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CNC CHARLESTON  
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SUBMITTAL OF WORK PLAN FOR ZONE H OTHER IMPACTED AREAS GRIDS G07 AND  
038 WITH TRANSMITTAL CNC CHARLESTON SC

1/29/1999  
U S NAVY



**DEPARTMENT OF THE NAVY**  
SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN  
PORTSMOUTH, VIRGINIA, ENVIRONMENTAL DETACHMENT CHARLESTON  
1899 NORTH HOBSON AVENUE, BUILDING 30  
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

IN REPLY REFER TO.

Ser: 521

**JUN 29 1999**

MEMORANDUM

From: Director, Supervisor of Shipbuilding, Conversion and Repair, USN, Portsmouth, Va., Environmental Detachment, Charleston, SC, (SPORTENVDETCNASN).  
To: Southern Division Naval Facilities Engineering Command (Code 1803 - Hayes Patterson).  
Subj.: SUBMITTAL OF WORK PLAN FOR ZONE H OTHER IMPACTED AREAS GRIDS G07 AND 038  
Ref: (a) Southern Division Ltr. 5090 dated 7 June 1999, Authorization for Project C98074, PCB Removal at Grids G07 and G038 Charleston Naval Complex  
End: (1) Interim Measure Work Plan for Zone H Grids G07 and G038

1. Per reference (a) the Environmental Detachment, Charleston (EDC) submits the enclosed Interim Measure Work Plan for review.
2. Questions and/or comments concerning this draft Work Plan should be addressed to Virginia Thomas (803) 743-6777, extension 145 or Jed Heames, extension 120.

Respectfully,

  
E. R. Dearhart

Distribution:  
File  
DET (Virginia Thomas/Jed Heames)  
SOUTHDIV  
USEPA (D. Spariosu)  
SCDHEC (P. Bergstrand, M. Mehta)



## **WORK PLAN**

**INTERIM MEASURE FOR ZONE H  
OTHER IMPACTED AREAS (OIAs)  
GRIDS G07 and G038  
CHARLESTON NAVAL COMPLEX  
CHARLESTON, SC**



Prepared for:

**DEPARTMENT OF THE NAVY  
SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
CHARLESTON SC**



Prepared by:

**Supervisor of Shipbuilding, Conversion and Repair,  
USN, (SUPSHIP) Portsmouth Va.,  
Environmental Detachment Charleston, S.C.  
1899 North Hobson Ave.  
North Charleston, SC 29405-2106**

June 29, 1999

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
COVER PAGE	
SIGNATURE PAGE	
TABLE OF CONTENTS	i
ACRONYM LIST	ii
1. INTRODUCTION	1
2. WORK PLAN OBJECTIVE	1
3. WORK PLAN GUIDANCE	1
4. WORK PLAN IMPLEMENTATION	2
5. SAMPLING	2
6. WASTE MANAGEMENT	3
7. SUBMITTALS	3

**APPENDICES**

A. SITE HISTORY	A-1
B. SITE SPECIFIC HEALTH AND SAFETY PLAN (SSHSP)	B-1
C. SCHEDULE	C-1
D. SITE MAPS	D-1

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PREPARER: \_\_\_\_\_

APPROVAL (DETACHMENT): \_\_\_\_\_

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**ACRONYM LIST**

AOC	Area of Concern
As	Arsenic
BEQ	Benzo(a)pyrene Equivalents
CFR	Code of Federal Regulations
CHASP	Comprehensive Health and Safety Plan
EDC	Environmental Detachment Charleston
GI	Gastrointestinal
HAZWOPER	Hazardous Waste Operations and Emergency Response
IM	Interim Measure
mg/kg	Milligrams/kilogram
MSDS	Material Safety Data Sheet
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PPE	Personnel Protective Equipment
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SCDHEC	South Carolina Department of Health and Environmental Control
SHSO	Site Health and Safety Officer
SOP	Standard Operating Procedure
SOUTHDIV	Southern Division Naval Facilities Engineering Command
SPORTENVDETCHASN	SUPSHIP Environmental Detachment Charleston
SSHSP	Site-Specific Health and Safety Plan
SUPSHIP	Supervisor of Shipbuilding, Conversion and Repair
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
USN	United States Navy

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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## **1. INTRODUCTION**

Soil samples were collected at grid-based sampling locations across Zone H. Other Impacted Areas (OIAs) represents areas where significant surface soil impacts were noted in the grid samples. Grid-based soil borings GDHSB007 and GDHDB038 were taken in grassy areas at the locations. Based on the identifications of the grid based soil samples, these OIAs are currently referred to as G07 and G038. The Final Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (RFI) for Zone H, Naval Base Charleston (NAVBASE) has identified PCB (Aroclor 1260) as a contaminant of concern at grid locations G07 and G038. These two surface sample locations contain Aroclor 1260 at concentrations higher than the Risk Based Screening Level (RBSL) of 83 µg/kg for that compound.

## **2. WORK PLAN OBJECTIVE**

The objective of this Interim Measure (IM) is to remove soils contaminated with PCB. These locations will be surveyed and marked prior to excavation. The cleanup level for PCB contaminated soil will be < 1 part per million (ppm) which is the clean soil definition as specified by 40 Code of Federal Regulations (CFR) 761.125. This IM may not necessarily be the final remedial action taken at this site. Additional actions may be required as determined by the RFI process. This IM is consistent with the ultimate cleanup of the site and is not intended to circumvent the public participation process inherent within environmental cleanup under RCRA.

Appendix A contains a description of the site including information on current conditions and past investigations.

Appendix B provides the Site Specific Health and Safety Plan (SSHSP).

## **3. WORK PLAN GUIDANCE**

This work plan will utilize and follow the guidance specified in the RFI Comprehensive Work Plan dated 30 August 1994. Work performed under this work plan is covered by the Supervisor of Shipbuilding Conversion and Repair, USN, (SUPSHIP) Portsmouth, Va., Environmental

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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Detachment Charleston (EDC) Comprehensive Health and Safety Plan (CHASP). The CHASP is required to be on site as part of the official work plan prior to work commencing. The Project Safety and Health Officer has amended this work plan with "Site Specific" Health and Safety requirements (SSHSP Appendix B).

#### **4. WORK PLAN IMPLEMENTATION**

The extent of the excavation area of Aroclor 1260 contaminated soils at location G07 shown in Figure 3 of Appendix D, is approximately 32 feet x 20 feet (640 square feet). The extent of the excavation area of Aroclor 1260 contaminated soils at location G038 shown in Figure 4 of Appendix D, is approximately 254 feet x 13 feet (3302 square feet). The excavation depth for both locations is approximately 1 foot. Samples collected to delineate the site horizontally will be used to confirm the horizontal extent of the excavation. Grab samples will be taken from the bottom of the excavation as shown in Figures 3 and 4 of Appendix D, to confirm the vertical extent of the excavation.

The disposal truck will be staged on the adjacent asphalt surface lined with 6-mil plastic. The excavated soil will be directly loaded for transport to the Treatment Storage and Disposal Facility (TSDF) for disposal. Excavation will continue until confirmatory sample results verify cleanup to the levels specified in paragraph 2 of this IM. Upon satisfactory confirmation sampling results the excavation will be backfilled with clean fill, graded and seeded to match the surrounding area.

#### **5. SAMPLING**

Analysis will be conducted to confirm that the excavated site meets acceptable cleanup levels for the contaminants of concern. The samples will be analyzed to confirm PCB removal to < 1 ppm. Samples collected for site delineation along the sidewalls of the excavation will be used as the horizontal perimeter confirmation samples.. Grab samples will be taken from the bottom of the excavation at sample locations numbered 1 through 8 shown in Figures 3 and 4 of Appendix D, for vertical confirmation. All sampling will be performed in accordance with the Comprehensive Sampling and Analysis Plan (CSAP).

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**6. WASTE MANAGEMENT**

Excavated soils will be characterized in accordance with South Carolina Hazardous Waste Management Regulations (Section SCDHEC R.61-79.261) and disposed of in accordance with all applicable regulations and permits. Soil that is characterized as non-hazardous will be sent to a Subtitle D landfill or approval for recycling will be obtained from the Waste Assessment Division of South Carolina Department of Health and Environmental Control (SCDHEC). Soil that is characterized as hazardous will be sent to a permitted Treatment, Storage and Disposal Facility (TSDF) for proper disposal. PCB contaminated waste will be disposed of at a Toxic Substances Control Act (TSCA) facility in accordance with 40 CFR 761.60 and 761.70.

**7. SUBMITTALS**

A final report will be submitted within 90 days after Southern Division Facilities Engineering Command agrees the IM at the site is completed (review of Data and Walk-through is performed). This report will summarize actions taken and report the following:

- excavated volumes
- nature of waste generated
- waste disposal
- sampling evolutions and sample results
- site photographs
- site condition following completion of work
- plan modification and any other data requested by agencies involved
- problems encountered and any other information that could be helpful tin the remediation, closure or reuse of the site

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**APPENDIX A  
SITE HISTORY**

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**1. SITE HISTORY**

During the Zone G Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) the Environmental Clean Contractor, "EnSafe," performed soil sampling that identified Aroclor-1260 as the contaminant of concern at grid locations G07 and G038. RFI Investigative soil and groundwater sample locations are shown in Appendix A. Very little land is unpaved in these areas and each sample was collected adjacent to or through asphalt. Location 038, a grassy area, is bounded by asphalt on the east and west. The PCB found at the impacted grid sample locations was spatially distributed along the grassy areas of the grids. Grid location GDHSB007 (G07) is at the west entrance to the Building 644 parking lot in a grassy apron along Dyess Avenue. It is bounded by asphalt and cemented surfaces. Grid location GDHSB038 (G038) is approximately 70 feet southeast of Building NS-84 adjacent to the associated parking lot.

Two of the first interval grid-based soil samples, GDHSB00701 and GDHSB03801 contained 2600 and 4000  $\mu\text{g}/\text{kg}$  of Aroclor 1260, respectively. The GHHSB038 sample from the second interval contained Aroclor 1260 at 290  $\mu\text{g}/\text{kg}$ . EDC investigative sampling indicates that PCB levels at sample locations 0134-4 through 6, surrounding G07, were found to contain from 1-6 ppm Aroclor 1260 as shown in Figure 1 of Appendix D. The samples were taken at 10 to 25 foot intervals south and west of G07. Samples 0136-1 through 7 taken at 3 foot intervals north, south, east, and west of location G038 contain PCB levels between 1 and 4 ppm as shown in Figure 2 of Appendix D. EDC samples 0157-1 through 3 were taken at 50 and 100 foot intervals east of G038. Sample 0157-4 was taken 15 feet southwest of the fence surrounding building 1135.



**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**APPENDIX B**

**SITE SPECIFIC HEALTH AND SAFETY PLAN (SSHSP)**

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**SITE SPECIFIC HEALTH AND SAFETY PLAN**

**1. PURPOSE:**

This plan provides supplemental site-specific information, and is to be used in conjunction with the Project Operations Plan For Site Investigations and Remedial Investigations dated August 1997, and the EDC Comprehensive Health and Safety Plan (CHASP). The CHASP has EDC requirements including exclusion/decontamination zones, control of work area access, weather extremes, heat/cold stress, biological/electrical hazards, general safe work procedures, emergency procedures, medical emergencies and chain of command.

**2. SITE DESCRIPTION, HAZARDS, and BACKGROUND:**

OIA G07 is located in a grassy apron at the west entrance to Building 644 parking lot. Asphalt pavement and a concrete sidewalk bound location G07. OIA G038 is approximately 70 feet southeast of Building NS-84, adjacent to the associated parking lot. The topography of the area is level and open air.

**3. WORK SCOPE BRIEF (REFER TO THE WORK DOCUMENT FOR FULL BRIEF:**

The surface contaminated areas will be excavated by backhoe to a depth of 1 foot. Excavated soils will be placed directly into trucks for transportation to a TSDF for disposal at a subtitle D landfill. The disposal vehicles will be staged on 6-mil thick plastic to protect the area against soil spills. Spills of contaminated material will be cleaned up immediately.

**4. HAZARDS:**

The primary health hazard is exposure to PCBs or Arsenic contaminated soils generated by dirt removal. Removal of the soil may create a contact and/or respiratory hazard.

**Aroclor 1260** is a polychlorinated biphenyl (PCB). PCBs are toxic chemicals belonging to the chlorinated hydrocarbon group and are of concern due to their persistence in the environment and the tendency to accumulate in the food chain. They range in form from oily liquids to hard solids and transparent resins. The health effect for workers who have a long history of prolonged skin contact is chloracne, a skin eruption disorder. Studies have shown the potential for problems in the liver and pancreas. PCBs are fat-soluble and accumulate in fat cells. In normal temperatures, PCBs do not evaporate into the air. A major route of entry is ingestion by improper hand to mouth work practices. Another concern is the need to prevent the spread of PCBs outside the area of contamination.

**Benzo(a)pyrene equivalent (BEQs)**-BEQs and other coal tar pitch volatiles are products of distillation of coal. NIOSH has recommended that the PEL for these products be 0.1 mg/m<sup>3</sup> and that they be regulated as carcinogens. Repeated and intimate exposure such as by coke oven workers, especially over longer time periods (five or more years) has shown an increased risk of

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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cancer of the lungs, skin, bladder, and kidneys. Pregnant women may be especially susceptible to exposure effects.

**Safety hazards include:**

- Traffic
- Heat stress
- Personal injury risks from heavy equipment operation
- The dangers of above ground or underground electrical wiring
- Excavation and trenching hazards

The risk for chronic exposure is very low due to the use of mechanical equipment, the open-air area, and the relatively short work duration at the site. Risk of acute exposure is also minimal due to the low contaminant levels and the fact that PCBs are not readily volatile. The primary health hazard is ingestion of PCBs from incorrect work habits, or from ingestion of soil which contains PCBs.

#### **5. PERSONAL PROTECTIVE EQUIPMENT:**

The minimum PPE required for general work is hard hat, safety shoes/boots, hearing protection, and safety glasses. These choices are based on a personal protective equipment assessment of the hazards normally present at construction sites such as impact, compression/crushing, material handling, flying objects, use of heavy equipment, and noise. Wear nitrile gloves, protective coveralls (either tyvek or cloth) and shoe covers, steel-toe boots, and booties when exposed to soil being excavated. If splashing is possible, wear a face shield or a full-face respirator. Industrial hygiene monitoring will be performed. Avoid contact with ground water.

Respiratory protection is required for

- working with or near the soil excavation if PID readings in the breathing zone in excess of 5 ppm PID units are obtained for greater than 10 minutes (and can not be eliminated by use of ventilation)
- if dust is present (and can not be eliminated by working upwind or misting with water)

Use a minimum of a half-mask respirator with an organic vapor and HEPA filter. Change the organic vapor respirator cartridge after every day of use. IF PID units over 500 ppm continuous are measured, evacuate immediately and assess the situation.

Additional care in work practices, area access controls and equipment decontamination should be exercised due to the need to avoid any spread of PCBs. If protective clothing and equipment are not removed at the worksite for cleaning or disposal, provide a changing area with separate lockers for protective clothing/equipment and for street clothing to prevent cross contamination. Employees may not wear or carry home PPE used during the work shift. Employees must wash their hands and face at the end of each work shift.

Hearing protection is required when operating noise hazardous equipment.

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**6. SPECIAL PERSONNEL TRAINING QUALIFICATIONS:**

Hazwoper training (40 hour initial with 8 hour annual refresher), and depending on the planned work, respiratory protection training with fit test, fall protection, excavation standard, forklift operation, lockout/tagout, and heavy metals worker training. Crane and heavy equipment operators must be licensed for the equipment being operated. Training to include arsenic course.

These requirements are applicable to visitors also. Visitors must certify by their signature in the work logbook that they meet the required training.

**7. OCCUPATIONAL SAFETY AND HEALTH PRECAUTIONS:**

Prior to the start of work, the area must be checked for the presence of above or below ground electrical, sewage, telephone or water lines if they will be endangered by the planned work. They must be marked and secured by lockout/tagout if they will be endangered by work operations. Inspect the area for the presence of overhead power lines, or poles that may be undermined by digging. Comply with the EDC SOP for lockout/tagout of electrical services if they endanger the work, and inspection of power poles and prohibition of digging near power poles.

Excavation sites may become a trip/fall hazard (especially at night), and may also be an attractive nuisance for children. The sites should be secured (e.g. by barrier fencing) at night or when not being worked.

If it becomes necessary to ventilate, use an exhaust blower after reaching a depth of about three feet. Exhaust downwind and away from personnel and occupied buildings. Ensure generators and other engine equipment used to power the blower should not discharge exhaust gas into the excavation. A good work practice is to stay upwind of dust produced. If dust is evident during work, use a light water mist to eliminate the dust or move the equipment upwind.

The excavations created will become confined spaces if they exceed four feet in depth. They will not be entered during this work until gas testing is completed and an entry permit issued if entry is needed. Excavation depths of 5 feet or greater must comply with the requirements of OSHA 29 CFR 1926.650 and 651 for trenching and excavation.

For excavations over 5 feet in depth where personnel entry is required, a "Competent Person" for excavation oversight must be designated, in writing (e.g. by making a log entry). This person will have been trained in the requirements of 29 CFR 1926.650/651/652 (The Construction Excavation Standard). This duty may be rotated among trained personnel, but only one person at a time is designated the competent person. Duties include:

- Identifying existing and predictable employee excavation hazards, and being authorized to take prompt corrective measures to eliminate those hazards

- Ensuring compliance with the excavation standard Detachment policy that all soils are to be classified as Type "C", and sloping/shoring/trench boxes will be used where needed

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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- Daily inspections prior to work or entry, and after rainstorms
- Being present at the site whenever employees enter an excavation over 5 feet deep
- Answering questions by regulators about compliance with the excavation standard during regulator inspections
- Informing EDC Project Team if excavation exceeds 5 feet in depth

During excavation, be alert to the discovery of containers or drums, utility lines especially power or sewer, and changes in the color or smell of the soil which could indicate past spills. Stop work, monitor with the PID, and evaluate if unknown conditions are encountered.

Strict entrance and exit controls should be maintained for each worksite to avoid spread of PCBs. Protection from traffic should be provided e.g. by blocking vehicle access or by use of warning cones. Truck drivers should exit trucks during loading.

If protective clothing and equipment (PPE) are not removed at the worksite for cleaning or disposal, provide a changing area with separate lockers for protective clothing/equipment and for street clothing to prevent cross contamination. Ensure facilities for washing face and hands are available to employees. Employees must wash their hands and face prior to eating or smoking and at the end of the work shift before going home. PPE worn during the work shift may not be worn home. Use of bug repellent and sun tan oil is suggested.

Monitoring will be performed for organic vapors using a PE Photovac PID Model 2020, or equivalent with a 10.6 eV tube. Combustible gas indicators, indicator tubes and passive dosimetry badges may also be used.

Use the emergency numbers and routes of Attachment A. Notify Detachment supervision of all injuries, including symptoms of health effects.

#### **8. MATERIAL SAFETY DATA SHEET:**

The Detachment Safety Department maintains a complete set. MSDS for PCB, Arsenic, Chromium, Vanadium and BEQ and any materials used will be in the official work plan folder maintained on site.

#### **9. MEDICAL SURVEILLANCE:**

Hazardous waste worker ( B27), Hearing Conservation (C2), and for Respirator, (A10).

#### **10. TRAINING AND MEDICAL RECORDS:**

Training and medical documentation for on sit workers will b placed in the job folder.

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**11. EMERGENCY PROCEDURES:**

**Notification-**

If any situation or unplanned occurrence requires outside emergency assistance, immediately call the following:

Fire Department	Phone 911
Police Department	Phone 911
Ambulance	Phone 911

As soon as practical, the following personnel should be apprised of the situation:

Project Manager  
Project Leader  
EDC Occupational Health and Safety Specialist and Health and Safety Officer

**Site Resources-**

The Project Supervisor will have a two-way radio and cellular phone on site for routine and emergency communication/coordination with EDC personnel. First aid, eyewash, hand/face washing equipment and toilet facilities will be available at the work site.

**Pre-Emergency Planning**

During the site briefing, all employees will be reminded of provisions of the emergency response plan, communication systems, and evacuation routes.

**Emergency Procedures**

In case of an emergency, which necessitates the evacuation of the site, the following procedures shall be followed:

- a) Activate alarms as designated by the Site Specific Health and Safety Plan (SSHSP).
- b) Immediately proceed to a pre-determined assembly area (relocated if necessary) and remain there until instructed to do otherwise.
- c) Use planned escape routes. Escape routes will be planned for each site.
- d) In the event that an individual experiences effects or symptoms of exposure while on site, personnel will immediately halt work and act according to the instructions provided by the Project Supervisor or, in his/her absence, the Site Health and Safety Officer (SHSO).
- e) For applicable site activities wind indicators will be used to continuously indicate upwind, preferred escape routes, from downwind routes.
- f) Investigate conditions(s) suggesting site conditions may be more hazardous than anticipated. The condition observed and the decisions made shall be recorded in the SSHSP. If there are any doubts about how to proceed, suspend work and back away

**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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from the work area until the SHSO has evaluated the situation and provided the appropriate instructions.

- g) If an individual suffers personal injury, if the situation indicates, the SHSO will call the N. Charleston Fire Department or and ambulance at (911). Next, alert appropriate emergency response agencies as the situation dictates.
- h) If an individual suffers chemical exposure, the affected areas should be flushed immediately with copious amounts of clean water and, if the situation dictates, the SHSO should alert appropriate emergency response agencies, or personally ensure the exposed individual is transported to the nearest medical treatment facility for prompt treatment.
- i) If available, additional information on appropriate chemical exposure treatment methods will be provided through the MSDS and should be provided to medical assistance authorities.

**HOSPITAL INFORMATION**

**Nearest Medical Assistance**

For non-emergency medical services, utilize Roper Hospital North located on 2750 Speissegger Drive, N. Charleston, SC. The phone number at the facility is (843) 744-2110. The Emergency Room number is (843) 745-2787. Ambulance service phone 911.

**FOR ALL LIFE THREATENING MEDICAL EMERGENCIES:**

**CALL COUNTY EMS 911**

**EMERGENCY TELEPHONE NUMBERS**

Environmental Detachment Charleston, (Bobby Dearhart Manager)	843-743-2821 (ext. 131)
USEPA Environmental Response Team	800-642-9999
Fire/Police/Ambulance (Dispatcher)	911
Poison Control Center	1-800-292-6678
Caretaker Safety Officer	1-800-430-6930

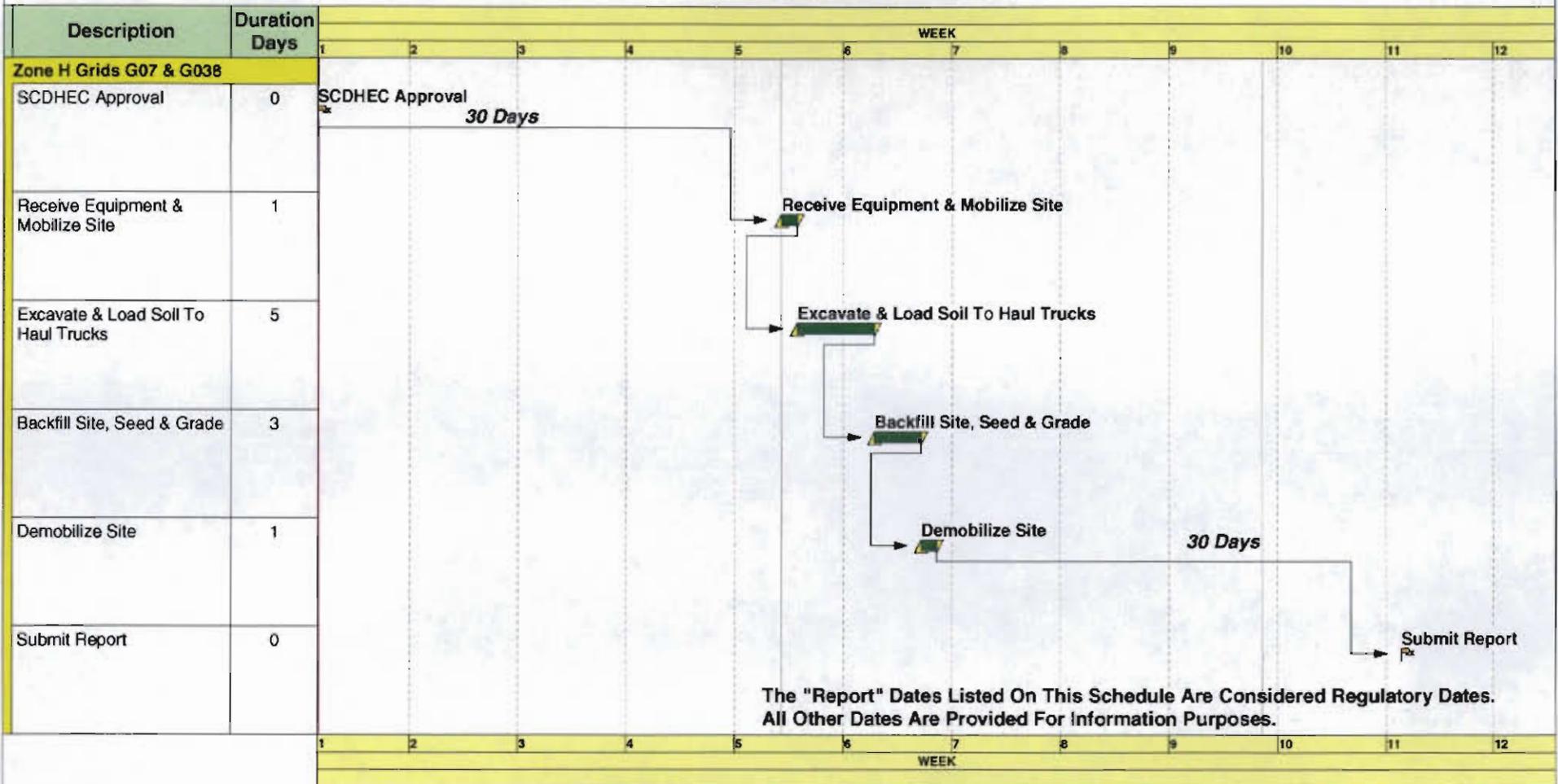
**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**APPENDIX C**

**SCHEDULE**

**ENVIRONMENTAL DETACHMENT  
CHARLESTON SC**



**ZONE H GRIDS G07 & G038  
PCB CONTAMINATED SOIL REMOVAL  
Appendix ( C - 1)**

Data date 01JUN99  
Run date 29JUN99  
Page number 1A  
© Primavera Systems, Inc.

- Early bar
- Early start point
- Early finish point
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

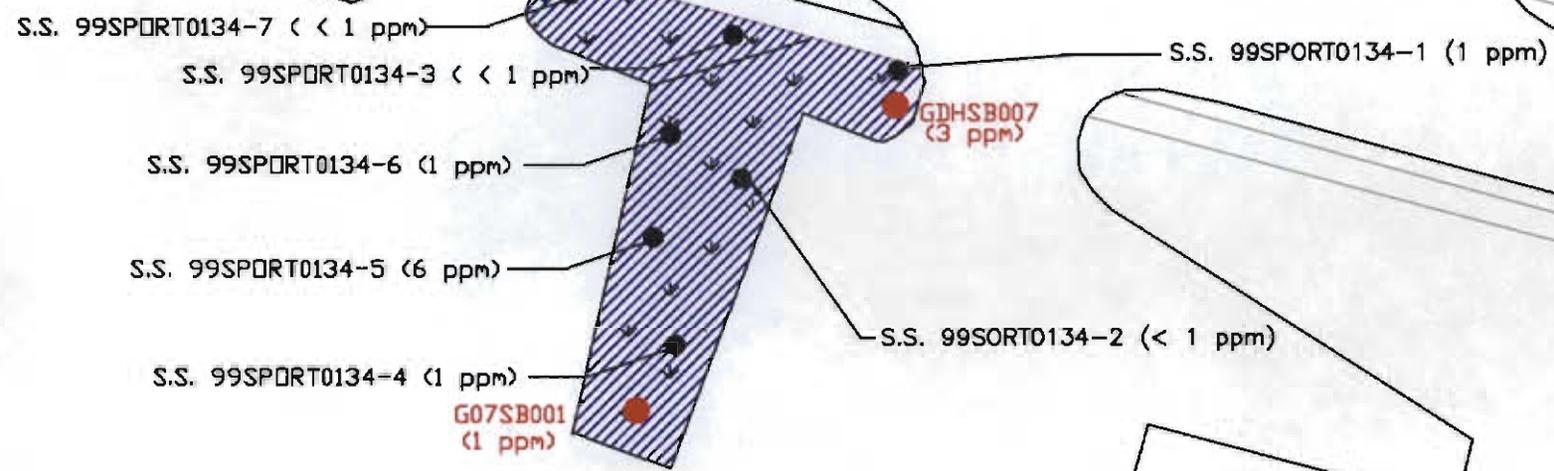
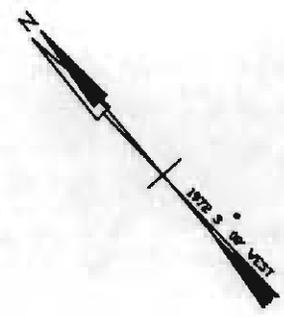


**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**APPENDIX D**

**SITE MAPS**



BLDG. 644

Appendix D-1

**LEGEND**

S.S. - SOIL SAMPLE



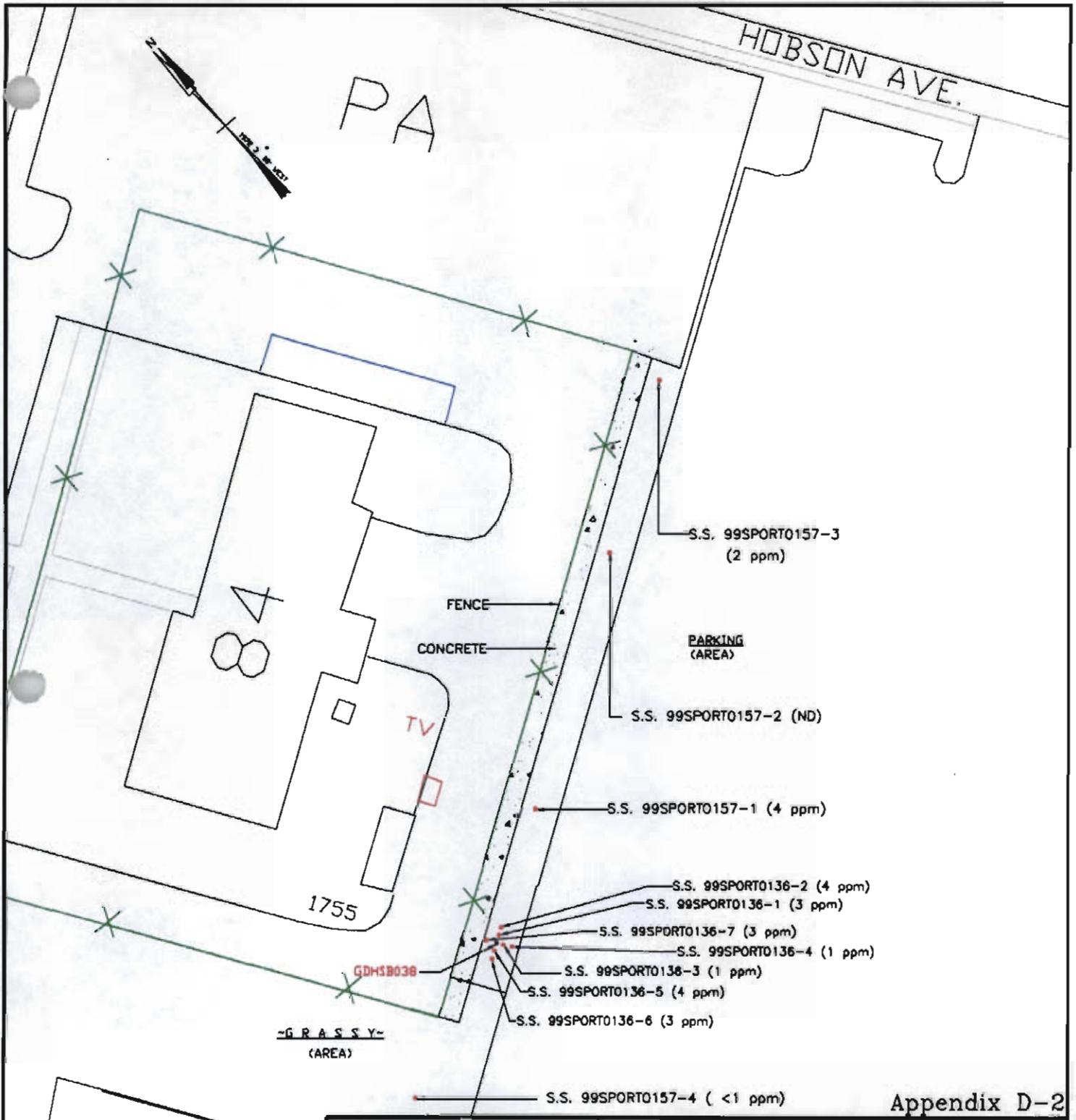
GRAPHIC SCALE



SPORTENVDETHASN  
 1899 North Hobson Ave.  
 North Charleston, SC  
 29405-2106  
 Ph. (803) 743-8777

Figure 1 PCB EXCAVATION AREA  
 Zone H Grid G07  
 BUILDING 644  
 Naval Base Charleston, SC

DWG DATE: 16 APR 99      DWG NAME: B-644\_1



Appendix D-2

**LEGEND**  
S.S. - SOIL SAMPLE

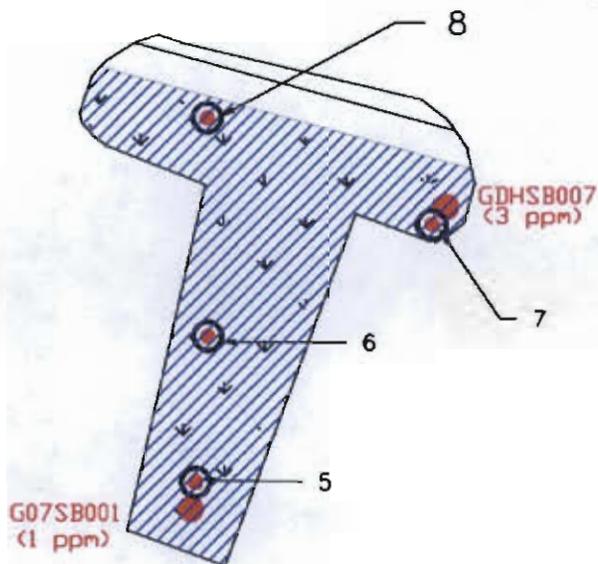
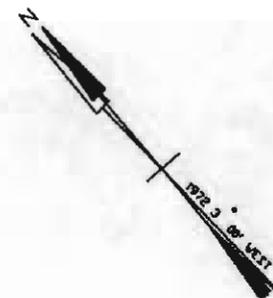


**SPORTENVDETCHASN**  
1899 North Hobson Ave.  
North Charleston, SC 29405-2108  
Ph. (803) 743-8777

**Figure 2 PCB EXCAVATION AREA**  
Zone H Grid G038  
BUILDING 84/1135  
Naval Base Charleston, SC

DWG DATE: 21 APR 99 | DWG NAME: B-84\_1

DYESS AVE.



BLDG. 644

**LEGEND**

● - CONFIRMATION SAMPLE



GRAPHIC SCALE

**Appendix D-3**

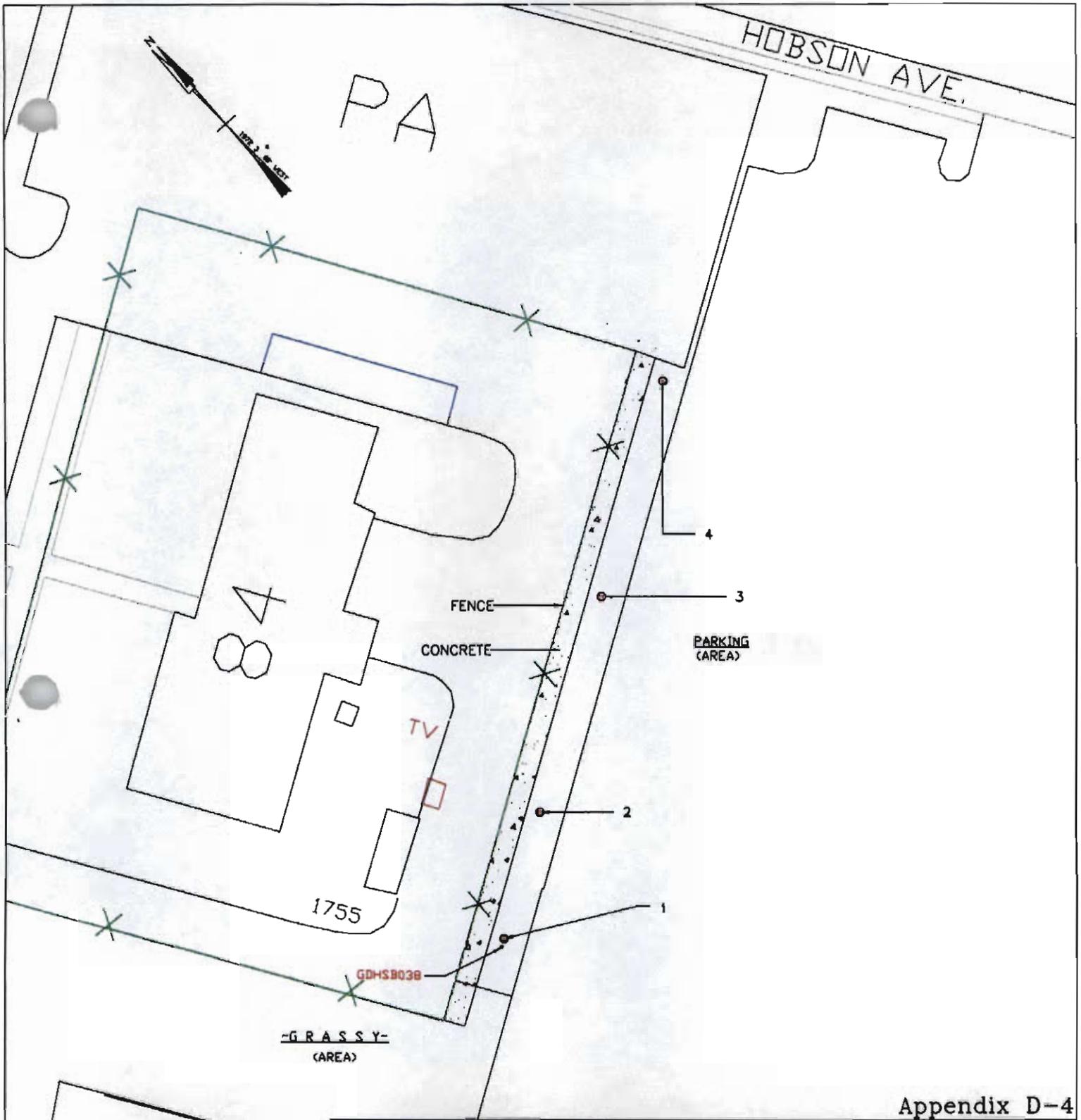


SPORTENVDETHASN  
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North Charleston, SC  
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Ph. (803) 743-8777

**Figure 3 PCB EXCAVATION AREA**  
Zone H Grid G07  
BUILDING 644  
Naval Base Charleston, SC

DWG DATE: 16 APR 99

DWG NAME: B-644\_3



Appendix D-4

**LEGEND**

● - CONFIRMATION SAMPLE



GRAPHIC SCALE



**SPORTENVDETHASN**

1899 North Hobson Ave.

North Charleston, SC 29405-2106

Ph. (803) 743-6777

**Figure 4 PCB EXCAVATION AREA**

Zone H Grid G038

**BUILDING 84/1135**

Naval Base Charleston, SC

DWG DATE: 21 APR 99

DWG NAME: B-84\_1



**DEPARTMENT OF THE NAVY**  
SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN  
PORTSMOUTH, VIRGINIA, ENVIRONMENTAL DETACHMENT CHARLESTON  
1899 NORTH HOBSON AVENUE, BUILDING 30  
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

Ser: 565 <sup>IN REPLY REFER TO</sup>

MEMORANDUM

From: Director, Supervisor of Shipbuilding, Conversion and Repair, USN, Portsmouth, Va., Environmental Detachment, Charleston, SC, (SPORTENVDETCNASN).

To: Mihir Mehta, Project Manager  
Corrective Action Engineering Section  
Bureau of Land and Waste Management  
SCDHEC  
2600 Bull Street  
Columbia, SC 29201-1708

Subj.: SUBMITTAL OF REVISIONS TO WORK PLANS FOR OTHER IMPACTED AREAS (OIA) GRID G07, GRID G038 AND AOC 684

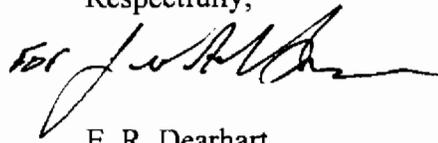
Ref: (a) SCDHEC Memo dated 12 July 1999 with Attachment, Comments for Project C98074, PCB Removal at Grids G07 and G038  
  
(b) SCDHEC Memo dated 12 July 1999 with Attachment, Comments for Project C99012, AOC 684 Pistol Berm Removal

Encl: (1) Changes and Resolutions for Interim Measure Work Plan for Grids G07 and G038, Located in Zone H, Project 98074  
  
(2) Changes and Resolutions for Interim Measure Work Plan for AOC 684, Located in Zone H, Project C

1. Per reference (a) the Environmental Detachment, Charleston (EDC) submits the enclosed changes and resolutions as requested for Zone H Other Impacted Areas Grids G07 and G038 Interim Measure Work Plan for review. The amended site history and corrected drawings are to be placed in the Work Plan appendices A and D respectively if approved per your review. The requested changes and revisions to pages 1, 3 and figure 1 of AOC 684 are to be placed in the Work Plan if approved per your review.

2. Questions and/or comments concerning these changes and resolutions for Grids G07/G038 Work Plan should be addressed to Virginia Thomas (843) 743-6777, extension 145; for AOC 684 contact Rusty Cope, extension 120 or Jed Heames, extension 123.

Respectfully,

A handwritten signature in black ink, appearing to read "E. R. Dearhart", written in a cursive style.

E. R. Dearhart

Distribution:

File

DET (Virginia Thomas/Jed Heames)

↳ SOUTHDIV (David Dodds)

USEPA (D. Spariosu)

SCDHEC (P. Bergstrand, M. Mehta)

<b>RESPONSE TO COMMENTS FOR INTERIM MEASURE WORK PLAN FOR OTHER IMPACTED AREAS (OIAs) GRID G07 &amp; GRID G038 CHARLESTON NAVAL COMPLEX</b>			
<b>Document Title:</b>		<i>Work Plan Interim Measure Removal Plan for Grid G07 and G038</i>	
<b>Author (POC)</b>		<i>Virginia Thomas, Project Leader</i>	<b>Reviewed by:</b> <i>Jed Heames, Team Leader IR Branch</i>
<b>Para Num.</b>	<b>Type</b>	<b>Comment: Page 1</b>	<b>Resolution:</b>
4.0 and 2.0	DHEC Mehta	<i>1. The third line of page 2 para. 1 states "The excavation depth for both locations is approximately 1 foot." The second line of page 1 para. 2 states the cleanup level for PCB contaminated soil will be &lt; 1 ppm which is the clean definition." The two goals above are contradicting as 1 foot of soil excavation may not reduce the PCB contaminated soils to levels below 1 ppm. Therefore, only one interim measure objective or goal should be stated in the referenced document (i.e., the PCB contaminated soils will be removed to meet the clean definition of less than 1 ppm as specified by 40 CFR 761.125) Please revise the document to address this concern.</i>	<b>Section 4.0</b> Para 2 states "Excavation will continue until confirmatory sample results verify cleanup to the levels specified in paragraph 2 of this IM
5	DHEC Mehta	<i>2. This paragraph does not describe whether the confirmatory samples collected be composited into one sample or discrete analysis be performed. The confirmatory sampling and analysis should be discrete to understand the nature and extent of residual contaminant concentration at these two sites. Also, explain how or what criteria were used for the selection of confirmatory samples (both location and number). Please revise this section to address this concern.</i>	<b>Section 5.0</b> Per the USEPA SOPQAM a grab sample is an individual sample collected from a single location at a specific time or period of time. It is therefore considered equivalent to a discrete sample and is treated as such by EDC. Per this definition and subsequent discussion between EDC and USDHEC no further correction is required.

App. A	DHEC Mehta	3. Please provide a brief description and figure to orient the sites (G07 & G038) within Zone H and with respect to SWMU or AOC within which the RFI sampling was conducted.	<b>App. A</b> Section 4.21 of the Zone H RFI dtd 31 July 1995 states "For the purpose of obtaining data to be used for the determination of background or upper tolerance limit concentrations for select compounds and elements, soil and groundwater samples were collected at grid-based locations across Zone H. This statement and drawing A-3 will be added to appendix A to clarify the site orientation.
Figure 3 and 4; 4.0	DHEC Mehta	4. Figure 3 and 4; PCB Excavation Area for Grid G07 and G038. Section 4, page 2, fourth line states that, "Samples collected to delineate the site horizontally will be used to confirm the horizontal extent of excavation." The referenced figure does not show any sample locations to confirm the horizontal extent of excavation. Please revise these figures to address this concern. Please show the excavation area for G038 on Figure 4.	<b>Section 4.0</b> Figures 3 and 4 are revised for clarification Soil boring results of less than 10 ppm taken in 1996 and 1999 will be used to define the horizontal extent of the excavation boundaries. These locations are depicted by solid red dots in revised figures 3 and 4. The data gaps from the 1999 soil sampling along the excavation boundaries will be confirmed in the areas as shown in 50 foot intervals in the revised figures. Confirmation of the vertical extent is indicated with triangles in the revision. Samples 10 thorough 20 as shown in figure 3 will be for both horizontal and vertical confirmation. These samples will be collected at the end of the project and will be used verif the effectiveness of the removal.
4	DHEC Bergstrand	5. This section states "The extent of the excavation...at location G07 shown in Figure 3 of Appendix D.... (and)...at location G038 shown in Figure 4 of Appendix D..." The extent of excavation is not clearly indicated on either figure. Please revise these two figures. The two revised figures may be submitted to be included in the workplan. The two revised figures should be submitted before the document can be approved.	Vertical excavation and confirmation will continue until the objective of this IM is met or ground water is encountered. As shown in figures 3 and 4 horizontal confirmation and excavation will continue up to the asphalted areas. Should the sample results exceed the objective of this IM plastic sheeting (6 mil thk.) will be placed along the sidewalls. The excavation will be backfilled and the conditions documented in the completion report. Further investigation will be warranted to determine the extent of additional cleanup.
App. B	DHEC Bergstrand	6. Review of this section is deferred.	<b>App. B</b> Deferral of the review of Appendix B, Site Specific Health and Safety Plan is noted.

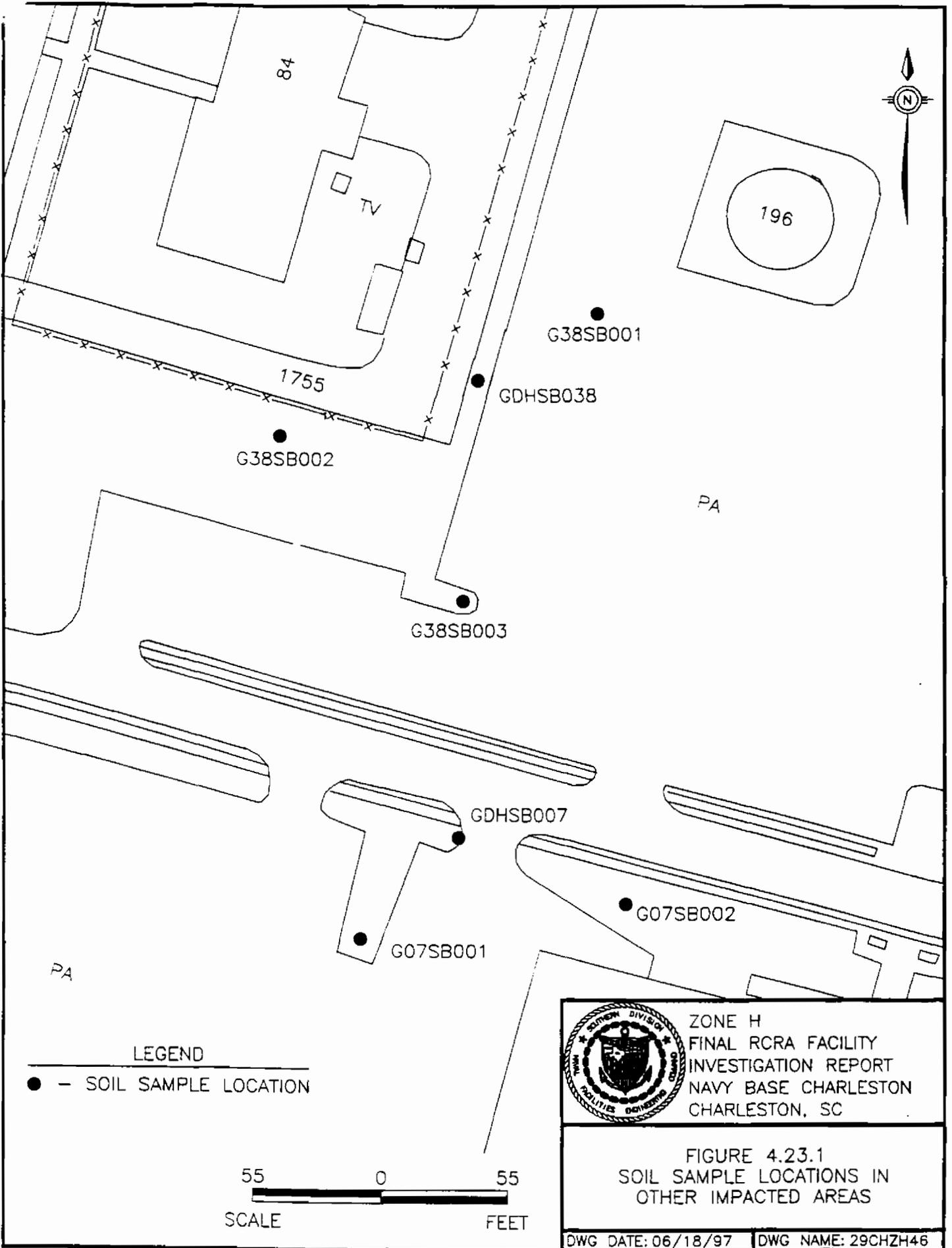
**INTERIM STABILIZATION MEASURE  
GRIDS G07 and G038  
ZONE H PCB CONTAMINATED SOIL REMOVAL**

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**1. SITE HISTORY**

During the Zone G Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) the Environmental Clean Contractor, "EnSafe," performed soil sampling that identified Aroclor-1260 as the contaminant of concern at grid locations G07 and G038. For the purpose of obtaining data to be used for the determination of background or upper tolerance limit concentrations for select compounds and elements, soil and groundwater samples were collected at grid-based locations across Zone H. RFI Investigative soil and groundwater sample locations are shown in Appendix A. Very little land is unpaved in these areas and each sample was collected adjacent to or through asphalt. Location 038, a grassy area, is bounded by asphalt on the east and west. The PCB found at the impacted grid sample locations was spatially distributed along the grassy areas of the grids. Grid location GDHSB007 (G07) is at the west entrance to the Building 644 parking lot in a grassy apron along Dyess Avenue. It is bounded by asphalt and cemented surfaces. Grid location GDHSB038 (G038) is approximately 70 feet southeast of Building NS-84 adjacent to the associated parking lot.

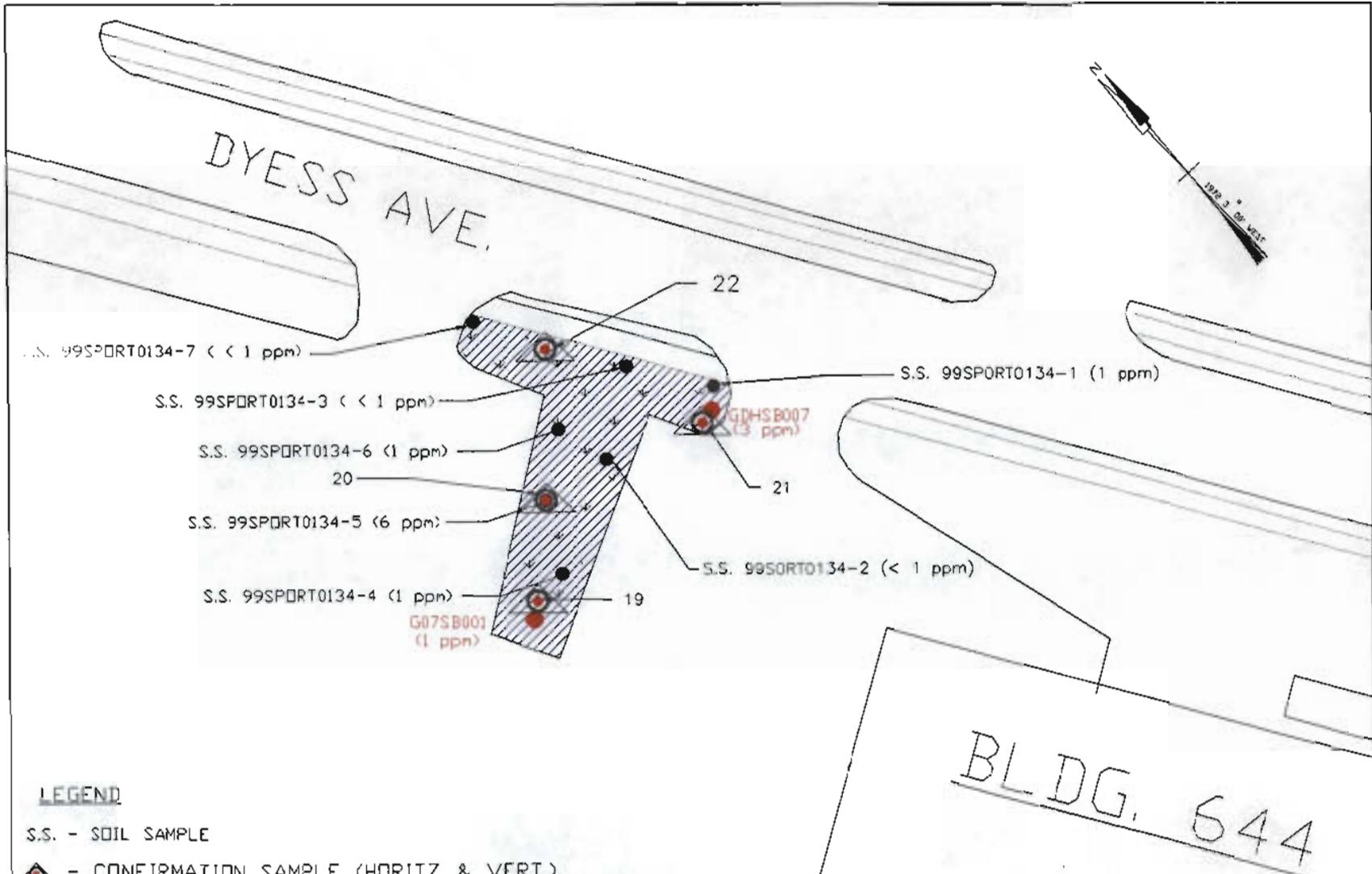
Two of the first interval grid-based soil samples, GDHSB00701 and GDHSB03801 contained 2600 and 4000  $\mu\text{g}/\text{kg}$  of Aroclor 1260, respectively. The GHHSB038 sample from the second interval contained Aroclor 1260 at 290  $\mu\text{g}/\text{kg}$ . EDC investigative sampling indicates that PCB levels at sample locations 0134-4 through 6, surrounding G07, were found to contain from 1-6 ppm Aroclor 1260 as shown in Figure 1 of Appendix D. The samples were taken at 10 to 25 foot intervals south and west of G07. Samples 0136-1 through 7 taken at 3 foot intervals north, south, east, and west of location G038 contain PCB levels between 1 and 4 ppm as shown in Figure 2 of Appendix D. EDC samples 0157-1 through 3 were taken at 50 and 100 foot intervals east of G038. Sample 0157-4 was taken 15 feet southwest of the fence surrounding building 1135.



ZONE H  
 FINAL RCRA FACILITY  
 INVESTIGATION REPORT  
 NAVY BASE CHARLESTON  
 CHARLESTON, SC

FIGURE 4.23.1  
 SOIL SAMPLE LOCATIONS IN  
 OTHER IMPACTED AREAS

DWG DATE: 06/18/97 | DWG NAME: 29CHZH46



**LEGEND**

S.S. - SOIL SAMPLE

- CONFIRMATION SAMPLE (HORITZ. & VERT.)

- EXCAVATION AREA



GRAPHIC SCALE

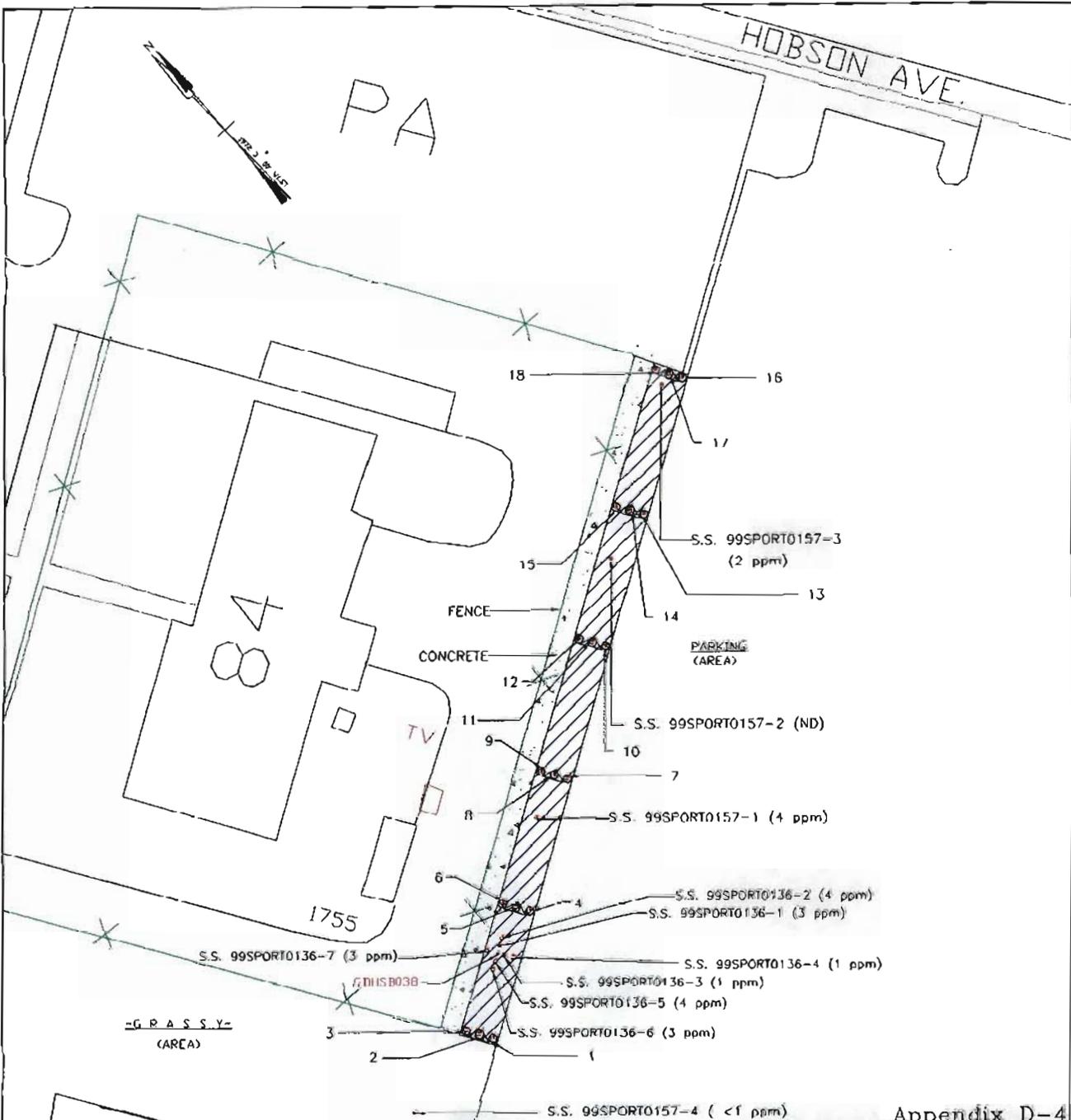


SPORTENVDETHASN  
 1899 North Hobson Ave.  
 North Charleston, SC  
 29405-2108  
 Ph. (803) 743-6777

Figure 3 PCB EXCAVATION AREA  
 Zone H Grid G07  
 BUILDING 644  
 Naval Base Charleston, SC

DWG DATE: 21 JUL 99

DWG NAME: B-644\_1A



Appendix D-4

**LEGEND**

- S.S. - SOIL SAMPLE
- ⊙ - CONFIRMATION SAMPLE (HORIZ)
- ▨ - EXCAVATION AREA
- ⚠ - CONFIRMATION SAMPLE (VERT)



SPORTENVDETCHASN  
 1899 North Hobson Ave.  
 North Charleston, SC 29405-2108  
 Ph. (803) 743-6777

Figure 4 PCB EXCAVATION AREA  
 Zone H Grid G038  
 BUILDING 84/1135  
 Naval Base Charleston, SC

DWG DATE: 21 JUL 99 | DWG NAME: B-84\_1A



2600 Bull Street  
Columbia, SC 29201-1708

## MEMORANDUM

**TO:** Mihir Mehta, Environmental Engineer Associate  
Corrective Action Engineering Section  
Hazardous and Infectious Waste Management  
Bureau of Land and Waste Management

**FROM:** Paul M. Bergstrand, P.G., Hydrogeologist   
Hazardous Waste Section  
Division of Hydrogeology  
Bureau of Land and Waste Management

**DATE:** 8 July 1999

**RE:** Charleston Naval Base (CNAV)  
Charleston County, South Carolina  
SC0 170 022 560

Interim Measure Workplan  
Zone H, AOC 684  
Dated 2 July 1999, Received 6 July 1999, Revision 0

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996 and the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994.

One comment has been provided. Revisions are not necessary. This work plan is approvable.

DD990560.PMB

Zone H, AOC 684 IM Work Plan  
Paul M. Bergstrand  
8 July 1999

1. Appendix B, Site Specific Health and Safety Plan

Review of this section is deferred.



2600 Bull Street  
Columbia, SC 29201-1708

COMMISSIONER  
Douglas E. Bryant

July 12, 1999

BOARD:  
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Rodney L. Grandy

Henry Shepard II, P.E.  
Caretaker Site Office  
NAVFACENCOM, Southern Division  
P. O. Box 190010  
North Charleston, SC 29419-9010

Re: Interim Measures Work Plan for Other Impacted Areas (OIAs) Grid G07 and Grid G038; dated June 29, 1999; Located in Zone H Charleston Naval Complex SCO 170 022 560.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced Interim Measures Work Plan (6/29/99) according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. The attached comments were generated based on this review. These comments must be addressed prior to the final approval of the referenced document and field implementation of the interim measure.

Further, the Department is available to clarify any of the attached comments before the submittal of the comment responses and the revised pages in order to expedite the resolution of these issues.

Should you have any questions, please contact me at Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Attachment: Memorandum from Paul Bergstrand to Mihir Mehta dated July 8, 1999.

Sincerely,

Mihir P. Mehta, Project Manager  
Corrective Action Engineering Section  
Bureau of Land & Waste Management

cc: Paul Bergstrand, Hydrogeology  
Rick Richter, Trident EQC  
David Dodds, SOUTHDIV  
Dann Spariosu, EPA Region IV

**South Carolina Department of Health and Environmental Control comments on: Interim Measures Work Plan for Other Impacted Areas (OIAs) Grid G07 and Grid G038; dated June 29, 1999; Located in Zone H Charleston Naval Complex SCO 170 022 560.**

**Comments Generated By Mihir Mehta:**

1. Section 4; Work Plan Implementation; page 2.  
Third line states, "The excavation depth for both locations is approximately 1 foot."  
  
Section 2; Work Plan Objective; page 1.  
This section states that the cleanup level for PCB contaminated soil will be < 1 ppm (parts per million)-which is the clean definition.  
  
The two goals stated above are contradicting as 1 foot of soil excavation may not reduce the PCB contaminated soils to levels below 1 ppm. Therefore, only one interim measure objective or goal should be stated in the referenced document (i.e., the PCB contaminated soils will be removed to meet the clean definition of less than 1 ppm as specified by 40 CFR 761.125). Please revise the document to address this concern.
2. Section 5; Sampling; page 2.  
This paragraph does not describe whether the confirmatory samples collected be composited into one sample or discrete analysis will be performed. The confirmatory sampling and analysis should be discrete to understand the nature and extent of residual contaminant concentration at these two sites.  
  
Also, explain how or what criteria were used for the selection of confirmatory samples (both location and number).  
  
Please revise this section to address this concern.
3. Appendix A; 1. Site History; page A-1.  
Please provide brief description and figure to orient the sites (G07 & G038) within Zone H and with respect to SWMU or AOC within which the RFI sampling was conducted.
4. Figure 3 and 4; PCB Excavation Area for Grid07 and G038  
Section 4, page 2, fourth line states that, "Samples collected to delineate the site horizontally will be used to confirm the horizontal extent of excavation."  
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2600 Bull Street  
Columbia, SC 29201-1708

**MEMORANDUM**

**TO:** Mihir Mehta, Environmental Engineer Associate  
Corrective Action Engineering Section  
Hazardous and Infectious Waste Management  
Bureau of Land and Waste Management

**FROM:** Paul M. Bergstrand, P.G., Hydrogeologist  
Hazardous Waste Section  
Division of Hydrogeology  
Bureau of Land and Waste Management

*PMB*

**DATE:** 8 July 1999

**RE:** Charleston Naval Base (CNAV)  
Charleston County, South Carolina  
SC0 170 022 560

Interim Measure Workplan  
Zone H, OIAs G07 and G038  
Received 1 July 1999, Revision 0

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996 and the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994.

Two comments have been provided.

DD990559.PMB

Zone H, OIAs G07 and G038 Work Plan

Paul M. Bergstrand

8 July 1999

1. Page 2, Section 4 WORK PLAN IMPLEMENTATION

This section states "The extent of the excavation...at location G07 shown in Figure 3 of Appendix D.... (and)... at location G038 shown in Figure 4 of Appendix D..." The extent of excavation is not clearly indicated on either figure. Please revise these two figures.

The two revised figures may be submitted to be included in the workplan. The two revised figures should be submitted before the document can be approved.

2. Appendix B, Site Specific Health and Safety Plan

Review of this section is deferred.