Name: Grey R. Coppi Job Title: Principal Health and Safety Scientist
Proposed Project Title Project Certified Industrial Hygienist
Years Experience
With This Firm <1 With Other Firms 10

Education (Degrees, year, specialization)

B.S., 1980 Health Science
M.S., 1986 Environmental Health Science

Active Registration (Year First Registered & Discipline)

1991, Certified Industrial Hygienist (CIH)
1992, Certified Safety Professional (CSP)
1992, Certified Hazard Control Manager (CHCM)

Health & Safety Training, Course(s) & Date(s)

40-Hour OSHA Health and Safety Hazardous Waste Training - 1988
8-Hour OSHA Health and Safety Hazardous Waste Supervisory Training -1991, 1993, 1995
8-Hour OSHA Health and Safety Hazardous Waste Refresher - Current
Red Cross First Aid and CPR, 1994
Confined Space Entry, 1988, 1993

Compliance to RFP Requirements	
REQUIREMENTS	**EXPERIENCE**
Three years working experience in the hazardous waste disposal industry.	Yes. Five years experience in the hazardous waste disposal industry.
Demonstrated experience in air monitoring technologies and in development of personal protective equipment (PPE) in potentially toxic atmospheres.	Developed and/or supervised implementation of dozens of air monitoring programs utilizing direct reading instruments such as CGI/02 meters, PID, FID dust monitors, ionizing and non-ionizing radiation meters, sound level meters, and dosimeter; as well as the development of air sampling strategies for integrated air monitoring utilizing battery powered sampling pumps.
	Developed and implemented PPE requirements for a variety of hazards on over 100 remedial projects including groundwater and soil sampling to landfill capping and drum removal.
Working knowledge of applicable Federal, state and local Occupational Health & Safety Regulations.	Yes. Worked as an OSHA Compliance Officer for 5 years and became intimately familiar with OSHA, NIOSH, NFPA, ANSI, FM standards, as well as township codes, where applicable. Continued practice and application of standards and regulations for the past 5 years during the management and leadership of private sector programs.
Formal Education and Training in Occupational Health and Safety	Yes. Bachelor's and Master's degrees in relevant discipline. (Environmental Health with a specialty in Industrial Hygiene). Numerous courses taken including: Toxicology, Confined Space Entry, Ventilation, Radiation, Respiratory Protection.

Experience and Qualifications: Mr. Coppi is a Certified Industrial Hygienist and a Certified Safety Professional with over 10 years of technical and managerial experience in occupational health and safety.

His background includes experience with a Federal regulatory agency that involved health and safety standard applications and enforcement in the manufacturing, chemical, construction and maritime industries. Additional private sector experience has included performing site audits, training course development and presentations and written health and safety program creation. Mr. Coppi's areas of expertise include Health and Safety Plan preparation and implementation, site auditing and air monitoring methods and applications.

Mr. Coppi joined Foster Wheeler Environmental Corporation (FWENC) in September 1995, and was assigned to the US Navy Northern Division Remedial Action Contract Program to provide health and safety support for contracts awarded within this region. He is also responsible for supporting the administration of the FWENC internal Health and Safety Program.

Mr. Coppi provided technical and site support to over 100 projects that involved the USACOE, USDOE and commercial clients. Project activities included, soil and groundwater sampling, test pit excavations, well installations, soil excavation, in-situ treatment of soil and water, stabilization, landfill capping, drum removal and sampling and groundwater pump and treat plant construction. Contaminants included PCB's, metals, VOC's, dioxin and pesticides.

Representative Project Experience

Mr. Coppi provided technical, managerial and leadership oversight to the New Jersey Turnpike Authority (NJTA) during their $500,000,000 roadway widening program that involved the excavation, segregation and placement of soil contaminated with lead and VOC's. He was responsible for assessing compliance with Contractual specifications for 13 separate contracts. Specific duties included the approval of all on-site health and safety personnel (25) employed by the construction contractors; he performed site audits and assessments, and developed an audit checklist and communicated results and recommendations to contractors and the NJTA; provided oral and written correspondence to NJTA, environmental firms, contractor's and section engineers, he evaluated air monitoring data and maintained training records.

Mr. Coppi provided project health, safety and environmental support to a construction firm who was involved in a $10 mm plus addition to an existing NYC waste water pollution control plant located on Wards Island, NYC. He wrote the HASP, supervised the on-site health and safety office and performed bi-weekly site audits to assess compliance with the Contract Specifications and with the site-specific HASP.

Mr. Coppi functioned as the full-time on-site Health and Safety Officer for a $15,000,000 residential remediation located in Northern New Jersey. Over the years, soil had become contaminated with lead and mercury from a nearby explosives manufacturing plant. This project involved the excavation, transportation and disposal of 100,000 tons of soil, backfilling and restoration of lawns, walkways, garages, decks, etc. Mr. Coppi's duties involved: ensuring adherence with the HASP, maintenance of training, air, medical and biological monitoring records; provided training to all personnel; supervised and implemented perimeter and personal air monitoring strategies for dust, lead and mercury. Interfaced with client, NJDEP and oversight engineer.

Mr. Coppi functioned as the on-site CIH for a $12 mm plus project for a construction contractor who was tasked with capping a municipal landfill located in Westchester, NY. The 65 acre site activities included cleaning and grubbing, swale construction, regrading, leachate and methane gas collection systems and monitoring well construction and installation. Potential on-site hazards included methane gas, VOC's and ionizing radiation.

Mr. Coppi functioned as Eastern Division Industrial Hygienist for a large hazardous waste remedial firm. He oversaw projects that included:

- Remediation of PCB containing soils for 3 New Jersey compressor stations belonging to a natural gas pipeline transmission company.
- Remediation of soil containing mercury and lead at a NJ explosives facility complying with an ACO agreement.
- Remediation of ponds and lagoons containing VOC's at a fragrance manufacturer located in NJ.
- Performed weekly site visits for a building demolition and UST removal for a chemical manufacturer located in NJ.
- Functioned as HSO for a building decon (mercury) of piping, ladders, walkways and for the excavation and removal of soil and AST decommissioning.
- Oversaw operations for a ACOE cleanup and capping for a $20mm municipal landfill located in Pennsylvania.
- Oversaw operations for the construction and closure of a TSD landfill located in Ohio.
- Responsible for chemical and township sewer cleanup (Buffalo, NY) contaminated with mercury and dioxin.
- A number of sites contaminated with herbicides and insecticides were remediated with Mr. Coppi's support.

William F. Dolhancey

Operator

EXPERIENCE SUMMARY

All types of heavy equipment experience including welding and metal fabrication; underground utility installation and repair; pipe fitting and plumbing; carpentry; grade setting; minor surveying; hydraulic installation and repair; roofing and siding; refractory repair and installation; demolition; personnel management; tank removal; erosion control; potable water distribution; marine engine and related systems operation and repair; concrete (pour, form, and finish); land clearing; tree surgery; and paving.

REGISTRATIONS

Certified Pennsylvania State Inspection Mechanic

SECURITY CLEARANCE

R-13 Security Clearance

EDUCATION

High School Graduate

TRAINING

CPR and First Aid
Level B-T Hazardous Waste (Roy F. Weston)
Site Safety Coordinator Training (Roy F. Weston)

PRIOR EXPERIENCE

Canonie Environmental

Operating Engineer/Night Shift Foreman, 1990 - Sixty-acre claymax containment area of PCB-contaminated soils in wetlands.

RTP Highway Contractors

Operating Engineer/Foreman, 1989-1990 - All types of highway and curb construction. Asphalt paving and milling. Utility relocation. Ninety percent (90%) of work performed for Pennsylvania and Delaware Departments of Transportation.

William F. Dolhancey

Weston Services
Thermal Group
Beardstown, IL

Crew Chief/Operating Engineer, 1987-1989 - Excavation of PCB-contaminated salvage yard. All types of incinerator maintenance kiln nose ring reconstruction as well as welding, pipe fitting, and mechanical applications.

Pickering Group
Morgantown, PA

Crew Chief/Operator - Refurbish entire potable water treatment facility. Clear well, filter tanks, floc tank, pumps, valves, chemical system, and polishing ponds.

Pennsylvania Department of Transportation
Blue Route
Springfield, PA

Crew Chief/Operator - $4 million disposal and containment of PCBs and heavy metals. Land clearing, on-site scale construction, bridge pier excavation, sanitary sewer by-pass and installation. Design, install, and maintain erosion control.

Pantex
Amarillo, TX

Crew Chief/Operator - Tank removal on high security ammunition facility. Removal, demolition, and restoration of chemical storage facilities.

Selas
Fort Washington, PA

Crew Chief/Operator - Sludge removal, sewer relocation, and site restoration. On-site septic field remediation for sale of property.

R.T. Stewart & Sons

Operator/Foreman, 1985-1987 - Subcontractor to Coatesville Water Authority water and sewer distribution maintenance and installation for the entire CCA system. Underground distribution, reservoir, and treatment plant maintenance.

R.N. Pizio

Operator/Truck Driver/Mechanic, 1983-1985 - Heavy equipment operation and maintenance.

William F. Dolhancey

Alan Funk General Contractor

Operator/Carpenter, 1981-1983 - Hydraulic lift installation.

Tom's Auto Repair

Certified State Inspection Mechanic, 1977-1981 - Custom metal fabrications. All types of car/truck repair welding.

General Electric Company

1974-1977 - Foundry pour-off. Casting and pouring of alloys, ferrous, and non-ferrous metals.

Miley Brown Chrysler Plymouth

Auto Mechanic, 1972-1974

EXPERIENCE SUMMARY

Nine years experience providing technical and management support for the EPA, state agencies, and private clients. Current responsibilities include conducting Remedial Investigations/Feasibility Studies (RI/FSs), Site Inspection Prioritizations (SIPs), and Hazardous Ranking System (HRS) packages. Three years experience providing technical support to EPA under a Technical Enforcement Support Contract with EPA. Management activities include supervision of personnel, scheduling, work distribution, budgeting, technical report review, and point of contact functions with EPA. Four years experience in the evaluation of CERCLA and RCRA sites through the performance of preliminary assessments, environmental priority initiative-preliminary assessments, site inspections, expanded site inspections, and the preparation of HRS packages. Experienced in hydrogeologic investigations, underground storage tank removals, and conducting chemical processes to treat hazardous wastes.

EDUCATION

B.A., Geology (Minor: Biology), Slippery Rock University, 1985

SPECIALIZED TRAINING

Seminar on Management, Temple University, 1990
Graduate courses in Hydrogeology and Geomorphology, West Chester University
40 hour OSHA Training with yearly updates

HARDWARE AND SOFTWARE

dBase	Surfer Contouring
Word Perfect	Freelance Drawing
Lotus	Harvard Graphics

PRESENT EMPLOYMENT (March 1994 - Present)

Foster Wheeler Environmental Corporation
Senior Geologist

Function as the Site Inspection Prioritization (SIP) Manager for EPA projects conducted out of the Langhorne office. Monitor projects, track hours, and conduct technical reviews of reports being submitted to EPA.

Completed an expedited Site Inspection at a landfill which included mixed waste sampling. Samples collected from the site and a nearby tungsten processing plant, the suspected source of radioactive waste, were analyzed for chemical and radiological parameters. Prepared a report evaluating the potential for placing the site on the NPL for remediation and attributing the radioactive contamination at the landfill to the nearby tungsten processing plant.

Supervised the installation and sampling of monitoring wells at a proposed power plant location to establish groundwater baseline conditions prior to the construction and operation of the plant.

Prepare Hazard Ranking System (HRS) Packages for sites under investigation by the Pennsylvania Department of Environmental Resources (PADER).

Prepared a Phase II RI Work Plan to delineate the extent of dense non-aqueous phase liquid (DNAPL), light non-aqueous phase liquid (LNAPL), and dissolved contamination at a former manufactured gas plant site. Proposed Hydropunch-type sampling and field screening methods designed to save time and money while accurately defining contamination at the site.

PRIOR EXPERIENCE

Dynamac Corporation (July 1991-March 1994)
Project Manager in Geology

Responsibilities included coordination, management, and technical guidance of both RCRA and CERCLA oversight projects for the EPA; compilation and preparation of technical reports and reviews; and point of contact functions for EPA contracts. Managed oversight activities during a remedial investigation of a hazardous waste landfill which included the installation of monitoring wells, soil gas surveys, and several sampling episodes. Provided a technical review of the RI/FS Reports and assisted in the preparation of The Record of Decision (ROD) for the remediation of the landfill.

Managed a sampling team and oversight activities for several investigations at a zinc smelting facility, a publicly sensitive Superfund site for EPA's Removal Enforcement section. Managed a team of six during a study to locate sources of contamination and to "fingerprint" contamination from those sources. The study involved extensive sampling of the facility's processes and waste streams and the collection of numerous soil samples surrounding the study area. Managed an oversight team for a study to determine the extent of contamination resulting from the zinc smelting operations. The study determined the lead levels in the house dust and soils of homes surrounding the zinc facility in order to assess potential health risks. Managed the oversight of house dust cleaning operations which involved the cleaning of homes with high levels of lead in their house dust.

Managed the oversight of a RCRA Facility Investigation (RFI) at an oil refinery. The investigation focused on the contamination associated with 10 Solid Waste Management Units (SWMUs). Activities include the oversight of monitoring well installation, soil borings, ecological assessment, home well surveys, and the evaluation of remedial programs presently in operation at the facility.

Project Manager for EPA oversight of the groundwater cleanup of an approximately 200,000 gallon oil spill in Virginia. Provided technical support to EPA in order to insure all the recovery systems in operation were functioning properly. Reviewed weekly and monthly progress reports to ensure that the plume was being contained. Prepared isoconcentrations maps to delineate the dissolved phase plume. Product thickness and potentiometric maps were prepared to determine the seasonal effects on the potentiometric elevations and product thickness. Regularly prepared cross sectional graphics through certain sections of the recovery systems to ensure that these systems were functioning properly.

Prepared potentiometric maps and cross sectional views through the recovery trenches utilizing continuous monitoring data collected from data loggers. The cross sections were constructed to determine the effects rainfall had on the potentiometric elevations, and the ability of the pumps in the recovery trenches to exhibit hydraulic control.

Managed the preparation of an Ecological and Health Risk Assessment for the subject site. Data from monitoring wells, residential wells, stream sampling, soil sampling, indoor and outdoor air sampling were be tabulated and reviewed in order to prepare the Assessment. Responsible for collecting indoor air quality samples from the homes located in and around the plume area. Assisted EPA in developing a Long Term Human Health and Environmental Monitoring Plan for the site.

Reviewed and offered EPA technical advise on all incoming reports related to the site. Reviewed the Work Plans for pilot studies designed to decrease the volume, mobility and toxicity of the plume, while insuring that the plume was stabilized. Responsible for closely monitoring all pilot studies and independently evaluate all data for EPA.

PRIOR EXPERIENCE (Cont'd)

NUS Corporation (1989-July 1991)
Section Supervisor/Consulting Geologist
Managed a team of seven geologists and environmental scientists performing Preliminary Assessments and Site Inspections. Trained new personnel, developed and implemented schedules, and monitored projects. Technically reviewed all reports prior to submission to the EPA. Reviewed geological literature on soil types and local hydrology. Participated in the revised Hazardous Ranking System (HRS) screening process to facilitate adding hazardous waste sites to the National Priorities List (NPL). Conducted a remedial investigation that required a magnetometer survey, soil gas survey, test pits, and the installation of monitoring wells.

GES, Incorporated (1989)
Staff Geologist
Responsible for conducting soil gas surveys, supervising the installation of monitoring wells, and delineating contamination plumes. Conducted pump tests to characterize aquifers. In addition, monitored recovery and treatment systems, directed underground storage tank removals, and identified and excavated contaminated soils. Prepared comprehensive reports for clients.

NUS Corporation (1987-1989)
Staff Geologist
Solved problems relating to hazardous waste disposal sites utilizing hydrogeologic literature, data collected during field evaluations, and the interpretation of sample analyses. Prepared sampling plans, quality assurance plans, and health and safety plans. Conducted soil, groundwater, surface water, and air sampling during Site Inspections. Performed numerous Preliminary Assessments and Site Inspections at uncontrolled hazardous waste sites. Conducted RCRA-type inspections at active facilities.

Waste Conversion, Inc. (1986-1987)
Chemical Processor
As a Chemical Processor for an industrial waste treatment facility, duties involved various testing of hazardous and nonhazardous liquids. Conducted chemical processes resulting in flocculation and precipitation of heavy metals and suspended particles, destruction of poisons, reduction of chrome and phosphates, and lowering of the chemical oxygen demand. Experienced in laboratory packaging operations involving the identification, categorization, and packaging of hazardous waste in inactive laboratories, and in the preparation of hazardous waste manifests under EPA and DOT regulations.

PERSONNEL EXPERIENCE FORM

Name: Edward L. Leonard Job Title: Senior Environmental Scientist
Proposed Project Title Senior Project Manager
Years Experience
With This Firm 1 With Other Firms 15

Education (Degrees, year, specialization)	Active Registration (Year First Registered & Discipline)
M.S., 1988, Environmental Science	1995, Certified NJDEP UST Subsurface Evaluator
B.S., 1980 General Biology	1994, Certified Hazardous Materials Manager

Health & Safety Training, Course(s) & Date(s)
40-Hour OSHA Health and Safety Hazardous Waste Training - 1986
8-Hour OSHA Health and Safety Hazardous Waste Supervisory Training -1991
8-Hour OSHA Health and Safety Hazardous Waste Refresher - Current

Compliance to RFP Requirements

REQUIREMENTS	EXPERIENCE
Degree from an accredited science program	Yes. MS in Environmental Science and BS in General Biology
Six years of in-field Project Management	Yes. Over 8 years of in-field project management.
Three years managing remedial action projects	Yes. Over 3 years managing remedial action projects.
PE or CPG, or equivalent scientific certification	Yes. Certified Hazardous Material Manager since 1994.

Experience and Qualifications: Mr. Leonard is a Certified Hazardous Materials Manager with 15 years experience as an Environmental Scientist in both the public and private sector. His experience encompasses site assessments, remedial investigations, treatability studies, feasibility study, ecological assessments, and environmental impact studies. He has managed multi-discipline teams in the implementation of response and removal actions and performing interim remedial measures. He has successfully coordinated and interfaced with the public and government representatives.

Chromium Remediation Project, New Jersey, Operations Manager - Managed the field operations for the remedial activities of chromium-contaminated material at 24 commercial/industrial properties in Hudson County, New Jersey. Oversaw the daily activities of a team of up to 20 individuals, including subcontractors, in the performance of remedial measures and investigations. Tasks included installation and maintenance of Interim Remedial Measures; drilling and field sampling activities; coordination of waste disposal; and site access. Responsibilities included: preparation of project deliverables, schedules and budgets; operation and maintenance of project facility; identification of site

property owners and coordination of access; solicitation and coordination of subcontractors; and scheduling of all field personnel. Coordinated all field activities with state and local government representatives. Provided daily debriefing to the client concerning findings and project status.

Technical Assistance Team, USEPA Region II, Deputy Regional Manager - Managed the daily operation of a team of 62 professionals in support of the USEPA Removal Program. The team provided monitoring oversight of emergency responses and removal actions; evaluated remedial alternatives; prepared technical reports on disposal alternatives, engineering studies and field investigations; and conducted site assessments of hazardous waste sites and oil storage facilities. Technical support and site inspections provided on many types of assignments, including gas cylinder over pack and removal; drum removal and disposal; damage assessment caused by a major hurricane; air monitoring at a major tire fire; and numerous responses to oil and hazardous materials spills.

ARCS, USEPA Region II, Acting Deputy Program Manager - Supervised site managers and provided assistance to the Program Manager in the daily management of the USEPA Region II ARCS Program. Assigned projects in the New York and New Jersey area included 6 RI/FSs; 2 Treatability Studies; 1 Remedial Design; 7 Remedial Design Oversights; and other technical support assignments. Responsible for the review of budget estimates, work plans and other project deliverables. He also assisted the project managers in resource management to staff work assignments. Performed the duties of the Program Manager in the Program Manager's absence.

Industrial Latex Site, Wallington, New Jersey, Site Manager - Managed the remedial investigation/feasibility study of a latex manufacturing site for the USEPA Region II. A multimedia sampling effort was conducted to determine the extent of PCB's, phthalates, metals and volatile organics contamination. Field activities included a geophysical investigation, a subsurface soil investigation, a building component investigation, a groundwater monitoring program and a surface water investigation. Data collected during the field investigation was utilized in the RI Report, baseline risk assessment and the FS. Several off-site bench-scale treatability studies and toxicity tests were also performed in support of the Final FS Report. Additional responsibilities have included the preparation of work plans, bid specifications, schedules and budgets; solicitation and coordination of subcontractors; coordination and scheduling of all project personnel; and support to the USEPA during expedited post RI/FS activities (proposed plans, public meeting, etc).

James M. Ruffing

Associate Engineer

EXPERIENCE SUMMARY

Five years of experience in the environmental industry including four years of on-site involvement in large remediation projects. For three years, acted as a technical representative specializing in instrumentation and sample preparatory procedures and Method SW 846 involving the preparation and analysis of environmental samples (for three years, specifically located in the Federal Register). Spent past six months acting as Site QC Officer and briefly as Superintendent of a remediation site involving soil removal, lead abatement, and PCB cleanup. Familiar with the regulation, procedures, and health and safety requirements for hazardous waste site including sampling, transportation and disposal, water treatment, lead abatement, and waste packaging.

PROFESSIONAL AFFILIATIONS

American Chemical Society

REGISTRATIONS

Certified Asbestos Supervisor - Pennsylvania

EDUCATION

B.S., Chemistry with Management Option, Carnegie-Mellon University - 1989

TRAINING

40-Hour OSHA Hazardous Waste Health and Safety Training
8-Hour OSHA Hazardous Waste Health and Safety Supervisor Refresher Course - Current
Health and Safety Officer Cross-Training
D.O.T. Hazmat Office Trainer, HM-126F

REPRESENTATIVE PROJECT EXPERIENCE

Foster Wheeler Environmental Corporation, Commonwealth of Pennsylvania DEP, General Technical Assistance Contract, 1993-Present, Associate Engineer - Participated in writing feasibility studies, performed CLP data validation of volatile and semi-volatile analyses and data computation and statistical analysis for risk assessment, performed oversite of drum and tank sampling and hazardous characterization, and acted as Health and Safety Officer/Field Technician for remedial investigation sites.

Department of the Navy, Northern Division RAC, Philadelphia Naval Shipyard, Temporary Superintendent/QC Officer - This remediation project consisted of lead paint abatement, contaminated soil removal, PCB cleanup, and compliance. Responsibilities as superintendent included subcontractor oversite, site mobilization, developing client liaison and contacts, transportation and disposal coordination, and labor management. Responsibilities as QC Officer included lead abatement, PCB

James M. Ruffing

cleanup, oversite for compliance with Work Plan, and submittals to the client and transportation and disposal coordination.

PRIOR EXPERIENCE

OHM Corporation

1990-1993 - Responsible for performing technical project activities associated with large remediation projects including the following activities: the writing and implementation of quality assurance plans, the writing and implementation of sampling plans, hazardous characterization of unknown waste, health and safety procedures, EPA Methods SW 846 and the writing of final reports.

Hazardous Waste Site Projects

Lead Chemist for a project involving the treatment, solidification/fixation and demolition of a pit/tank of chromic acid for a Fortune 500 company. Responsibilities included on-site direction and implementation of the chemical analyses needed to monitor the treatment system and tank demolition and the subsequent writing of the final report of the data produced; also, the indirect oversite of the sampling efforts of both phases. Analyses performed included, TCLP metals, total metals, pH, total cyanide, mercury, total and dissolved solids and percent solids following EPA methods SW 846 for the sample preparations and instrumentation procedures.

Health and Safety Officer for an emergency response of a train derailment near Louisville, Kentucky. Responsibilities included location of spilled product, safety oversite of chemical transfer and initial sampling of areas after product migration visually located.

Chemist for project involving the classification, bulking and removal of unknown drums and tanks from a former specialty chemical producer for the Army Corps of Engineers. Responsibilities included the hazard classification and test bulking of unknown drums for disposal.

Chemist for an EPA Region V project involving the remediation of a bankrupt plating facility. Responsibilities included the hazard classification and test bulking of unknown drums and tanks.

Lead Chemist for project involving the remediation of soil contaminated by leaking underground tanks containing trichloroethane and fuel oil. Responsibilities including implementing and overseeing analyses of samples used to direct digging efforts, and the writing of technical part of final report.

Chemist for EPA Region V project involving the excavation and subsequent sampling and compatibility testing of buried drums. Responsibilities included the hazard classification and test bulking of the samples representing the unknown drums.

Chemist on a lagoon dredging and treatment project for a Fortune 500 company. Responsibilities included running analysis on the treated sludge and water, SW 846 Method 8240, for proper off-site disposal and water discharge.

James M. Ruffing

Technical

Lead chemist on large environmental clean-up projects. Project and Quality Assurance Planning responsibility. Strong knowledge of organizing and categorizing on-site waste for disposal. Working knowledge of the EPA analytical chemical methods. Working knowledge of QA/QC chemical analytical reports. Working knowledge of GC, GC/MS, GFA, Photovac. Working knowledge of IBM compatible software. Current with OSHA training requirements. Knowledge of hazardous materials transportation and disposal.

General

A prime liaison between Fortune 500 company employees and OHM personnel. A prime interface for government employees and OHM personnel. Leadership role in emergency response projects. A decision maker regarding working policies and other job site matters. Collect and coordinate data from numerous vendors and individuals at job sites. Familiar with government policies and routines for toxic waste clean up. Prepare final written reports from job site operations. Initiated and developed a recruiting plan for hiring chemists. Leadership role in training course for new chemists.

Sun Refining and Marketing

Chemist, 1990 - Worked with a senior research scientist on the development of a new metal catalyst for the production of gasoline. Work included executing the experimentation and documentation in an effort to create the catalyst. Specific responsibilities included proper experimental and laboratory procedures, reporting information to senior chemist, writing a report on experimental information. Developed new catalysts for possible use production of gasoline additives. Set up lab for experiments and testing compounds using cyclic voltammetery. Reported directly to a senior research scientist. Gave presentation during the quarterly meeting. Prepared a written report of my work on the project. Worked with the syntheses of novel transition metal complexes. Worked with the syntheses of Schiff-base molecules. Gained experience in electronic chemistry (cyclic voltammetery).

Carnegie-Mellon University

Technician, 1989 - Worked with a research group as a technician. The primary focus of the research was in the synthesis of organic porphyrin complexes. Specific responsibilities were the execution of experiment and the subsequent documentation. Worked with the syntheses of novel porphyrin complexes. Gained working knowledge of liquid chromatography and solvent systems. Used IR, NMR, Absorption Spectroscopy. Wrote bi-weekly reports on progress of project. Co-author of scientific publication on the syntheses of facially-encumbered porphyrins.

David A. Plum, Inc.

Transit Operator, 1987-1988 - Ran transit and level and assisted in field calculations. Participated in the drafting of prints. Performed supervisory duties.

James M. Ruffing

PUBLICATIONS

Wagner, R.W., J. Ruffing, B.V. Breakwell, and J.S. Lindsey, Synthesis of Facially-Encumbered Porphyrins - An Approach to Light-Harvesting Antenna Complexes, Tetrahedron Letters, Vol. 32, No. 14, pp. 1703-1706, 1991.

APPENDIX C

SUBMITTAL REGISTER

SUBMITTAL REGISTER

Contract Number: N62472-94-D-0398 D.O. # 0018 Project Title: Various Remedial Actions at NAWC

LOCATION: Warminster, PA CONTRACTOR: Foster Wheeler Environmental Corporation

							CONTRACTOR ACTION		APPROVING AUTHORITY ACTION					CONTR	
SPEC SECTION NO.	SD NO. & TYPE OF SUBMITTAL-MATL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY CO *	GOVT OR A/E REVR	TRANS CONTL NO.	PLANNED SUBMITTAL DATE	ACT. CODE	DATE OF ACTION	DATE FWD TO APPR AUTH / DATE RECD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RECD FROM OTHER REVIEWER	ACT. CODE	DATE OF ACTION	MAILED TO CONTR / RECD FROM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(I)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
	SD-18, Records														
	Health and Safety Plan	N/A	"G"			4/12/96									
	SD-18, Records														
	Work Plan	N/A	"G"			5/10/96									
	SD-18, Records														
	Environmental Protection Plan	N/A	"G"			5/10/96									
	SD-18, Records														
	Quality Control Plan		"G"			6/24/96									
	SD-10, Test Reports														
	Soil Characterization Test Results	N/A				7/5/96									
	SD-18, Records														
	Waste Profiles	N/A	"G"			7/10/96									
02220	SD-10, Test Reports														
	Imported Common Fill Certification	2.1.1	"G"			7/23/96									
02930	SD-10, Test Reports														
	Top Soil Composition Test	1.3.2				8/15/96									
02930	SD-10, Test Results														
	Grass Seed Specification	2.1.1				8/15/96									
	SD-18, Records														
	Close-out/Final Report		"G"			10/09/96									

ACTION CODES: NR: Not Reviewed AN: Approved as Noted A: Approved
RR: Disapproved; Revise and Resubmit (Others may be prescribed by the Transmittal Form

* Navy Notes:
Approved by:
G: Contracting Officer
Blank: CQC Manager

* NASA Notes:
Approved by:
Blank: Contracting Officer

*Army Notes:
Classification:
GA: Gov't Approval
FIO: For Infor ONLY

Teamerson, Neil

From: Raye/Rose Lahti - TtEMI [rmlahti@win.bright.net]
Sent: Tuesday, June 01, 1999 2:56 PM
To: Teamerson, Neil
Subject: Re: "dig and haul" plan

Neil: Thanks for the reply. Is it short enough to fax (715) 794-2889, or could you fedex it? They would like me to provide a plan by Friday.

Thanks!

Raye Lahti, P.G.
TtEMI
HC 60 Box 380-L
Triangle Road
Cable, WI 54821
(715) 794-2889

FOSTER WHEELER ENVIRONMENTAL CORPORATION

July 16, 1996
File #: 1284-0018-96-0423

Mr. Don Demkovitz
Waste Management of Pennsylvania, Inc.
1000 New Ford Mill Road
Morrisville, Pennsylvania 19067

Subject: US NAVY CONTRACT NO. N62472-94-D-0398
DELIVERY ORDER NO. 0018 - NAWC WARMINSTER, PA
SITE 4 WASTE PROFILE AND FORM U

Dear Mr. Demkovitz:

Enclosed are the following signed original documents for the subject site:

- Generator's Waste Profile Sheet
- Form U
- PCB Certification

Also included are three attachments providing the analytical data results, the sampling plan and background summary.

As we discussed, I have requested the Navy to contact PADEP to request an expedited review of these documents. Once you have submitted this package, please provide me the name and phone number of the PADEP representative.

Should you have any questions or comments, please contact me at (215) 702-4074.

Very truly yours,

Edward L. Leonard, CHMM
Project Manager

Enclosure

cc: T. Ames, NAWC
A. Aziz, FWENC
E. Beatty, ROICC
J. Biswurm FWENC (w/o encl.)
A. Holcomb, FWENC (w/o encl.)
D. Kennedy, PADEP
D. Ostraukas, EPA
Public Works, NAWC
File

2300 LINCOLN HIGHWAY EAST, ONE OXFORD VALLEY, SUITE 200, LANGHORNE, PA 19047-1829
TEL: 215-702-4000 FAX: 215-702-4045

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Waste Profile Sheet Code

WMNA 303141

is form is to be used to comply with the requirements of a waste agreement.

INSTRUCTIONS FOR COMPLETING THIS FORM ARE ATTACHED

(Shaded Areas For Contractor Use Only)

Decision Expiration Date: / /

Contractor Sales Rep#: _____

Service Agr. Renewal Date: / /

. WASTE GENERATOR INFORMATION

Generator Name: Naval Air Warfare Center, Aircraft Division - Warminster 2. SIC Code: 9999

Facility Address (site of waste generation): Street Road & Jacksonville Road

Generator City, State/Province: Warminster 5. Zip/Postal Code: 18974

Generator USEPA/Federal ID #: PA6170024545 7. State/Province ID #: N/A

Technical Contact: Frank Kurdziel (mail stop 14) 9. Phone: (215) 441-7118

. WASTE STREAM INFORMATION (See Instructions)

Name of Waste: Solid waste/contaminated soil

Process Generating Waste: Site clean up of on site waste disposal

Annual Amount/Units: 8,000 cy (12,000 tons) 4. Type A [XX] Type B [ ]

Special Handling Instructions/Supplemental Information: None

Incidental Waste Types and Amounts: None

. TRANSPORTATION INFORMATION

Method of Shipment: [ ] Bulk Liquid [ ] Bulk Sludge [XX] Bulk Solid [ ] Drum/Box [ ] Other _____

. Supplemental Shipping Information: Cover with tarps

a DOT hazardous material? [XX] No [ ] Yes (If yes, complete 4, 5 & 6) 4. Hazard Class/ID #: N/A

Reportable Quantity/Units (lb/kg): N/A 6. Shipping Name: N/A

. TECHNICAL MANAGER DECISION (Check One) [ ] **APPROVED** [ ] **DISAPPROVED** [ ] Check if additional information is attached

If Disapproved, Explain:

If Approved, Continue.

Management Method(s)

Precautions, Conditions, or Limitations on Approval:

. For Type A Wastes, Laboratory Analysis of a Representative Sample Was: [ ] Waived [ ] Attached

If waived, explain why:

. List Non-WMI Facility that is Approved to Manage this Waste: _____ Date: _____

Tech. Mgr. Signature: _____ Name (Print): _____ Date: _____

. MANAGEMENT FACILITY INFORMATION / DECISION

Proposed Management Facility:

Proposed Intermediate Transfer Facility: _____ 3. Transporter: _____

. **Management Facility Gen. Mgr. Decision (Check One)** [ ] **APPROVED** [ ] **DISAPPROVED**

If Disapproved, Explain:

oved, List

utions, Conditions, or Limitations on Approval:

General Mgr. Signature: _____ Name (Print): _____ Date: _____

Turn Page and Complete Side 2 (If Type B Special Waste, only complete Part J of Side 2)

Printed on Recycled Paper

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

F. PHYSICAL CHARACTERISTICS OF WASTE (See Instructions)

1. Color	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F/21°C:	4. Layers	5. Specific Gravity	6. Free Liquids:
Varies	[X] No ☐ Yes; if so, describe:	[X] Solid ☐ Semi-Solid ☐ Liquid ☐ Powder ☐ Other:	[X] Multi-layered ☐ Bi-layered ☐ Single Phased	Range >1.0-	☐ Yes [X] No Volume: N/A %

7. pH: ☐ ≤2 ☐ > 2-4 ☐ 4-7 ☐ 7 ☐ 7-10 ☐ 10- <12.5 ☐ ≥12.5 [X] Range 5.05 ☐ NA to 8.25

8. Flash Point: ☐ None ☐ <140°F/60°C [X] 140 - 199°F/60 - 93°C ☐ ≥200°F/93°C [X] Closed Cup ☐ Open Cup

G. CHEMICAL COMPOSITION

	RANGE (MIN-MAX)
1. See Attachment 1 -	- %
Analytical Data Results	- %
	- %
	- %
	- %
	- %
	- %
	- %
	- %
Total.	%

2. Does the waste contain any of the following? (provide concentration if known):

	NO	or	LESS THAN	or	ACTUAL
PCBs	☐		☐ < 50 ppm	ND -	42 ppm
Cyanides	☐		☐ < 30 ppm	ND -	1.6 ppm
Sulfides	☐		☐ < 500 ppm	ND -	92 ppm

ND = Non-detect

Please note: Unless analytical results are attached, the chemical composition identification should include, at a minimum, Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver, Pesticides, Herbicides, and any other TCLP constituents that may be present in the waste. The total composition must be greater than or equal to 100%. (.0001% = 1 ppm or 1 mg/l)

3. Indicate method used to determine composition (if provided): [X] TCLP ☐ Total ☐ Other. _____

H. SAMPLING SOURCE (e.g., Drum, Lagoon, Pit, Pond, Tank, Vat) Waste Trenches (Composite Sample)

I. REPRESENTATIVE SAMPLE CERTIFICATION

1. Print Sampler's Name: James Ruffing 2. Sample Date: June 25 to 28, 1996
3. Sampler's Title: Chemist
4. Sampler's Employer (if other than Generator): Foster Wheeler Environmental Corporation

The sampler's signature certifies that any sample submitted is representative of the waste described above pursuant to 40 CFR 261.20(c) or equivalent rules

5. Sampler's Signature James M Ruffing

J. GENERATOR CERTIFICATION

By signing this profile sheet, the Generator certifies:

1. This waste is not a "Hazardous Waste" as defined by USEPA or Canadian Federal regulation and/or the state/province.
2. This waste does not contain regulated radioactive materials or regulated concentrations of PCB's (Polychlorinated Biphenyls).
3. The unshaded portions of this sheet and the attachments contain true and accurate descriptions of the waste material. All relevant information regarding known or suspected hazards in the possession of the Generator has been disclosed.
4. The Generator has read and understands the Contractor's Definition of Special Waste included in Part B.5. of the attached instructions form. All types and amounts of special wastes provided in incidental amounts have been identified in section B.6. of this form.
5. The analytical data presented herein or attached hereto were derived from testing a representative sample taken in accordance with 40 CFR 261.20(c) or equivalent rules
6. If any changes occur in the character of the waste, the Generator shall notify the Contractor prior to providing the waste to the Contractor

7. Signature Frederick George Trumper 8. Title Public Works Officer

9. Name (Type or Print) FREDERICK GEORGE TRUMPER 10. Date 16 JUL 96

2500-FM-WM0395 6-92

Date Prepared/Revised
July 11, 1996
Waste Code
920

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WASTE MANAGEMENT

Facility I.D Number
100148

FORM U

REQUEST TO PROCESS OR DISPOSE OF RESIDUAL WASTE

SEE INSTRUCTIONS BEFORE COMPLETING THIS FORM, In addition to this form, submit Form A.

I. GENERAL INFORMATION (must be completed by facility operator)

A. Processing or Disposal Facility

1. Name of facility G.R.O.W.S., Inc.

   Address 1000 New Ford Mill Road Morrisville, PA Zip: 19067

   Municipality Falls Township County Bucks

2. Solid waste permit number(s) for processing or disposal facility to be utilized
   100148

3. Facility contact person

   Name Amy Meacock Title Laboratory Manager

   Telephone Number 215/736- 9475

B. Generator of the Waste

1. Name of company Naval Air Warfare Center, Aircraft Division - Warminster

   Mailing address Street Road & Jacksonville Road Zip: 18974

   Location of site if different from mailing address N/A

   Municipality Warminster County Bucks

2. If a subsidiary, name of parent co. US Navy

3. Identification number

P	A	6	1	7	0	0	2	4	5	4	5		

4. Company contact person

   Name Frank Kurdziel (mail stop 14) Title Environmental Engineer

   Telephone Number (215) 441-7118

2500-FM-WM0395 6/92

Date Prepared/Revised
July 11, 1996
Waste Code
920

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WASTE MANAGEMENT

Facility I.D. Number
101494

FORM U

REQUEST TO PROCESS OR DISPOSE OF RESIDUAL WASTE

SEE INSTRUCTIONS BEFORE COMPLETING THIS FORM, In addition to this form, submit Form A.

I. GENERAL INFORMATION (must be completed by facility operator)

A. Processing or Disposal Facility

1. Name of facility Tullytown Resource Recovery Facility

   Address 200 Bordentown Road, Tullytown, PA Zip: 19007

   Municipality Borough of Tullytown County Bucks

2. Solid waste permit number(s) for processing or disposal facility to be utilized 101494

3. Facility contact person

   Name Amy Meacock Title Laboratory Manager

   Telephone Number 215/736- 9475

B. Generator of the Waste

1. Name of company Naval Air Warfare Center, Aircraft Division - Warminster

   Mailing address Street Road & Jacksonville Road Zip: 18974

   Location of site if different from mailing address N/A

   Municipality Warminster County Bucks

2. If a subsidiary, name of parent co. US Navy

3. Identification number | P | A | 6 | 1 | 7 | 0 | 0 | 2 | 4 | 5 | 4 | 5 | | |

4. Company contact person

   Name Frank Kurdziel (mail stop 14) Title Environmental Engineer

   Telephone Number (215) 441-7118

Date Prepared/Revised

July 11,1996

Waste Code

920

FORM U

Facility I.D. Number

100148
101494

II. WASTE DESCRIPTION (Must be completed by generator)

A. General Properties

1. pH range 5.05 to 8.25 (based on analyses or knowledge)

2. Physical state:

a. ☐ liquid waste (EPA Method 9095)
b. ☒ solid (EPA Method 9095)
c. ☐ gas (ambient temperature and pressure)

3. Physical appearance:

Color Varies

Number of solid or liquid phases or separation Three Solid layers

Describe each phase of separation.
A. Layers 1 and 3 consist of contaminated soil
B. Layer 2 is a mixture of contaminated soil and non-hazardous solid waste.

4. Maximum volume of waste to be shipped to processing or disposal facility on a monthly basis:

8,000 (one time) (cubic yards) gallons, pounds, or tons (circle one)

5. Processing or disposal frequency: N/A times per year; ☒ one time

6. Current volume of waste to be shipped to processing or disposal facility: 8,000 (cubic yards) gallons, pounds, or tons (circle one)

7. Is the waste a hazardous waste as defined in 25 Pa. Code 261 and/or 40 CFR 261
☐ Yes ☒ No

a. If yes, is the hazardous waste generated by a conditionally exempt small quantity generator as defined in 40 CFR 261.5? ☐ Yes ☐ No N/A

b. If yes, list the appropriate hazardous waste number (s): N/A

c. If yes, describe the hazardous waste. N/A

8. Has the waste been delisted as a hazardous waste by DER? ☐ Yes ☐ No ☒ N/A.

9. a. Has the waste been accepted for disposal/processing at another Pennsylvania facility? ☐ Yes ☒ No

b. If yes, list the facility ID number(s).

Date Prepared/Revised

July 11, 1996

Waste Code
920

FORM U

Facility I.D Number

100148
101494

10. a. Has an application for disposal/processing of the waste at another Pennsylvania facility been submitted? ☒ Yes ☐ No

b. If yes, list the facility ID number(s). 100148 & 101494

B. Chemical Analysis - Please attach the following:

1. The results of a detailed physical and chemical characterization of the waste and its leachate, as described in the instructions.
   See Attachment 1 - Analytical Data Results
2. A description of the waste sampling method, in accordance with the waste sampling plan as required in §271.611(a)(3) or §287.132(a)(3).
   See Attachment 2 - Work Plan
3. Provide a detailed explanation supporting use of generator knowledge in lieu of actual chemical analysis, if applicable.
   N/A

C. Process Description and Schematic - *Please attach the following:*

1. A detailed description of the manufacturing and/or pollution control processes producing the waste, as specified in the instructions.
   See Attachment 3 - Background Summary
2. A schematic of the manufacturing and/or pollution control processes producing the waste, as specified in the instructions.
   See Above
3. The substantiation for a confidentiality claim, as described in the instructions, if portions of the information you have submitted are confidential.
   N/A

III. EVALUATION WITH WASTE ANALYSIS AND CLASSIFICATION PLAN (must be completed by facility operator) THIS APPLICATION SATISFIES THE REQUIREMENTS OF THE FORM R MAJOR PERMIT AMENDMENT ISSUED 12/27/93.

IV. PROPOSED PROCESSING, STORAGE, AND/OR DISPOSAL METHOD (must be completed by facility operator. Use additional sheets if necessary. Check box marked "N/A" if not applicable.)

A. Proposed Processing method - ☒ N/A

B. Proposed Storage Method and Length of Storage - ☒ N/A

C. Proposed Disposal Method - ☐ N/A

Co-disposal with Municipal and Residual Solid Waste Material on Double-lined Areas of the Landfill.

Date Prepared/Revised

July 11, 1996

Waste Code

920

FORM U

Facility I.D. Number

100148

V. SOURCE REDUCTION STRATEGY (Form 25R must be completed by generator and attached to this application unless waived in the instructions to that form)

See VI.A.

VI. ALTERNATIVE TO PROPOSED PROCESSING AND/OR DISPOSAL METHODS (must be provided by generator. Use additional sheets, if necessary.)

A. What other processing, disposal, recycling, reuse, or reclamation methods can be used? Briefly describe alternatives to your proposal.

None, as directed by Action Memorandum the contaminated soils and burried waste will be disposed of without treatment at a municipal waste landfill.

B. Why was the processing and/or disposal method in Section IV chosen?

See VI.A.

VII. CERTIFICATION OF DOCUMENTS BY GENERATOR

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name of Responsible Official Frederick George Trummer Title Public Works Officer

Signature Frederick George Trummer Date 16 Jul 96

Taken, sworn, and subscribed before me, this

16 day of July A.D. 19 96

Notary Seal

Jill Tangye

NOTARIAL SEAL
JILL L. TANGYE, Notary Public
Warminster Twp., Bucks County
My Commission Expires Dec. 2, 1999

Date Prepared/Revised

July 11, 1996

Waste Code

920

FORM U

Facility I.D Number

101494

V. SOURCE REDUCTION STRATEGY (Form 25R must be completed by generator and attached to this application unless waived in the instructions to that form)

See VI.A.

VI. ALTERNATIVE TO PROPOSED PROCESSING AND/OR DISPOSAL METHODS (must be provided by generator. Use additional sheets, if necessary.)

A. What other processing, disposal, recycling, reuse, or reclamation methods can be used? Briefly describe alternatives to your proposal.

None, as directed by Action Memorandum the contaminated soils and burried waste will be disposed of without treatment at a municipal waste landfill.

B. Why was the processing and/or disposal method in Section IV chosen?

See VI.A.

VII. CERTIFICATION OF DOCUMENTS BY GENERATOR

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name of Responsible Official Frederick George Trummer Title Public Works Officer

Signature Frederick George Trummer Date 16 Jul 96

Taken, sworn, and subscribed before me, this

Notary Seal

16 day of July A.D. 19 96

Jill Tangye

NOTARIAL SEAL
JILL L. TANGYE, Notary Public
Warminster Twp., Bucks County
My Commission Expires Dec. 2, 1999

Waste Management of Pennsylvania, Inc.
1000 New Ford Mill Road
Morrisville, Pennsylvania 19067
215/736-9400

A Waste Management Company

PCB CERTIFICATION

I, FRANK J KURDZIEL JR. (customer representative) certify to Tullytown Resource Recovery Facility (WM Facility) that within my company I would have knowledge concerning the accuracy of the following representations and that the following representations are correct to the best of my knowledge.

☑ CHECK THIS SECTION if customer has "historic" contamination, and cannot attribute the contamination to any particular source:

(1) I am unable to locate any records which indicate that a spill of PCBs occurred subsequent to February 17, 1978 which could have contaminated the material accompanying this certification.

(2) Any polychlorinated biphenyls (PCBs) detected in the material accompanying this certification resulted from a spill of PCBs that occurred prior to February 17, 1978.

☐ CHECK THIS SECTION when spill occurred after February 17, 1978 and the customer has records or knowledge that the contaminant source has concentrations below 50 ppm. You should also have any pertinent sampling data attached to this certification:

☐ The materials accompanying this certification have a concentration of polychlorinated biphenyls (PCBs) below 50 ppm.

☐ The source of the PCB contamination was sampled and found to have a PCB concentration below 50 ppm, and was the result of a spill which occurred on or about _____ (date).

Frank J Kurdziel Jr. 7-16-96
Customer Signature Date

Naval Air Warfare Center
Aircraft Division - Warminster
Company Name

FRANK J KURDZIEL JR.
Printed Name