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CNC CHARLESTON
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CONTAMINATION ASSESSMENT REPORT FOR UNDERGROUND STORAGE TANK NS-705 (UST NS-705) CNC CHARLESTON SC

07/16/1998

ENVIRONMENTAL DETACHMENT CHARLESTON

L: 8.20.98
L: 8.20.98

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
P.O. BOX 190010
2155 EAGLE DRIVE
NORTH CHARLESTON, S.C. 29419-9010

5090
Code 1849
30 July 1998

Mr. Paul Bristol
South Carolina Department of Health
And Environmental Control
Groundwater Quality Section
Bureau of Water
2600 Bull Street
Columbia, SC 29201

CONTAMINATION ASSESSMENT REPORT FOR UST 705 (SCDHEC GWPD SITE ID # 17664)

Dear Mr. Bristol:

Enclosed are two (2) copies of the Contamination Assessment Report (CAR) for the former UST 705 located at the former Charleston Naval Base, Charleston SC. The contamination assessment has been completed in accordance with SCDHEC regulations and guidelines. This report is now being submitted to SCDHEC for review and approval.

The Navy recommends "source removal" at this site.

If you have any questions regarding the CAR feel free to contact me at (843) 820-7307.

Sincerely,

GABRIEL L. MAGWOOD
Petroleum/UST Branch

Encl:
(1) Contamination Assessment Report (CAR) (2 copies)

RECEIVED
AUG 3 1998
Water Monitoring, Assessment & Protection Division

Li 8.20.98
Lo 8.20.98

CONTAMINATION ASSESSMENT REPORT

UST NS705
(SCDHEC GWPD SITE ID # 17664)

NAVAL BASE CHARLESTON
CHARLESTON SC

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, S.C.

Prepared by:

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVE.
NORTH CHARLESTON, S.C. 29405-2106

S.C. UST SITE REHABILITATION CONTRACTOR # 145

July 16, 1998

RECEIVED
AUG 3 1998
Water Monitoring, Assessment & Protection Division

Distribution

South Carolina Department of Health and Environmental Control	2
Southern Division Naval Facilities Engineering Command	2

Executive Summary

Environmental Detachment Charleston (DET) performed a Contamination Assessment (CA) for the Navy at Building NS705 at the former Charleston Naval Base (NAVBASE). The CA was performed between 26 March 1998 and 24 April 1998 in response to contamination detected in soil samples taken during removal of an Underground Storage Tank (UST).

The CA field activities included advancing six soil borings to the water table to assess the horizontal and vertical extent of potential hydrocarbon contamination in soil at the site and taking six surface soil samples from the area surrounding the former tank location to assess risk to site residents. A soil sample from each soil boring was analyzed for Polynuclear Aromatic Hydrocarbons (PAHs) and Benzene, Toluene, Ethylbenzene, and Xylene plus Naphthalene (BTEX + Naphthalene) Chemicals of Concern (COCs). The surface soil samples were submitted to an analytical analysis for PAH COCs only. CA field activities **did not** include activities to characterize groundwater at the site as the laboratory analysis of soil samples detected only one COC in one surface soil sample in excess of groundwater protection Risk Based Screening Levels (RBSLs).

The results of the CA field investigation indicate no threat exists to groundwater or site residents at the former UST NS705 site. Surface soil at the former UST NS705 site does pose a potential threat to site residents. No COCs were detected above groundwater protection RBSLs in soil boring samples. In surface soil samples, one COC, Benzo(a)pyrene, in one sample was detected in a concentration exceeding residential soil ingestion RBSLs.

Based on the findings of the CA of the former UST NS705 site, the Navy recommends removal of contaminated surface soil and replacing it with clean fill soil to eliminate potential risk to future site residents.

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below the ground surface
BTEX+Naphthalene	Benzene, Toluene, Ethylbenzene, Xylenes (total) plus Naphthalene
CA	Contamination Assessment
CIA	Controlled Industrial Area
COC	Chemical of Concern
CSAP	RFI Final Comprehensive Sampling and analysis Plan
DET	Environmental Detachment Charleston
DL	Detection Levels
FID	flame ionization detector
ft/day	feet per day
ft^2/day	square feet per day
gpm	gallons per minute
GWPD	Ground Water Protection Division
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
MTBE	Methyl Tert-Butyl Ether
NAVBASE	former Charleston Naval Base
OVA	organic vapor analyzer
PAH	Polynuclear Aromatic Hydrocarbon
PPM	parts per million
RBC	Risk Based Concentration
RBCA	Risk-Based Corrective Action for Petroleum Releases
RBSL	Risk Based Screening Level
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAP	Sampling and Analysis Plan
SCAP	Soil Corrective Action Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SDWA	Safe Drinking Water Act
SOUTHDIV	Southern Division Naval Facilities Engineering Command
SSL	Soil Screening Level
SVOC	Semi-Volatile Organic Chemical
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Chemical

1.0 INTRODUCTION

DET removed an UST at Building NS705 at the NAVBASE. Soil samples taken during UST removal contained contamination requiring further investigation. Southern Division Naval Facilities Engineering Command (SOUTHDIV) requested that DET prepare a Sampling and Analysis Plan (SAP) to investigate the site for the U. S. Navy. This Contamination Assessment Report presents the findings of the investigation and recommendations of the investigation to the South Carolina Department of Health and Environmental Control (SCDHEC) for review and approval.

1.1 PURPOSE A field investigation was performed between 26 March 1998 and 24 April 1998 at the former UST NS705 site to assess the horizontal and vertical extent of soil and groundwater contamination. The purpose of this report is to present the findings of this investigation and provide recommendations for remedial actions to be taken at the UST NS705 site.

1.2 SITE DESCRIPTION The NAVBASE is in the city of North Charleston, on the west bank of the Cooper River in Charleston County, South Carolina. The developed portion of the NAVBASE occupies the west bank of the Cooper River starting at a boundary 2300 feet upstream of Noisette Creek and ending at Shipyard Creek. The northern section of the NAVBASE (Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Zones A, B, C and D) contains a mixture of warehouses, offices and former Navy housing areas. The central section of the NAVBASE (RFI Zones E and F) was occupied primarily by the controlled industrial area (CIA) of the former Naval shipyard and its associated offices and warehouses. The southern section of the NAVBASE (RFI Zones G, H and I) along the Cooper River is occupied by piers, barracks, training buildings, offices, storehouses and fuel tanks which formerly supported naval vessels homeported at Charleston. The north bank of Shipyard Creek in the southern part of the base is largely undeveloped and consists of recreational areas and a large dredge spoil area. See Figure 1-1.

The former UST NS705 site is in RFI Zone B in the northern section of the NAVBASE. Zone B consists of a golf course and housing area located immediately south of Noisette Creek. See Figure 1-2. Building NS705 is a single-family dwelling located in the western half of Zone B at 97 Navy Way. Building NS705 is located at the top a hill on the west end of Navy Way. The former UST location is on the east side of Building NS705.

Two RFI Zone B monitoring wells are located near the former UST NS705 site. Shallow monitoring well NBCBGDB004 is located 15 feet south of the former tank site. Deep monitoring well NBCBGDB04D is located 30 feet southeast of the former tank site.

1.3 SITE BACKGROUND The UST at Building NS705 (SCDHEC Ground Water Protection Division (GWPD) Site Identification No. 17664) was a 280-gallon unregulated heating oil tank installed prior to 1957 and used until April 1996. The tank was constructed of steel and connected to Building NS705 by two ½" copper lines. There were no recorded releases while the tank was in service.

On 5 June 1996, the UST and its associated piping were removed. Residual used oil was collected from the UST and recycled. The tank and piping were reported to be in good condition with no visible holes or corrosion when removed. The UST was subsequently cleaned and cut up for recycling as scrap. Excavated soil was returned to the tank pit, after which the top of the excavation was filled to grade with clean fill.

Two soil samples were taken at the base of the excavation before it was filled and analyzed for PAHs and BTEX + Naphthalene. Sample SPORT0068-1 taken at the south end of the excavation had PAH concentrations above SCDHEC RBSLs for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene. It also contained matrix interferences which elevated PAH detection limits (DLs) above SCDHEC RBSLs for dibenzo(a,h)anthracene and naphthalene. Sample SPORT0068-2 had no detectable PAH concentrations. See Figure 1-3.

No groundwater was encountered while removing UST NS705.

1.4 SCREENING LEVELS FOR SOIL AND GROUNDWATER Where provided, RBSLs from Appendix B of SCDHEC Risk-Based Corrective Action for Petroleum Releases (RBCA) dated June 20, 1997 were used in the preparation of this report. For COCs not listed in the RBCA, screening levels were obtained from other sources, including Soil Screening Levels (SSLs) and tapwater Risk Based Concentrations (RBCs) from the Soil Corrective Action Plan (SCAP) dated January 28, 1997, soil ingestion RBCs from the United States Environmental Protection Agency (USEPA) Region III RBC Table dated April 1, 1998, Maximum Contaminant Levels (MCLs) from the Safe Drinking Water Act (SDWA) and generic SSLs from the EPA Soil Screening Guidance: Technical Background Document dated May 1996. A table of the RBSLs used to prepare this document and their sources is included as Appendix E.

1.5 USE OF RFI DATA The NAVBASE is the site of an ongoing RFI; the UST NS705 location is in Zone B of the RFI. Data taken as part of the RFI, including geological information, hydrogeological information, well drilling logs and groundwater sampling data was used in the preparation of this report.

1.6 INITIAL ABATEMENT AND INTERIM REMEDIAL ACTION No initial abatement or interim remedial actions were taken at the UST NS705 site.

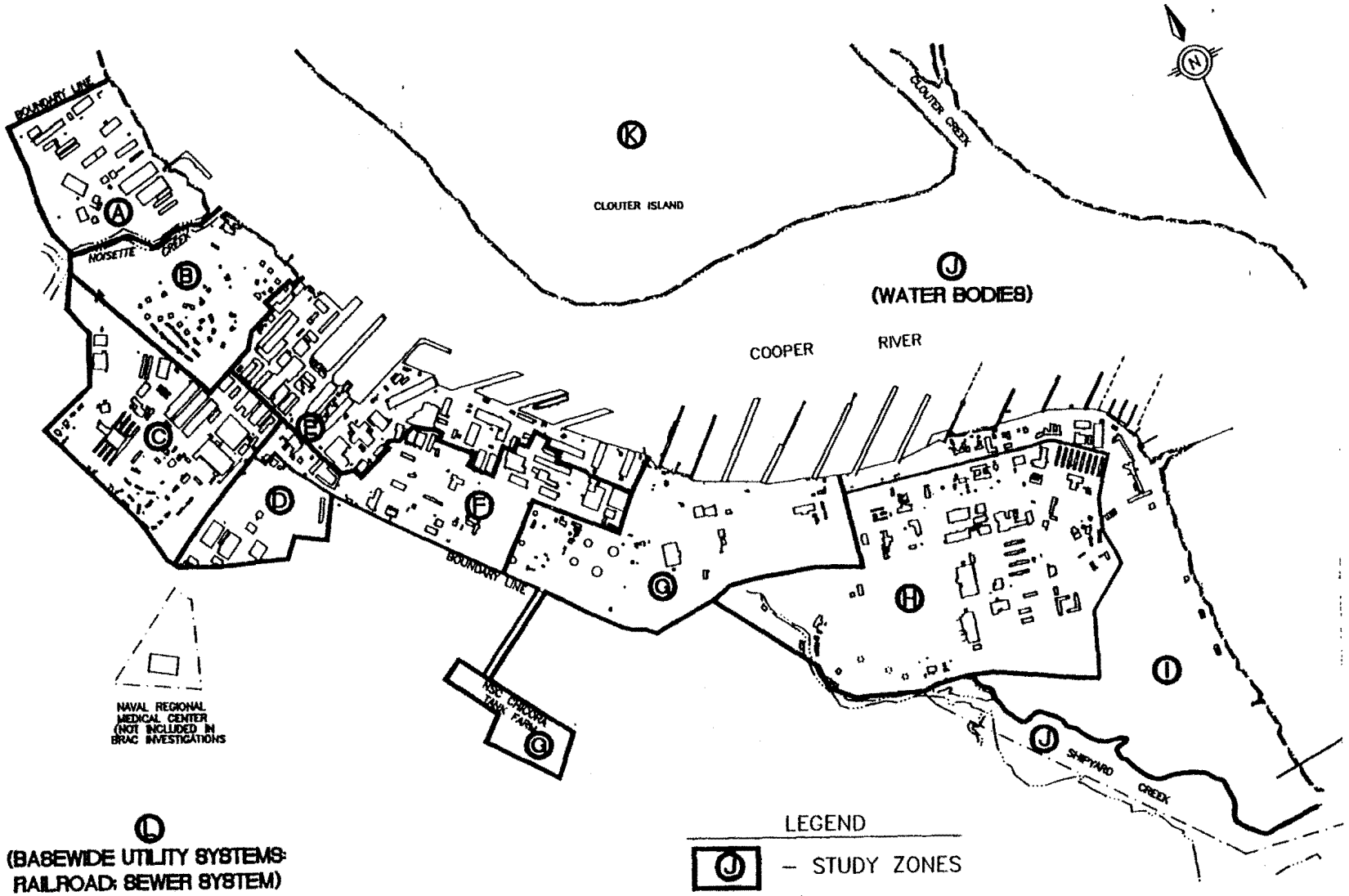
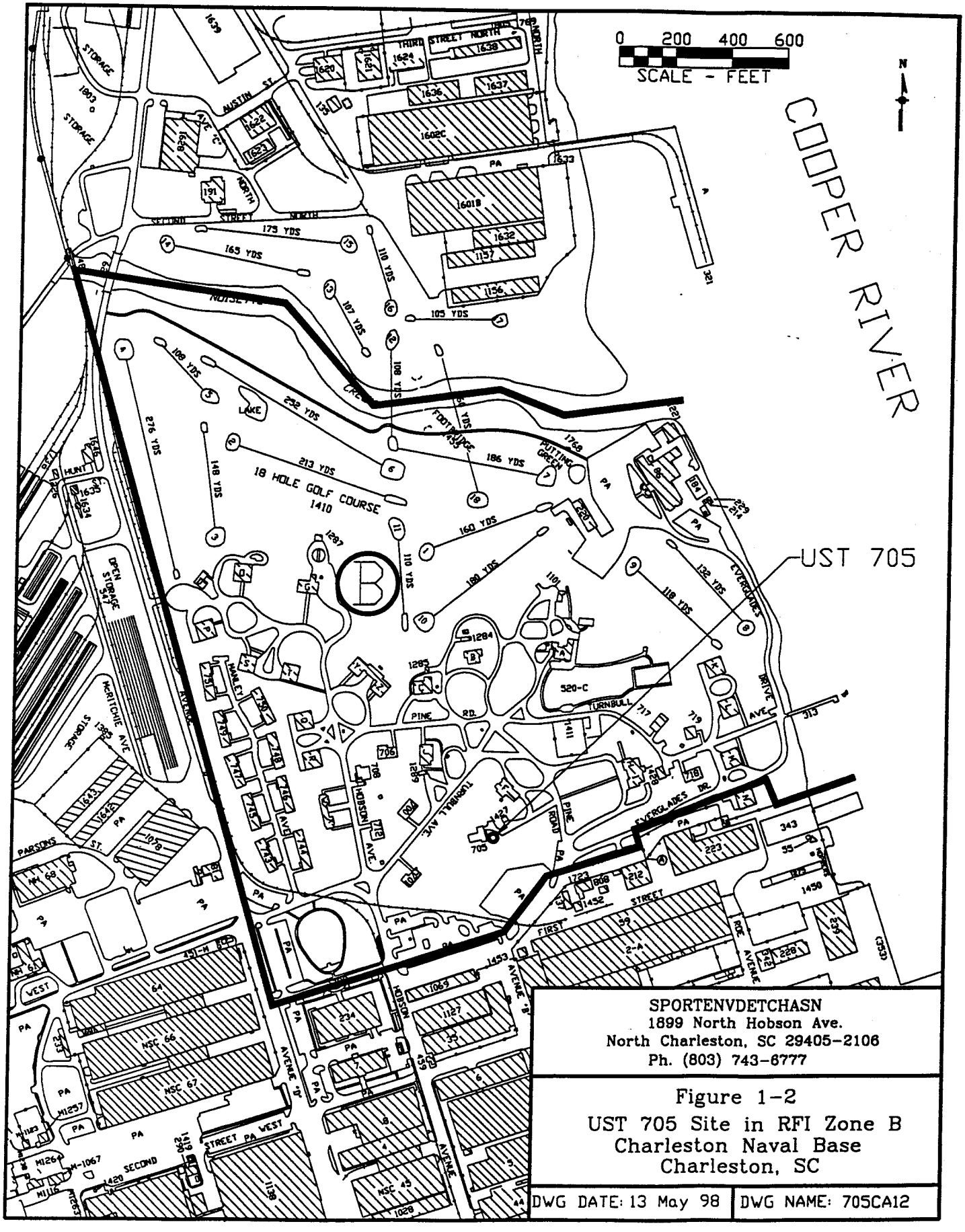


Figure 1-1
RFI Zone Boundaries
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 13 May 98

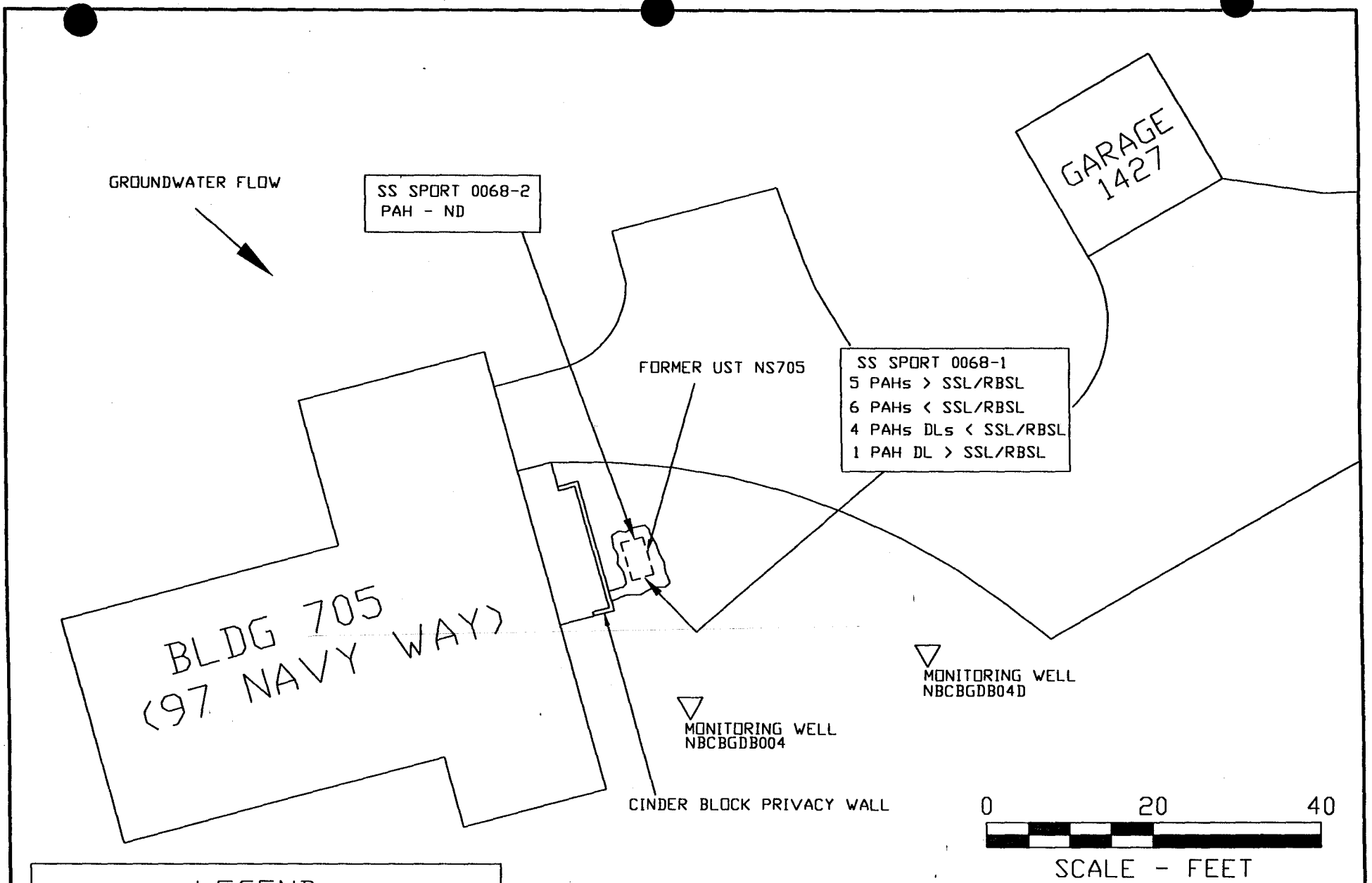
DWG NAME: ALLCA11



SPORTENVDETCHASN
1899 North Hobson Ave.
North Charleston, SC 29405-2106
Ph. (803) 743-6777

Figure 1-2
UST 705 Site in RFI Zone B
Charleston Naval Base
Charleston, SC

DWG DATE: 13 May 98	DWG NAME: 705CA12



SPORTENVDETCHASN
1899 North Hobson Ave.
North Charleston, SC
29405-2106
Ph. (803) 743-6777

Figure 1-3
Removed UST NS705
Charleston Naval Base
Charleston, SC

DWG DATE: 20 MAY 98 | DWG NAME: NS705_13

2.0 SITE GEOLOGY AND HYDROGEOLOGY

2.1 GEOLOGY Based on information provided in the Draft Zone I RCRA Facility Investigation Report, NAVBASE Charleston, dated January 1996, Charleston, South Carolina, is located in the southern Atlantic Coastal Plain. The surficial geology of the region consists of the Quaternary-age sands, silts and clays of the Wando Formation. Below the Wando Formation are the Oligicene-age Ashley Formation and the Eocene-age Parkers Ferry and Harleyville Formations, known collectively as the Cooper Group. Below the Cooper Group is the Eocene-age Santee Limestone.

At the NAVBASE, the upper surface of the Ashley Formation is an erosional surface ranging from 35 feet to 77 feet below the ground surface (bgs). Overlaying the Ashley Formation is the Wando Formation, which at the NAVBASE typically consists of upper and lower sand layers divided by a layer of "marsh clay". The surface contours of the NAVBASE area were extensively changed by fill operations during the base's life, particularly in the lower portion of the NAVBASE, which was originally tidal marsh.

2.2 HYDROGEOLOGY

2.2.1 Regional (Excerpted from Ensafe/Allen & Hoshall, Draft Zone I RCRA Facility Investigation Report NAVBASE Charleston, dated January 1996.) Groundwater occurs under water table or poorly confined conditions within the Pleistocene deposits overlying the Ashley Formation. Transmissivities in the Pleistocene aquifer are generally less than 1,000 square feet per day (ft^2/day) and well yield are variable, ranging from 0 to 200 gallons per minute (gpm). This groundwater contains high concentrations of iron and is commonly acidic at shallow depth (Park, 1985).

The Cooper Group is hydrogeologically significant mainly because of its low permeability. In most locales, its sandy, finely granular limestones produce little or no water and act as confining material that produces artesian condition in the underlying Santee Limestone.

2.2.2 Site Specific. From lithologic cross-sections in the Draft Zone I RFI Report dated January, 1996, above the Ashley Formation in Zone I are two sand layers divided by a clay layer described as "marsh clay" in the RFI Reports. (Vertical hydraulic conductivity of the Ashley Formation beneath the NAVBASE was measured as 0.0027 feet per day (ft/day) during the Zone H RFI and the vertical hydraulic conductivity of the marsh clay layer was measured as 0.001 ft/day during the Zone I RFI.) The Ashley Formation acts as a lower confining layer, while the marsh clay functions as an aquitard separating the upper and lower sand layers. At the NAVBASE, rainwater absorbed into the ground will flow downward to the marsh clay and then flow toward a discharge point into a body of surface water.

The former Building NS705 UST site is approximately 1400 feet from the Cooper River. Based on potentiometric maps included in the final Zone B RFI Report dated November 21, 1996, ground water in the surficial aquifer beneath the former UST location flows in a southeast direction. From the drilling log for the nearby shallow monitoring well (NBCBGBD004), the depth to groundwater is estimated to be 21 to 22 feet bgs.

2.3 SURFACE HYDROGEOLOGY Parts of the southern portion of the NAVBASE are drained by Shipyard Creek while some northern areas are drained by Noisette Creek. The drainage basins of both waterways include areas other than NAVBASE. These waterways are tributaries of the Cooper River. Surface drainage over the remainder of NAVBASE flows directly into the Cooper River, which discharges into Charleston Harbor. Surface drainage at the former UST NS705 site is downhill to catch basins and a cleanout which carry water to storm drains emptying into the Cooper River.

3.0 CONTAMINATION ASSESSMENT ACTIVITIES

3.1 SOIL SAMPLE COLLECTION PROGRAMS

3.1.1 Soil Boring Program A soil boring program was performed at Quarters Building NS705 to assess the horizontal and vertical extent of hydrocarbon contamination in the vadose zone at the site. A total of six soil borings were advanced toward the water table using a hollow stem auger. Samples were collected using stainless steel hand augers lowered through the center of the hollow stem auger. Figure 3-1 shows soil boring locations.

The execution of the soil boring program differed from that proposed in the Sampling and Analysis Plan – UST NS705, dated July 15, 1997 in two respects. First, the locations of the soil borings were relocated as needed to avoid obstructions and provide clearance for the drill rig used to perform the borings. The second change is that soil samples were taken at two foot intervals from the ground surface to the water table only in the initial boring NBCT705S01. Because of limited numbers of hand augers available, in the subsequent borings NBCT705S02 through NBCT705S06, soil samples were collected at two foot intervals between the surface and a depth of ten feet, and at four foot intervals between ten feet deep and the water table.

Soil samples collected during the soil boring program were to be numbered using a system where the last two digits of the sample number indicated the sampling interval from which the sample was taken. All the personnel collecting soil samples and numbering the samples for the chain-of-custody records had participated in soil sampling during other CAs. However, some of these personnel had not previously prepared chain-of-custody records and had not been briefed on the numbering system. As a result, the last two digits of the soil sample numbers assigned during this CA were inconsistent and in one case, NBCT705S030108, were unrelated either to the actual sample depth or the sampling interval. To avoid potential chain-of-custody questions, no attempt was made to correct soil sample numbers once assigned. Soil sample depths are shown accurately on the soil boring logs contained in Appendix A.

The general technical approach applied to soil borings at the UST NS705 site was to collect samples from the underlying soils. Soil samples were screened in the field by performing headspace analysis using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). No effort was made to evaluate the possible presence of methane by utilizing a charcoal filter. The soil sample from each boring with the greatest OVA headspace analysis was submitted to an analytical laboratory to determine the relative concentrations of fuel oil contaminants in the soil. Where all samples from a soil boring had a "zero" headspace analysis, the sample taken at a depth closest to groundwater level was submitted for laboratory analysis. One characterization (source area) sample was collected from a boring at the approximate location where contaminants were found during tank removal. Delineation or "clean" borings were made around a perimeter outside the suspected extent of contamination.

The OVA used to monitor soil samples was calibrated daily against a methane standard to ensure that the OVA was functioning properly.

3.1.2 Surface Soil Sampling Program Because of the current and potential future use of the site as residential, a surface soil sampling program was performed at the former UST NS705 site to assess risk to residents. A total of six surface soil samples were collected surrounding the tank removal excavation using stainless steel hand augers. Due to elevated PAH levels in one of the four planned samples, two additional samples were taken to determine the extent of contamination.

3.1.3 Sampling Equipment Decontamination All soil sampling equipment was decontaminated before and after each use to prevent incidental cross-contamination of the soil samples. Except for the hollow stem auger, decontamination was performed at the DET decontamination station in the NAVBASE Building 25. The decontamination procedure consisted of the following steps in order: a wash with a detergent/water solution, a potable water rinse, a deionized water rinse, a rinse with pesticide grade isopropyl alcohol and a second deionized water rinse. Once decontaminated, hand augers were wrapped in aluminum foil to prevent contamination of the augers before use.

The hollow stem auger was decontaminated at the decontamination pad located adjacent to NAVBASE Building 1656 as specified in the Environmental Detachment Charleston Sampling Plan, dated June 16, 1997.

3.2 MONITORING WELL INSTALLATION PROGRAM

The Sampling and Analysis Plan – UST NS705, dated July 15, 1997, proposed that two temporary monitoring wells be installed at the former UST NS705 site. However, as the soil boring program of section 3.1.1 failed to detect any COC above groundwater protection RBSLs (see section 4.2), no monitoring well installation program was undertaken at the former UST NS705 site. However, the results of sampling performed in the nearby RFI monitoring wells NBCBGDB004 and NBCBGDB04D are discussed in section 4.3 below.

3.3 SAMPLING AND ANALYSIS PROGRAM

3.3.1 Soil Sampling Program Confirmatory laboratory analyses were performed on soil samples collected from the former UST NS705 site to document soil quality at the site. The samples were collected between 26 March 1998 and 24 April 1998.

Sample NBCT705S020122 was a characterization (source area) sample taken from a depth of 22 feet bgs at the water table below the approximate location where contamination was detected during UST removal.

Delineation or "clean" samples were collected from five soil borings numbered NBCT705S01 and NBCT705S03 through NBCT705S06 surrounding the former tank location. Based on potentiometric maps contained in the Zone B RFI Report, sample NBCT705S01 was collected upgradient of the former tank location and samples NBCT705S03 through NBCT705S06 were collected downgradient of the former tank location.

Surface soil samples were taken from sampling locations NBCT705S07 through NBCT705S12 immediately outside the corners of the UST excavation.

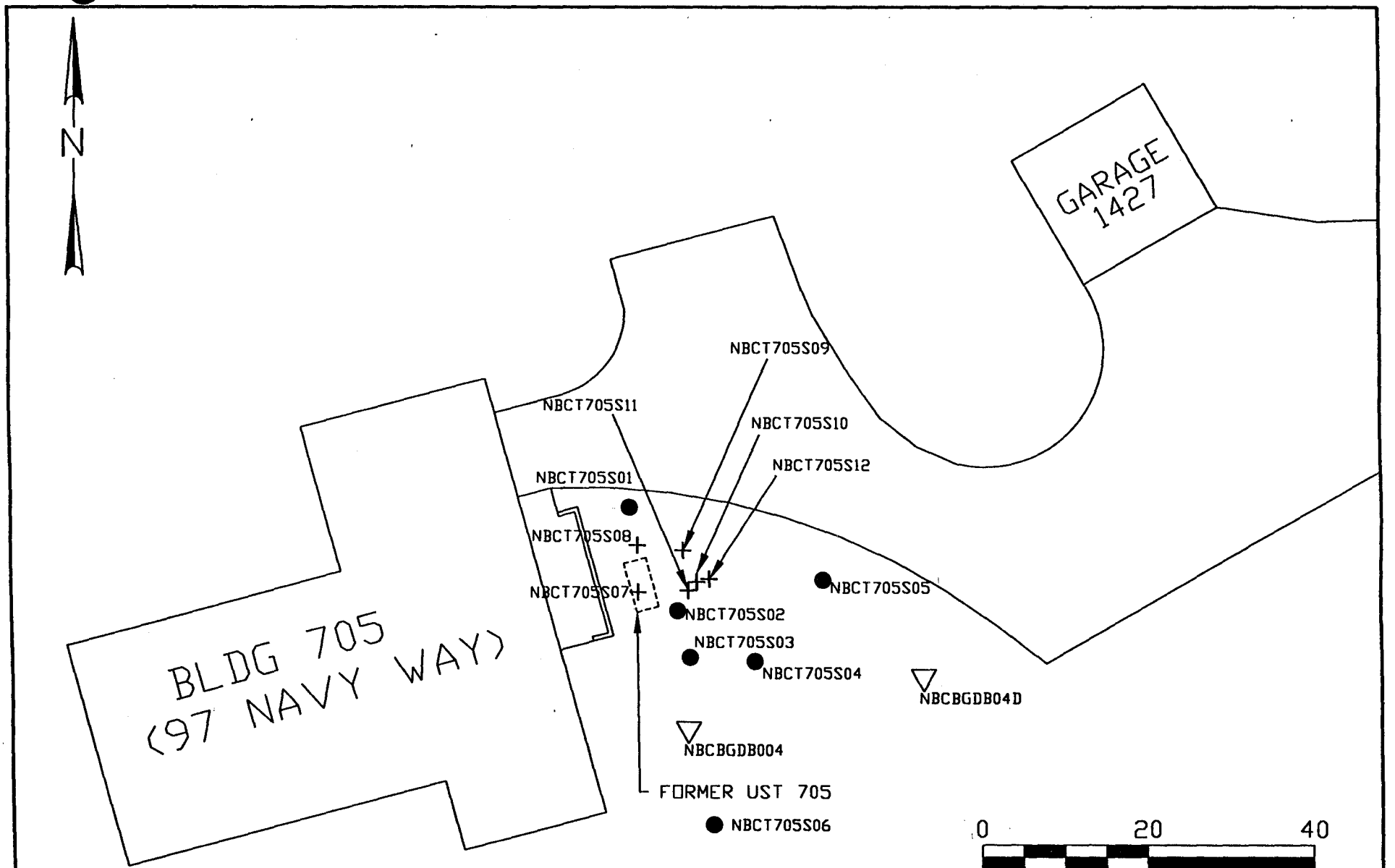
All soil samples were collected as grab samples. Samples for volatile analysis were immediately packed in appropriate laboratory containers that were then packed on ice to minimize volatilization of the potential contaminants. Samples for semivolatile analysis were immediately packed and set aside to wait headspace analysis. For each soil boring, separate samples for volatile and semivolatile analysis were collected and identified for all depth intervals before OVA headspace analysis was performed. After headspace analysis was performed and the results recorded, the samples from the interval with the greatest headspace analysis were retained, packed on ice, for laboratory analysis, with all other samples being returned to the boring from which they were taken.

Soil samples were shipped to a SCDHEC-approved contract laboratory for analysis. Site soil samples were handled and additional Quality Assurance/Quality Control samples prepared as required by the RFI Final Comprehensive Sampling and analysis Plan (CSAP), dated August 30, 1994. Chain of custody records are contained in Appendix B.

Since the removed UST NS705 contained fuel oil, soil samples from the soil boring program were analyzed for the parameters listed for Diesel or Kerosene in Table 1 of the RBCA. Volatile samples were analyzed for BTEX+Naphthalene; semivolatile samples were analyzed for PAHs. Samples from the surface soil sampling program were analyzed for PAHs only, on the premise that volatile COCs would have evaporated from the sandy soil in the interval (June, 1996 to March, 1998) between UST removal and the sampling program.

Table 3-1
Survey Data for Soil Borings
Quarters Building NS705
97 Navy Way
North Charleston, South Carolina

Soil Boring Number	South Carolina State Plane Coordinates		Ground Elevation (ft. msl)
	North	East	
NBCT705S01	377829.84	2316599.31	24.87
NBCT705S02	377817.44	2316604.97	24.62
NBCT705S03	377811.83	2316606.45	24.21
NBCT705S04	377811.32	2316614.22	23.83
NBCT705S05	377821.07	2316622.55	23.70
NBCT705S06	377791.61	2316609.03	23.18
NBCT705S07	377819.69	2316600.23	24.50
NBCT705S08	377825.29	2316600.24	24.81
NBCT705S09	377824.65	2316605.74	24.47
NBCT705S10	377820.88	2316607.35	24.47
NBCT705S11	377819.88	2316606.31	24.55
NBCT705S12	377821.23	2316608.85	24.61



LEGEND

- ● SOIL BORING
- \+ SURFACE SOIL SAMPLE
- ▽ EXISTING MONITORING WELL

Figure 3-1
NS705 Soil Boring Map
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 14 MAY 98 | DWG NAME: NS705CA31

4.0 CONTAMINATION ASSESSMENT FINDINGS

4.1 POTABLE WATER WELL/SENSITIVE RECEPTOR SURVEY There are no potable water wells on the NAVBASE. The former UST NS705 site is located more than 1/4 mile inside the NAVBASE boundary, therefore no potable water wells are within a 1/4 mile radius of the UST NS705 site. The nearest potential receptors, a storm drain cleanout west of the site and catch basins northeast and southeast of the site, empty into the Cooper River through outfall numbers 19, 20 and 21 as shown in Charleston Naval Shipyard Public Works Drawing H409-72 - *Storm Drainage Area No. 2.* Most surface runoff from the former UST NS705 will drain to Cooper River through the catch basin southeast of the site that empties into the Cooper River through outfall number 20.

4.2 SOIL CONTAMINATION

4.2.1 Soil Vapor Monitoring Results As discussed in subsection 3.1.1, a total of six soil borings were advanced toward the water table at the former UST NS705 site to help define the horizontal and vertical extent of contamination at the site. The borings were designated NBCT705S01 through NBCT705S06. As the borings were advanced, the soils were screened for hydrocarbon vapors at two-foot intervals using an OVA.

The results of the soil vapor monitoring at the UST NS705 site provided no useful analytical information. The highest OVA reading was for the source area at boring NBCT705S02. This reading was 4.7 parts per million (PPM) at a depth of 22 feet bgs downgradient of the former tank location. The next highest reading NBCT705S01, upgradient of the former tank location, was 3.0 PPM at a depth of 24 feet bgs. The remaining OVA readings were downgradient of the former tank location at NBCT705S03 (2.3 PPM at 10 feet bgs), NBCT705S05 (1.0 PPM at 18 feet bgs), NBCT705S04 (0.9 PPM at 10 feet bgs), and NBCT705S06 (0.0 PPM at all depths). Figure 4-1 is a soil vapor map of the site showing the boring locations the maximum OVA readings detected in the soils from these borings and the sample depths from which the maximum OVA readings were detected.

4.2.2 Soil Sampling Results

4.2.2.1 Soil Boring Sampling Results Laboratory analysis was performed on a sample from a single depth interval in each of the soil borings NBCT705S01 through NBCT705S06. For borings NBCT705S01 through NBCT705S05, the analysis was performed on samples from the depth interval with the highest OVA reading. For boring NBCT705S06 which had 0.0 PPM OVA readings at all depths, the sample taken at the water table was analyzed. The analyses were performed to confirm the soil vapor monitoring results and determine the horizontal and vertical extent of soil contamination at the former UST NS705 site. In each case, samples were analyzed for PAHs and BTEX + Naphthalene.

Soil vapor monitoring results were too low to indicate the presence of petroleum hydrocarbon vapors. The only petroleum hydrocarbon COC detected in the former UST NS705 site soil borings was detected in one sample taken from the 22-foot depth interval. Naphthalene was detected in sample NBCT705S02. The detected Naphthalene concentration (0.001 milligram per kilogram (mg/kg)) was less than one percent of the 0.200 mg/kg SCDHEC groundwater protection RBSL. All other BTEX + Naphthalene and PAH concentrations were non-detectable. Figure 4-2 illustrates the analytical results for soil boring samples and the surface soil samples of section 4.2.2.2 below. Table 4-1 summarizes the analytical results of the soil-boring program. Copies of the analytical reports are contained in Appendix C.

4.2.2.2 Surface Soil Sampling Results Laboratory analysis was performed on six surface soil samples taken from the soil surrounding the UST excavation. The results of the analysis are presented in Table 4-2. Sample NBCT705S10 contained a concentration of Benzo(a)pyrene above SCDHEC Residential Ingestion/Dermal Contact RBSLs and USEPA residential soil ingestion RBCs. This sample also contained concentrations of Benzo(a)anthracene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Phenanthrene, and Pyrene below SCDHEC Residential Ingestion/Dermal Contact RBSLs and USEPA residential soil ingestion RBCs. Subsequently, samples NBCT705S110101 and NBCT705S120101 were taken within a three foot radius of sample NBCT705S10 to delineate the area of contamination above RBSLs. PAHs were not detected in these samples. Figure 4-3 illustrates the analytical results for surface soil samples. Copies of the analytical reports are contained in Appendix C.

4.3 RFI GROUNDWATER SAMPLING NEAR UST NS705 SITE: Groundwater samples from RFI monitoring wells NBCBGDB004 and NBCBGDB04D were analyzed for Volatile Organic Chemicals (VOCs) and Semi-Volatile Organic Chemicals (SVOCs) in June 1996 and October 1996. No COCs sought during this CA (BTEX, Methyl Tert-Butyl Ether (MTBE), or PAHs) were detected in any groundwater sample taken on either occasion. Validated analytical data from the RFI monitoring well sampling is contained in Appendix D.

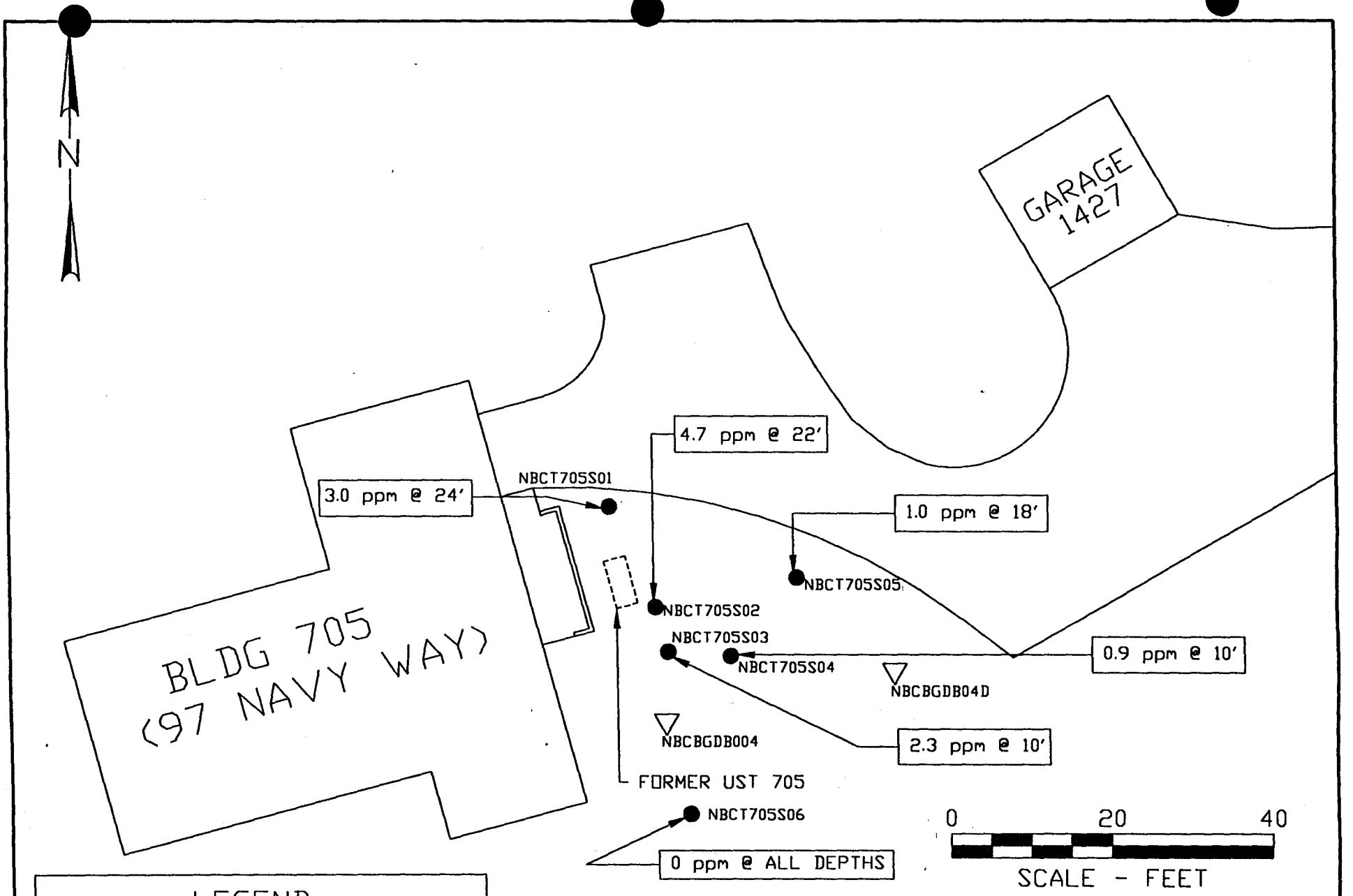


Figure 4-1
NS705 Soil Vapor Map
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 14 MAY 98 | DWG NAME: NS705CA41

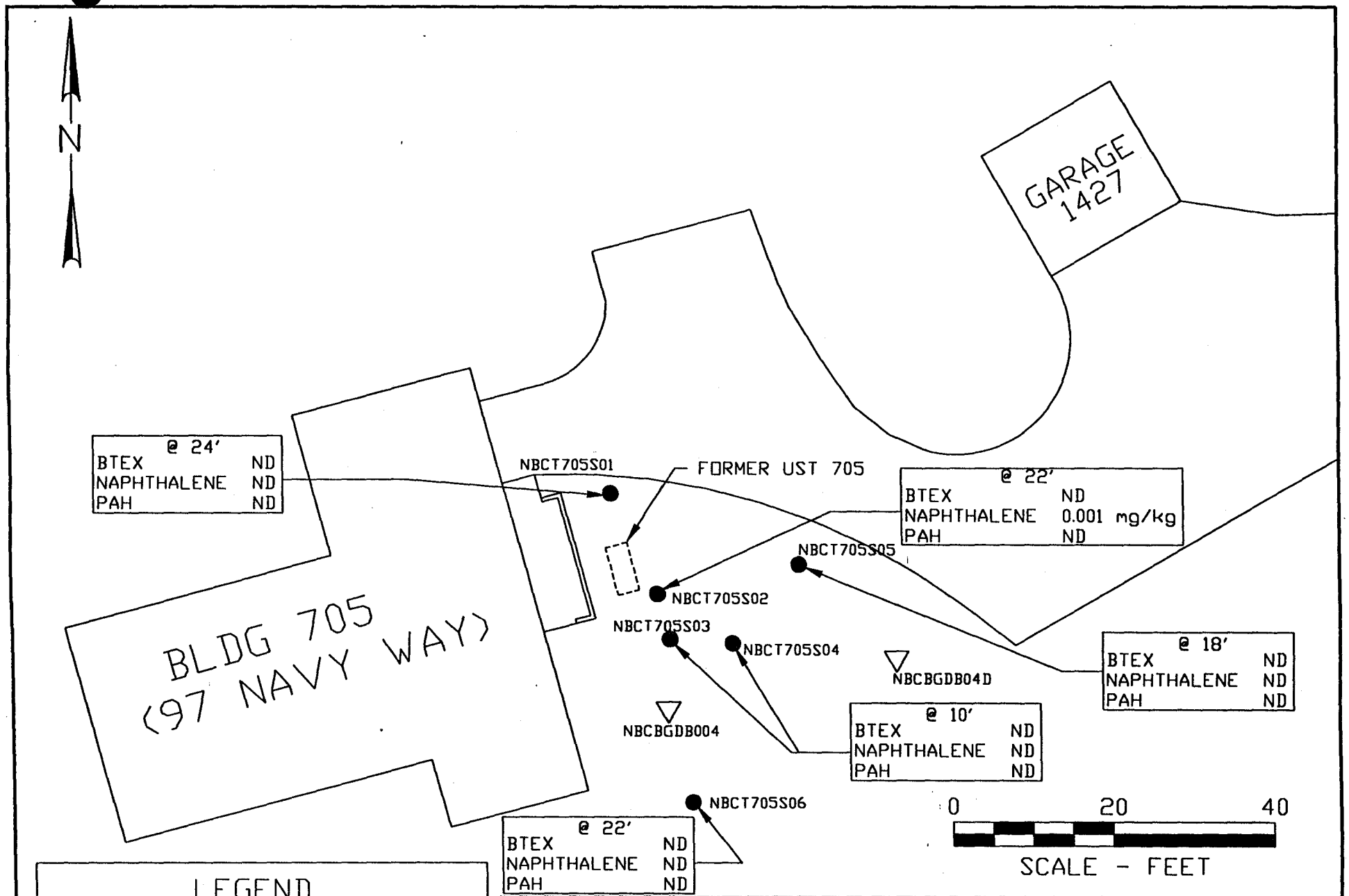


Figure 4-2
NS705 Soil Quality Map
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 14 MAY 98 | DWG NAME: NS705CA42

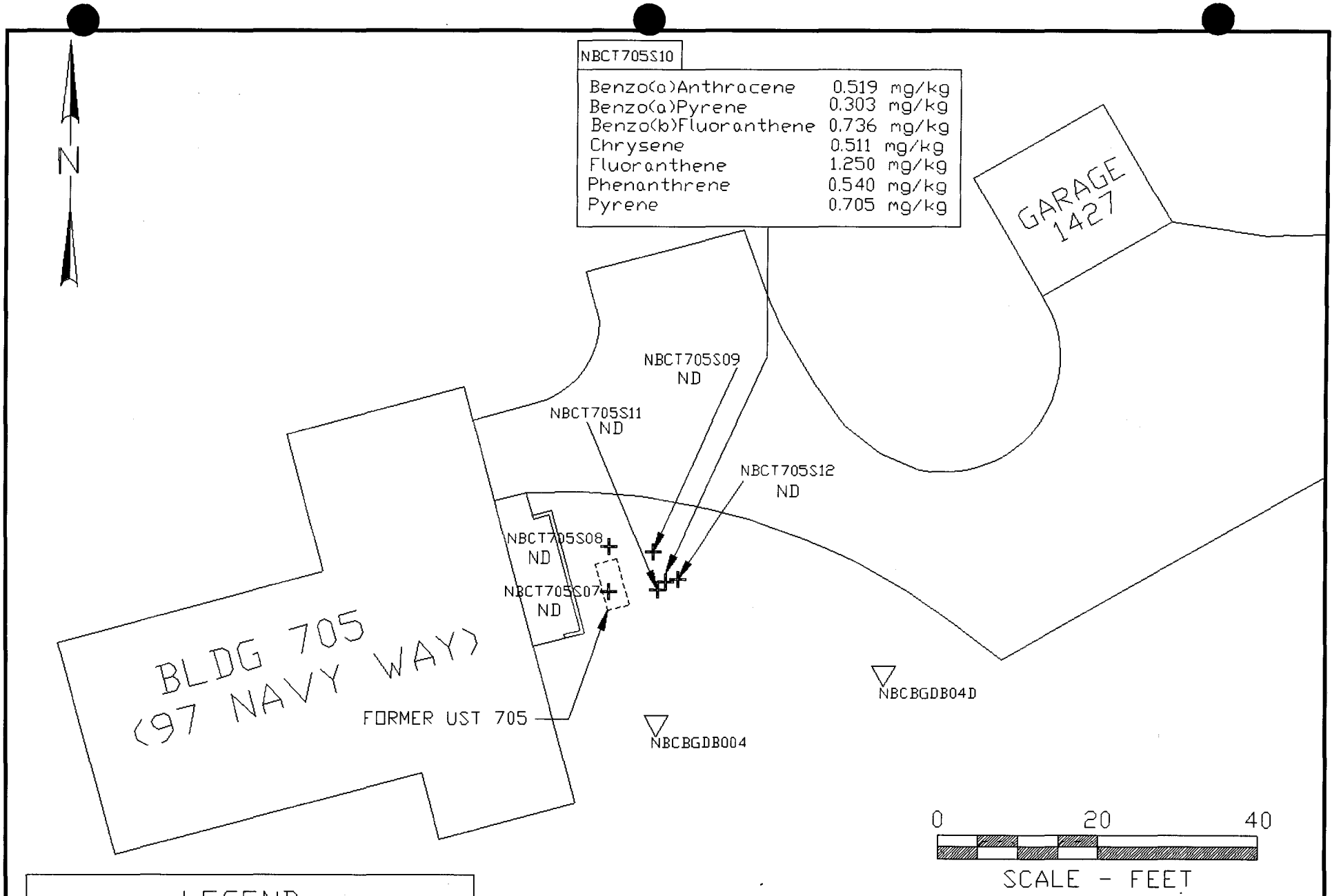


Figure 4-3
NS705 Surface Soil Samples of PAHs
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 14 MAY 98 | DWG NAME: NS705CA43

Table 4-1 Analytical Results for Soil Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SAMPLE NUMBER		NBCT705S010124	NBCT705S020122	NBCT705S030108	NBCT705S040105	NBCT705S050109
Associated Trip Blank		SPORT0635-1	SPORT0638-1	SPORT0638-1	SPORT0641-1	SPORT0641-1
ANALYTE:	**RBSLs**					
	GW PROTECTION					
Benzene	0.007 mg/kg	ND	ND	ND	ND	ND
Ethylbenzene	1.500 mg/kg	ND	ND	ND	ND	ND
Toluene	1.700 mg/kg	ND	ND	ND	ND	ND
Xylenes (total)	44.000 mg/kg	ND	ND	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	0.001 mg/kg	ND	ND	ND
Acenaphthene	20.000 mg/kg	ND	ND	ND	ND	ND
Acenaphthylene	20.000 mg/kg	ND	ND	ND	ND	ND
Anthracene	430.000 mg/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.700 mg/kg	ND	ND	ND	ND	ND
Benzo(a)pyrene	4.000 mg/kg	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.660 mg/kg	ND	ND	ND	ND	ND
Benzo(ghi)perylene	98.000 mg/kg	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	4.600 mg/kg	ND	ND	ND	ND	ND
Chrysene	0.660 mg/kg	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	2.600 mg/kg	ND	ND	ND	ND	ND
Fluoranthene	98.000 mg/kg	ND	ND	ND	ND	ND
Fluorene	16.000 mg/kg	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	35.000 mg/kg	ND	ND	ND	ND	ND
Naphthalene	0.200 mg/kg	ND	ND	ND	ND	ND
Phenanthrene	98.000 mg/kg	ND	ND	ND	ND	ND
Pyrene	140.000 mg/kg	ND	ND	ND	ND	ND

ND - Non-Detect GW - Groundwater

Table 4-1 Analytical Results for Soil Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SAMPLE NUMBER		NBCT705S060111
Associated Trip Blank		SPORT0641-1
ANALYTE:	**RBSLs GW PROTECTION**	
Benzene	0.007 mg/kg	ND
Ethylbenzene	1.500 mg/kg	ND
Toluene	1.700 mg/kg	ND
Xylenes (total)	44.000 mg/kg	ND
Naphthalene	0.200 mg/kg	ND
Acenaphthene	20.000 mg/kg	ND
Acenaphthylene	20.000 mg/kg	ND
Anthracene	430.000 mg/kg	ND
Benzo(a)anthracene	0.700 mg/kg	ND
Benzo(a)pyrene	4.000 mg/kg	ND
Benzo(b)fluoranthene	0.660 mg/kg	ND
Benzo(ghi)perylene	98.000 mg/kg	ND
Benzo(k)fluoranthene	4.600 mg/kg	ND
Chrysene	0.660 mg/kg	ND
Dibenzo(a,h)anthracene	2.600 mg/kg	ND
Fluoranthene	98.000 mg/kg	ND
Fluorene	16.000 mg/kg	ND
Indeno(1,2,3-c,d)pyrene	35.000 mg/kg	ND
Naphthalene	0.200 mg/kg	ND
Phenanthrene	98.000 mg/kg	ND
Pyrene	140.000 mg/kg	ND

ND - Non-Detect GW - Groundwater

Table 4-2 Analytical Results for Surface Soil Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SAMPLE NUMBER		NBCT705S070101	NBCT705S080101	NBCT705S090101	NBCT705S100101	NBCT705S110101
Associated Trip Blank		SPORT0645-1	SPORT0645-1	SPORT0645-1	SPORT0645-1	SPORT0675-1
ANALYTE:	**RBSLs SOIL INGESTION**					
Acenaphthene	4700.000 mg/kg	ND	ND	ND	ND	ND
Acenaphthylene	4700.000 mg/kg	ND	ND	ND	ND	ND
Anthracene	23000.000 mg/kg	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.880 mg/kg	ND	ND	ND	0.519 mg/kg	ND
Benzo(a)pyrene	0.088 mg/kg	ND	ND	ND	**0.303 mg/kg**	ND
Benzo(b)fluoranthene	0.880 mg/kg	ND	ND	ND	0.736 mg/kg [1]	ND
Benzo(ghi)perylene	3100.000 mg/kg	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	8.800 mg/kg	ND	ND	ND	ND	ND
Chrysene	88.000 mg/kg	ND	ND	ND	0.511 mg/kg	ND
Dibenzo(a,h)anthracene	0.088 mg/kg	ND	ND	ND	ND	ND
Fluoranthene	3100.000 mg/kg	ND	ND	ND	1.250 mg/kg	ND
Fluorene	3100.000 mg/kg	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	0.880 mg/kg	ND	ND	ND	ND	ND
Naphthalene	3100.000 mg/kg	ND	ND	ND	ND	ND
Phenanthrene	3100.000 mg/kg	ND	ND	ND	0.540 mg/kg	ND
Pyrene	2300.000 mg/kg	ND	ND	ND	0.705 mg/kg	ND

ND - Non-Detect
Bold Text - exceeds Soil Ingestion RBSL
[1] - Exceeds 0.660 mg/kg Groundwater Protection RBSL for Benzo(b)Fluoranthene

Table 4-2 Analytical Results for Surface Soil Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SAMPLE NUMBER		NBCT705S120101
Associated Trip Blank		SPORT0675-1
ANALYTE:	**RBSLs SOIL INGESTION**	
Acenaphthene	4700.000 mg/kg	ND
Acenaphthylene	4700.000 mg/kg	ND
Anthracene	23000.000 mg/kg	ND
Benzo(a)anthracene	0.880 mg/kg	ND
Benzo(a)pyrene	0.088 mg/kg	ND
Benzo(b)fluoranthene	0.880 mg/kg	ND
Benzo(ghi)perylene	3100.000 mg/kg	ND
Benzo(k)fluoranthene	8.800 mg/kg	ND
Chrysene	88.000 mg/kg	ND
Dibenzo(a,h)anthracene	0.088 mg/kg	ND
Fluoranthene	3100.000 mg/kg	ND
Fluorene	3100.000 mg/kg	ND
Indeno(1,2,3-c,d)pyrene	0.880 mg/kg	ND
Naphthalene	3100.000 mg/kg	ND
Phenanthrene	3100.000 mg/kg	ND
Pyrene	2300.000 mg/kg	ND

ND - Non-Detect

5.0 CONTAMINATION ASSESSMENT CONCLUSIONS

The contamination assessment of the former UST NS705 detected low levels of contamination which do not threaten groundwater at the site but which may threaten the health of site residents. The following paragraphs summarize the conclusions of this contamination assessment investigation.

- **Subsurface soil** at the former UST NS705 site is not a threat to groundwater quality. No COCs were detected above groundwater protection RBSLs in the six soil boring samples. Analysis of the sample taken from the boring made at the approximate location where COCs were found during UST removal failed to detect any COCs except a negligible (0.001 mg/kg) concentration of Naphthalene at the water table.

- **Surface soil** at the former UST NS705 site is a potential threat to future site residents The presence of COCs in surface soil sample NBCT705S100101 suggests that an area of minimally contaminated surface soil exists. All COCs were below groundwater protection RBSLs or SSLs except for Benzo(b)fluoranthene. The Benzo(b)fluoranthene concentration slightly exceeded SCDHEC groundwater protection RBSL, but did not exceed the SCDHEC RBSL for Ingestion or Dermal Contact with Surficial Soil and USEPA Region III residential soil ingestion RBC. All COCs were below the SCDHEC RBSL for Ingestion or Dermal Contact with Surficial Soil and USEPA Region III residential soil ingestion RBC except Benzo(a)pyrene. The Benzo(a)pyrene concentration exceeded the SCDHEC RBSL for Ingestion or Dermal Contact with Surficial Soil and USEPA Region III residential soil ingestion RBC but did not exceed the SCDHEC groundwater protection RBSL. Two nearby surface soil samples NBCT705S110101 and NBCT705S120101 had no detectable COCs. Surface soil at immediately surrounding NBCT705S100101 is a potential threat to future site residents. The area of the threat is probably limited to within the less than three foot radius at which NBCT705S110101 and NBCT705S120101 were taken.

- **Groundwater** has not been affected by the former UST NS705 site nor is groundwater threatened by the site. No COCs were detected in groundwater samples taken from RFI monitoring wells within 30 feet of the former UST NS705 site. No COCs were detected in any soil boring samples in excess of groundwater protection RBSLs. Based on these subsurface soil results, groundwater was not characterized at the former UST NS705 site during the CA. The only detection of a COC in excess of groundwater protection RBSLs wad (Benzo(b)fluoranthene) in surface soil sample NBCT705S100101. Given the limited size of the affected area (see paragraph immediately above) and the depth to groundwater (21 to 22 feet based on the drilling log for shallow monitoring well NBCBGBD004), the threat this COC presents to groundwater quality is negligible.

6.0 RECOMMENDATIONS

Based on the findings of the Contamination Assessment of the former UST NS705 site, the Navy recommends remediation at the site consisting of removal of contaminated surface soil and replacing it with clean fill soil to eliminate potential risk to future site residents. The soil recommended for removal consists of soil within a five foot horizontal radius of the location of surface soil sample NBCT705S100101 down to a depth of 18 inches. This area extends beyond the limits of the contaminated area as defined by Samples NBCT7052110101 and NBCT705S120101 to ensure the removal of all contaminated surface soil.

7.0 PROFESSIONAL REVIEW CERTIFICATION

The contamination assessment contained in this report was prepared using sound engineering principles and judgement. This assessment is based on the field investigation and associated information detailed in this report. If conditions different from those described are discovered, the undersigned engineers should be notified to evaluate any effect on the assessment in this report. This Contamination Assessment was developed for the former UST site located at the former Charleston Naval Base Quarters Building NS705, 97 Navy Way, North Charleston, SC and applies only to that site.

PREPARER:

S. T. Beale
Project Engineer

REVIEWER:

C. F. Militzer PE
PE South Carolina No. 17368

7-16-98
Date

REFERENCES

Ensafe/Allen & Hoshall, Final Comprehensive Sampling and Analysis Plan (CSAP) RCRA Facility Investigation dated August 30, 1994

Ensafe/Allen & Hoshall, Final RFI Report CTO-0029, Zone B dated November 21, 1996

Ensafe/Allen & Hoshall, Draft Zone I RCRA Facility Investigation Report NAVBASE Charleston, dated January 1996

Ensafe/Allen & Hoshall, Final RCRA Facility Investigation Report for Zone H Naval Base Charleston, dated July 5, 1996

Environmental Detachment Charleston Sampling Plan, dated June 16, 1997

SCDHEC Underground Storage Tank Assessment Guidelines for Permanent Closure, Change-in Owner and Change-in-Service, dated June 1995

SCDHEC Risk-Based Corrective Action for Petroleum Releases, dated June 20, 1997

SCDHEC letter dated September 2, 1997, (Paul Bristol to J. T. Amey) "Re: Soil Corrective Action Plan/Response to Comments dated July 30, 1997"

South Carolina R. 61-71 South Carolina Well Regulations and Standards

South Carolina R61-58.5 Maximum Contaminant Levels in Drinking Water

Base Realignment and Closure Tank Management Plan Charleston Naval Complex, Charleston SC

Soil Corrective Action Plan for Excavated Soil from Underground Storage Tanks (Bioremediation Study) Naval Base Charleston, Charleston, SC, dated January 28, 1997

Underground Storage Tank Assessment (UST) Assessment Report for Charleston Naval Base Complex, NS705, dated 30 September 1996

United States Environmental Protection Agency (USEPA) Environmental Services Division *Standard Operating Procedures and Quality Assurance Manual* (SOPQAM)

United States Environmental Protection Agency (USEPA) Region III RBC Table, dated September 23, 1996

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705			CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER			BORING NO 705S01
			SHEET 1 OF 2
SAMPLING METHOD: GRAB			BORING
		START	FINISH
WATER LEVEL	24' BGS	TIME	TIME
TIME	1500	1330	1500
DATE	26-Mar-98	DATE	DATE
CASING DEPTH		26-Mar-98	26-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316599.31'	NORTHING:	377829.84'
ELEVATION:	24.87' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					1.50	2		SAND - DARK BROWN - NO ODOR
						3		
					1.80	4		SAND - DARK BROWN - NO ODOR
						5		
					1.30	6		SAND - LIGHT TAN - NO ODOR
						7		
					1.50	8		SAND - LIGHT TAN - NO ODOR
						9		
					1.40	10		MOIST SAND - LIGHT TAN - NO ODOR
						11		
					2.40	12		MOIST SAND - LIGHT TAN - NO ODOR - MOIST
						13		
					1.70	14		MOIST SAND - LIGHT TAN - NO ODOR
						15		
					1.40	16		MOIST SAND - LIGHT TAN - NO ODOR
						17		
					2.10	18		MOIST SAND - LIGHT TAN - NO ODOR
						19		
					2.60	20		MOIST RED CLAY - NO ODOR

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705		CLIENT: SOUTHDIV	
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER		BORING NO 705S01	
		SHEET 2 OF 2	
SAMPLING METHOD: GRAB		BORING	
		START	FINISH
WATER LEVEL	24' BGS	TIME	TIME
TIME	1500	1330	1500
DATE	26-Mar-98	DATE	DATE
CASING DEPTH		26-Mar-98	26-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING: 2316599.31' NORTHING: 377829.84'

ELEVATION: 24.87' MSL

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						20		SEE SHEET 1 OF 2
						21		
						22		
						23		
HA			1 / 24		3.00	24		VERY MOIST RED CLAY - NO ODOR
						25		SAMPLE NBCT705S010124
						26		
						27		
						28		
						29		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S02
	SHEET 1 OF 2
SAMPLING METHOD: GRAB	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	23166604.97'	NORTHING:	377817.44'
ELEVATION:	24.62' MSL		

		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	1045	940	1045
DATE	30-Mar-98	DATE	DATE
CASING DEPTH		30-Mar-98	30-Mar-98

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
						1		(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)
					1.40	2		SAND - MULTI-COLORED GRAY TO LIGHT TAN IN COLOR
						3		NO ODOR
					2.80	4		SAND - GRAY IN COLOR - NO ODOR
						5		
					2.20	6		SAND - MEDIUM TAN IN COLOR - NO ODOR
						7		
					2.40	8		SAND - MEDIUM TAN IN COLOR - NO ODOR
						9		
					3.20	0		SAND - MEDIUM TAN IN COLOR - NO ODOR
						11		
						12		
						13		
					2.80	14		SAND - MEDIUM TO DARK TAN IN COLOR - NO ODOR
						15		
						16		
						17		
					2.50	18		CLAY - RED IN COLOR - NO ODOR
						19		
						20		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705		CLIENT: SOUTHDIV	
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER		BORING NO 705S02	
		SHEET 2 OF 2	
SAMPLING METHOD: GRAB		BORING	
		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	1045	940	1045
DATE	30-Mar-98	DATE	DATE
CASING DEPTH		30-Mar-98	30-Mar-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316604.97'	NORTHING:	377817.44'
ELEVATION:	24.62' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						20		
						21		
HA			1 / 22		4.70	22		RED CLAY/TAN SAND - NO ODOR
						23		SAMPLE **NBCT705S020122**
						24		
						25		
						26		
						27		
						28		
						29		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S03
	SHEET 1 OF 2
SAMPLING METHOD: GRAB	BORING START / FINISH

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

WATER LEVEL	22' BGS	TIME	TIME
TIME	1415	1300	1415
DATE	30-Mar-98	DATE	DATE
CASING DEPTH		30-Mar-98	30-Mar-98

EASTING:	2316606.45'	NORTHING:	377811.43'
ELEVATION:	24.21' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS CLEAR SUNNY WEATHER, 75F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					0.10	2		SAND - GRAY IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
					0.00	6		SAND - LIGHT TAN IN COLOR - NO ODOR
						7		
					0.90	8		SAND - LIGHT TAN IN COLOR - NO ODOR
						9		
HA			1 / 8		2.30	10	X	SAND - LIGHT TAN IN COLOR - NO ODOR SAMPLE **NBCT705S030108**
						11		
						12		
						13		
					2.00	14		SAND - LIGHT TAN IN COLOR - NO ODOR
						15		
						16		
						17		
					1.10	18		CLAY - RED IN COLOR - NO ODOR
						19		
						20		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 703S03
	SHEET 2 OF 2
SAMPLING METHOD: GRAB	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

				START	FINISH
WATER LEVEL	22' BGS			TIME	TIME
TIME	1415			1300	1415
EASTING:	2316606.45'	NORTHING:	377811.83'	DATE	DATE
DATE	30-Mar-98			30-Mar-98	30-Mar-98
ELEVATION:	24.21' MSL			CASING DEPTH	

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS CLEAR SUNNY WEATHER, 75F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						20		
						21		
					1.30	22		RED CLAY/TAN SAND - NO ODOR
						23		
						24		
						25		
						26		
						27		
						28		
						29		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705		CLIENT: SOUTHDIV	
DRILLING METHOD: DRILL RIG		BORING NO 705S04	
W/ 6" HOLLOW STEM AUGER		SHEET 1 OF 2	
SAMPLING METHOD: GRAB		BORING	
		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	930	830	930
DATE	2-Apr-98	DATE	DATE
CASING DEPTH		2-Apr-98	2-Apr-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316614.22'	NORTHING:	377811.32'
ELEVATION:	23.83' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS SUNNY, MILD WEATHER 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
					0.00	6		SAND - LIGHT TAN IN COLOR - NO ODOR
						7		
					0.00	8		SAND - LIGHT TAN IN COLOR - NO ODOR
						9		
HA			1 / 5		0.90	10		SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR SAMPLE **NBCT705S040105**
						11		
						12		
						13		
					0.30	14		SAND - LIGHT TAN IN COLOR - NO ODOR
						15		
						16		
						17		
					0.00	18		SAND - MEDIUM TAN TO LIGHT RED IN COLOR - NO ODOR
						19		
						20		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S04
	SHEET 2 OF 2
SAMPLING METHOD: GRAB	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316614.22'	NORTHING:	377811.32'
ELEVATION:	23.83' MSL		

		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	930	830	930
DATE	2-Apr-98	DATE	DATE
CASING DEPTH		2-Apr-98	2-Apr-98

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY, MILD WEATHER, 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH
						20	
						21	
					0.60	22	CLAY - RED - MOIST - NO ODOR
						23	
						24	
						25	
						26	
						27	
						28	
						29	
						30	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S05
	SHEET 1 OF 2
SAMPLING METHOD: GRAB	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316622.55'	NORTHING:	377821.07'
ELEVATION:	23.70' MSL		

		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	1053	948	1053
DATE	2-Apr-98	DATE	DATE
CASING DEPTH		2-Apr-98	2-Apr-98

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS SUNNY, MILD WEATHER 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					0.00	2		SAND - MEDIUM TAN IN COLOR - NO ODOR
						3		
					0.10	4		SAND - MEDIUM TAN IN COLOR - NO ODOR
						5		
					0.00	6		SAND - MEDIUM TAN IN COLOR - NO ODOR
						7		
					0.00	8		SAND - LIGHT TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND - LIGHT TAN IN COLOR - NO ODOR
						11		
						12		
						13		
					0.00	14		SAND - LIGHT TAN IN COLOR - NO ODOR
						15		
						16		
						17		
HA			1 9		1.00	18		CLAY - RED IN COLOR - NO ODOR SAMPLE **NBCT705S050109**
						19		
						20		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S05
	SHEET 2 OF 2
SAMPLING METHOD: GRAB	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316622.55'	NORTHING:	377821.07'
ELEVATION:	23.70' MSL		

		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	1053	948	1053
DATE	2-Apr-98	DATE	DATE
CASING DEPTH		2-Apr-98	2-Apr-98

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY, MILD WEATHER 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						20		
						21		
					0.00	22		CLAY - RED IN COLOR - NO ODOR
						23		
						24		
						25		
						26		
						27		
						28		
						29		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705		CLIENT: SOUTHDIV	
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER		BORING NO 705S06	
		SHEET 1 OF 2	
SAMPLING METHOD: GRAB		BORING	
		START	FINISH
WATER LEVEL	22' BGS	TIME	TIME
TIME	1445	1330	1445
DATE	2-Apr-98	DATE	DATE
CASING DEPTH		2-Apr-98	2-Apr-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316609.03'	NORTHING:	377791.61'
ELEVATION:	23.18' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS SUNNY, MILD WEATHER 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						0		
						1		
					0.00	2		SAND - LIGHT TAN IN COLOR - NO ODOR
						3		
					0.00	4		SAND - LIGHT TAN IN COLOR - NO ODOR
						5		
					0.00	6		SAND - LIGHT TAN IN COLOR - NO ODOR
						7		
					0.00	8		SAND - LIGHT TAN IN COLOR - NO ODOR
						9		
					0.00	10		SAND - LIGHT TO MEDIUM TAN IN COLOR - NO ODOR
						11		
						12		
						13		
					0.00	14		SAND - MEDIUM TAN IN COLOR - NO ODOR
						15		
						16		
						17		
					0.00	18		SAND - MEDIUM TO DARK TAN IN COLOR - NO ODOR
						19		
						20		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: DRILL RIG W/ 6" HOLLOW STEM AUGER	BORING NO 705S06
	SHEET 2 OF 2
SAMPLING METHOD: GRAB	BORING START / FINISH

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316609.03'	NORTHING:	377791.61'
ELEVATION:	23.18' MSL		

WATER LEVEL	22' BGS	
TIME	1445	TIME 1330 / TIME 1445
DATE	2-Apr-98	DATE 2-Apr-98 / DATE 2-Apr-98
CASING DEPTH		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS SUNNY, MILD WEATHER 80F
(NOTE: SAMPLES COLLECTED USING HAND AUGERS LOWERED THROUGH CENTER OF HOLLOW STEM AUGER)

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
						20		
						21		
HA			1 / 11		0.00	22		RED CLAY - NO ODOR; SAMPLE **NBCT705S060111**
						23		
						24		
						25		
						26		
						27		
						28		
						29		
						30		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705		CLIENT: SOUTHDIV	
DRILLING METHOD: HAND AUGER		BORING NO 705S07	
		SHEET 1 OF 1	
SAMPLING METHOD: GRAB (SURFACE SOIL)		BORING START	BORING FINISH
WATER LEVEL	N/A	TIME	TIME
TIME		840	840
DATE		DATE	DATE
CASING DEPTH		6-Apr-98	6-Apr-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING: 2316600.23' NORTHING: 377819.69'

ELEVATION: 24.50' MSL

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY WEATHER 70F

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
HA			1 / 1			0		BROWN SOIL (SANDY) - NO ODOR
								SAMPLE **NBCT705S070101**
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: HAND AUGER	BORING NO 705S08
	SHEET 1 OF 1
SAMPLING METHOD: GRAB (SURFACE SOIL)	BORING

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316600.24'	NORTHING:	377825.29'
ELEVATION:	24.81' MSL		

		START	FINISH
WATER LEVEL	N/A	TIME	TIME
TIME		845	845
DATE		DATE	DATE
CASING DEPTH		6-Apr-98	6-Apr-98

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY WEATHER 70F

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
HA			1 / 1			0		BROWN SOIL (SANDY) - NO ODOR
								SAMPLE **NBCT705S080101**
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: HAND AUGER	BORING NO 705S09
	SHEET 1 OF 1
SAMPLING METHOD: GRAB (SURFACE SOIL)	BORING
WATER LEVEL: N/A	START TIME: 850
TIME:	FINISH TIME: 850
DATE:	START DATE: 6-Apr-98
CASING DEPTH:	FINISH DATE: 6-Apr-98

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING: 2316605.74' NORTHING: 377824.65'

ELEVATION: 24.47' MSL

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY WEATHER 70F

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
HA			1 / 1			0		BROWN SOIL (SANDY) - NO ODOR
								SAMPLE **NBCT705S090101**
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: HAND AUGER	BORING NO 705S10
	SHEET 1 OF 1
SAMPLING METHOD: GRAB (SURFACE SOIL)	BORING START: TIME 855 / DATE 6-Apr-98
WATER LEVEL: N/A	BORING FINISH: TIME 855 / DATE 6-Apr-98
TIME	
DATE	
CASING DEPTH	

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316607.35'	NORTHING:	377820.88'
ELEVATION:	24.47' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS
SUNNY WEATHER 70F

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH	
HA			1 / 1			0		BROWN SOIL (SANDY) - NO ODOR
								SAMPLE **NBCT705S100101**
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						0		

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: HAND AUGER	BORING NO 705S11
	SHEET 1 OF 1
SAMPLING METHOD: GRAB (SURFACE SOIL)	BORING START TIME / FINISH TIME
WATER LEVEL: N/A	
TIME:	
DATE:	DATE / DATE
CASING DEPTH:	

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING: 2316606.31' NORTHING: 377819.88'

ELEVATION: 24.55' MSL

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH
HA			1 / 1			0	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	

SAMPLE NBCT705S110101

BY _____ CHK BY: _____
DATE: _____

ENVIRONMENTAL DETACHMENT CHARLESTON
SOIL BORING LOG

JOB ORDER: T-SAP 705	CLIENT: SOUTHDIV
DRILLING METHOD: HAND AUGER	BORING NO 705S12
	SHEET 1 OF 1
SAMPLING METHOD: GRAB (SURFACE SOIL)	BORING
	START TIME / FINISH TIME
WATER LEVEL: N/A	
TIME:	
DATE:	START DATE / FINISH DATE
CASING DEPTH:	

LOCATION OF BORING: QUARTERS BUILDING 705
97 NAVY WAY
NORTH CHARLESTON SD 29405

EASTING:	2316608.85'	NORTHING:	377821.23'
ELEVATION:	24.61' MSL		

SURFACE CONDITIONS: SANDY SOIL, SPARSE GRASS

SAMPLER TYPE	IN. DRIVEN / IN. RECOVERED	DEPTH OF CASING	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	OVA READING (PPM)	DEPTH IN FEET	SOIL GRAPH
HA			1 / 1			0	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						0	

SAMPLE **NBCT705S120101**

BY _____ CHK BY: _____
DATE: _____

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID : SPORT0645-2

Surrogate Recovery	Test	Percent%	Acceptable Limits

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID	: SPORT0645-3
Lab ID	: 9804153-03
Matrix	: Soil
Date Collected	: 04/06/98
Date Received	: 04/07/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	165	330	ug/kg	1.0	JCB	04/13/98	1410	119721	1
Acenaphthylene	U	0.00	165	330	ug/kg	1.0					
Anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	165	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	165	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Chrysene	U	0.00	165	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	165	330	ug/kg	1.0					
Fluoranthene	U	0.00	165	330	ug/kg	1.0					
Fluorene	U	0.00	165	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	165	330	ug/kg	1.0					
Naphthalene	U	0.00	165	330	ug/kg	1.0					
Phenanthrene	U	0.00	165	330	ug/kg	1.0					
Pyrene	U	0.00	165	330	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 04/08/98 1000 119721 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	82.3	(30.0 - 115.)
Nitrobenzene-d5	M610	59.5	(23.0 - 120.)
p-Terphenyl-d14	M610	107.	(37.3 - 128.)

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14. 1998

Sample ID : SPORT0645-3

Surrogate Recovery	Test	Percent%	Acceptable Limits

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID	: SPORT0645-4
Lab ID	: 9804153-04
Matrix	: Soil
Date Collected	: 04/06/98
Date Received	: 04/07/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	165	330	ug/kg	1.0	JCB	04/13/98	1440	119721	1
Acenaphthylene	U	0.00	165	330	ug/kg	1.0					
Anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	165	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	165	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Chrysene	U	0.00	165	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	165	330	ug/kg	1.0					
Fluoranthene	U	0.00	165	330	ug/kg	1.0					
Fluorene	U	0.00	165	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	165	330	ug/kg	1.0					
Naphthalene	U	0.00	165	330	ug/kg	1.0					
Phenanthrene	U	0.00	165	330	ug/kg	1.0					
Pyrene	U	0.00	165	330	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 04/08/98 1000 119721 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	81.8	(30.0 - 115.)
Nitrobenzene-d5	M610	66.6	(23.0 - 120.)
p-Terphenyl-d14	M610	81.0	(37.3 - 128.)

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID : SPORT0645-4

Surrogate Recovery	Test	Percent%	Acceptable Limits

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID	: SPORT0645-5
Lab ID	: 9804153-05
Matrix	: Soil
Date Collected	: 04/06/98
Date Received	: 04/07/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	JCB	04/13/98	1509	119721	1
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene		519	167	333	ug/kg	1.0					
Benzo(a)pyrene	J	303	167	333	ug/kg	1.0					
Benzo(b)fluoranthene		736	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene		511	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene		1250	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene		540	167	333	ug/kg	1.0					
Pyrene		705	167	333	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 04/08/98 1000 119721 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	91.1	(30.0 - 115.)
Nitrobenzene-d5	M610	55.7	(23.0 - 120.)
p-Terphenyl-d14	M610	68.4	(37.3 - 128.)

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9804153-05

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 14, 1998

Sample ID : SPORT0645-5

Surrogate Recovery	Test	Percent%	Acceptable Limits

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
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U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87459
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 05, 1998

Sample ID	: SPORT0675-1
Lab ID	: 9804680-01
Matrix	: Soil
Date Collected	: 04/24/98
Date Received	: 04/24/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	TCL	05/01/98	0319	121259	1
Ethylbenzene	J	1.16	1.00	2.00	ug/kg	1.0					
Toluene	J	1.17	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)		6.37	1.00	4.00	ug/kg	1.0					
Naphthalene		5.50	1.00	2.00	ug/kg	1.0					

Surrogate Recovery	Test	Percent%	Acceptable Limits
Bromofluorobenzene	BTEX-8260	94.6	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	87.8	(63.4 - 136.)
Toluene-d8	BTEX-8260	86.2	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	94.6	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	87.8	(63.4 - 136.)
Toluene-d8	NAP-8260	86.2	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 05, 1998

Sample ID : SPORT0675-1

M = Method	Method-Description

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
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U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Karen Blakeney
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1998

Sample ID	: SPORT0675-2
Lab ID	: 9804680-02
Matrix	: Soil
Date Collected	: 04/24/98
Date Received	: 04/24/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	RLC	05/06/98	1340	120940	1
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	54.3	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 04/28/98 1510 120940 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	86.8	(30.0 - 115.)
Nitrobenzene-d5	M610	103.	(23.0 - 120.)
p-Terphenyl-d14	M610	96.3	(37.3 - 128.)

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1998

Sample ID : SPORT0675-2

Surrogate Recovery	Test	Percent%	Acceptable Limits

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1998

Sample ID	: SPORT0675-3
Lab ID	: 9804680-03
Matrix	: Soil
Date Collected	: 04/24/98
Date Received	: 04/24/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	329	658	ug/kg	2.0	RLC	05/07/98	1625	120940	1
Acenaphthylene	U	0.00	329	658	ug/kg	2.0					
Anthracene	U	0.00	329	658	ug/kg	2.0					
Benzo(a)anthracene	U	0.00	329	658	ug/kg	2.0					
Benzo(a)pyrene	U	0.00	329	658	ug/kg	2.0					
Benzo(b)fluoranthene	U	0.00	329	658	ug/kg	2.0					
Benzo(ghi)perylene	U	0.00	329	658	ug/kg	2.0					
Benzo(k)fluoranthene	U	0.00	329	658	ug/kg	2.0					
Chrysene	U	0.00	329	658	ug/kg	2.0					
Dibenzo(a,h)anthracene	U	0.00	329	658	ug/kg	2.0					
Fluoranthene	U	0.00	329	658	ug/kg	2.0					
Fluorene	U	0.00	329	658	ug/kg	2.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	329	658	ug/kg	2.0					
Naphthalene	U	0.00	329	658	ug/kg	2.0					
Phenanthrene	U	0.00	329	658	ug/kg	2.0					
Pyrene	U	0.00	329	658	ug/kg	2.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 04/28/98 1510 120940 2

Comments:

A dilution was required for Extractable Organics due to matrix interference. As a result, the detection limits are elevated.

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1998

Sample ID : SPORT0675-3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	77.0	(30.0 - 115.)
Nitrobenzene-d5	M610	97.1	(23.0 - 120.)
p-Terphenyl-d14	M610	93.5	(37.3 - 128.)

M = Method	Method-Description
M 1	EPA 8270
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 SVOA

SAMPLE ID ------->	GDB-H-W04D-03
ORIGINAL ID ----->	GDBHW04D03
LAB SAMPLE ID --->	L7330-5
ID FROM REPORT -->	GDBHW04D03
SAMPLE DATE ----->	06/26/96
DATE EXTRACTED -->	06/30/96
DATE ANALYZED --->	07/17/96
MATRIX ---------->	Water
UNITS ----------->	UG/L A

CAS #	Parameter	L7330	VAL
111-44-4	bis(2-Chloroethyl)ether	11.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U
95-53-4	o-Toluidine	32.	U
67-72-1	Hexachloroethane	11.	U
126-68-1	O,O,O-Triethylphosphorothioate	32.	U
111-91-1	bis(2-Chloroethoxy)methane	11.	U
91-20-3	Naphthalene	11.	U
1888-71-7	Hexachloropropene	11.	U
87-68-3	Hexachlorobutadiene	11.	U
95-94-3	1,2,4,5-Tetrachlorobenzene	11.	U
77-47-4	Hexachlorocyclopentadiene	11.	UJ
91-58-7	2-Chloronaphthalene	11.	U
131-11-3	Dimethyl phthalate	11.	U
208-96-8	Acenaphthylene	11.	U
83-32-9	Acenaphthene	11.	U
608-93-5	Pentachlorobenzene	11.	U
91-59-8	2-Naphthylamine	53.	U
134-32-7	1-Naphthylamine	53.	U
84-66-2	Diethylphthalate	11.	U
86-73-7	Fluorene	11.	U
7005-72-3	4-Chlorophenylphenylether	11.	U
297-97-2	Thionazin	21.	U
99-55-8	5-Nitro-o-toluidine	11.	U
101-55-3	4-Bromophenyl-phenylether	11.	U
55-18-5	N-Nitrosodiethylamine	32.	U
2303-16-4	Diallate	21.	U
298-02-2	Phorate	21.	U
62-44-2	Phenacetin	32.	U
118-74-1	Hexachlorobenzene	11.	U
60-51-5	Dimethoate	21.	U
92-67-1	4-Aminobiphenyl	53.	U
23950-58-5	Pronamide	21.	U
85-01-8	Phenanthrene	11.	U
120-12-7	Anthracene	11.	U
298-04-4	Disulfoton	21.	U
298-00-0	Methyl parathion	21.	U

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 SVOA							
	SAMPLE ID ------->	GDB-H-W04D-03					
	ORIGINAL ID ----->	GDBHW04D03					
	LAB SAMPLE ID --->	L7330-5					
	ID FROM REPORT -->	GDBHW04D03					
	SAMPLE DATE ----->	06/26/96					
	DATE EXTRACTED -->	06/30/96					
	DATE ANALYZED --->	07/17/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	L7330	VAL				
84-74-2	Di-n-butylphthalate	11.	U				
56-38-2	Parathion	11.	U				
206-44-0	Fluoranthene	11.	U				
129-00-0	Pyrene	11.	U				
140-57-8	Aramite	32.	U				
60-11-7	p-(Dimethylamino)azobenzene	32.	U				
510-15-6	Chlorobenzilate	21.	U				
119-93-7	3,3-Dimethylbenzidine	210.	U				
52-85-7	Famphur	18.	UJ				
85-68-7	Butylbenzylphthalate	11.	U				
53-96-3	Acetamidofluorene	21.	U				
56-55-3	Benzo(a)anthracene	11.	U				
91-94-1	3,3'-Dichlorobenzidine	21.	U				
218-01-9	Chrysene	11.	U				
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	11.	U				
117-84-0	Di-n-octyl phthalate	11.	U				
57-97-6	7,12-Dimethylbenz(a)anthracene	11.	U				
205-99-2	Benzo(b)fluoranthene	11.	U				
207-08-9	Benzo(k)fluoranthene	11.	U				
50-32-8	Benzo(a)pyrene	11.	U				
56-49-5	3-Methyl cholanthrene	11.	U				
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U				
53-70-3	Dibenz(a,h)anthracene	11.	U				
191-24-2	Benzo(g,h,i)perylene	11.	U				
110-86-1	Pyridine	15.	U				
76-01-7	Pentachloroethane	11.	U				
62-75-9	N-Nitrosodimethylamine	21.	U				
109-06-8	2-Picoline	32.	U				
10595-95-6	N-Nitrosomethylethylamine	32.	UJ				
66-27-3	Methyl methanesulfonate	21.	U				
62-50-0	Ethyl methanesulfonate	21.	U				
62-53-3	Aniline	32.	U				
108-95-2	Phenol	11.	U				
95-57-8	2-Chlorophenol	11.	U				
100-51-6	Benzyl alcohol	21.	U				
95-48-7	2-Methylphenol (o-Cresol)	11.	UJ				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 SVOA							
	SAMPLE ID ------->	GDB-H-W04D-03					
	ORIGINAL ID ----->	GDBHW04D03					
	LAB SAMPLE ID --->	L7330-5					
	ID FROM REPORT -->	GDBHW04D03					
	SAMPLE DATE ----->	06/26/96					
	DATE EXTRACTED -->	06/30/96					
	DATE ANALYZED --->	07/17/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	L7330	VAL				
930-55-2	N-Nitrosopyrrolidine	13.	U				
59-89-2	N-Nitrosomorpholine	42.	U				
621-64-7	N-Nitroso-di-n-propylamine	11.	U				
108-39-4	3-Methylphenol (m-Cresol)	32.	U				
98-86-2	Acetophenone	21.	U				
98-95-3	Nitrobenzene	11.	U				
78-59-1	Isophorone	11.	U				
88-75-5	2-Nitrophenol	11.	U				
105-67-9	2,4-Dimethylphenol	11.	U				
120-83-2	2,4-Dichlorophenol	11.	U				
87-65-0	2,6-Dichlorophenol	32.	U				
106-47-8	4-Chloroaniline	21.	U				
100-75-4	N-Nitrosopiperidine	11.	U				
924-16-3	N-Nitroso-di-n-butylamine	21.	U				
59-50-7	4-Chloro-3-methylphenol	19.	U				
120-58-1	Isosafrole	11.	U				
91-57-6	2-Methylnaphthalene	11.	U				
88-06-2	2,4,6-Trichlorophenol	11.	U				
95-95-4	2,4,5-Trichlorophenol	11.	U				
94-59-7	Safrole	11.	U				
130-15-4	1,4-Naphthoquinone	21.	U				
88-74-4	2-Nitroaniline	53.	U				
99-65-0	1,3-Dinitrobenzene	21.	U				
606-20-2	2,6-Dinitrotoluene	11.	U				
99-09-2	3-Nitroaniline	53.	U				
51-28-5	2,4-Dinitrophenol	53.	U				
132-64-9	Dibenzofuran	11.	U				
100-02-7	4-Nitrophenol	53.	U				
121-14-2	2,4-Dinitrotoluene	11.	U				
58-90-2	2,3,4,6-Tetrachlorophenol	32.	U				
100-01-6	4-Nitroaniline	21.	U				
534-52-1	2-Methyl-4,6-Dinitrophenol	53.	U				
99-35-4	1,3,5-Trinitrobenzene	11.	U				
87-86-5	Pentachlorophenol	53.	U				
82-68-8	Pentachloronitrobenzene	21.	U				
88-85-7	Dinoseb	32.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 SVOA

SAMPLE ID ------->	GDB-H-W04D-03
ORIGINAL ID ----->	GDBHW04D03
LAB SAMPLE ID --->	L7330-5
ID FROM REPORT -->	GDBHW04D03
SAMPLE DATE ----->	06/26/96
DATE EXTRACTED -->	06/30/96
DATE ANALYZED --->	07/17/96
MATRIX ---------->	Water
UNITS ---------->	UG/L A

CAS #	Parameter	L7330	VAL
56-57-5	4-Nitroquinoline 1-oxide	21.	UR
3689-24-5	Sulfotep	21.	U
86-30-6	N-Nitrosodiphenylamine	11.	U
541-73-1	1,3-Dichlorobenzene	??????????	
106-46-7	1,4-Dichlorobenzene	??????????	
95-50-1	1,2-Dichlorobenzene	??????????	
106-44-5	4-Methylphenol (p-Cresol)	??????????	
65-85-0	Benzoic acid	??????????	
120-82-1	1,2,4-Trichlorobenzene	??????????	
95-49-8	o-Chlorotoluene	??????????	
106-43-4	p-Chlorotoluene	??????????	
87-61-6	1,2,3-Trichlorobenzene	??????????	
122-09-8	a,a-Dimethylphenethylamine	??????????	
106-50-3	p-Phenylenediamine	??????????	
90-13-1	1-Chloronaphthalene	??????????	
92-87-5	Benzidine	??????????	
122-39-4	Diphenylamine	??????????	
465-73-6	Isodrin	??????????	
103-33-3	Azobenzene	??????????	
91-80-5	Methapyrilene	??????????	
70-30-4	Hexachlorophene	??????????	
143-50-0	Kepone	??????????	
224-42-0	Dibenz(a,j)acridine	??????????	

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 VOA

SAMPLE ID ------->	GDB-H-W04D-03
ORIGINAL ID ----->	GDBHW04D03
LAB SAMPLE ID --->	L7330-2
ID FROM REPORT -->	GDBHW04D03
SAMPLE DATE ----->	06/26/96
DATE ANALYZED --->	07/03/96
MATRIX ---------->	Water
UNITS ----------->	UG/L A

CAS #	Parameter	L7330	VAL
9999900-05-0	m+p Xylene	5.	U
95-47-6	o-Xylene	5.	U
100-42-5	Styrene	5.	U
75-25-2	Bromoform	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
541-73-1	1,3-Dichlorobenzene	5.	U
106-46-7	1,4-Dichlorobenzene	5.	U
95-50-1	1,2-Dichlorobenzene	5.	U
75-05-8	Acetonitrile	50.	UJ
107-02-8	Acrolein	50.	UR
107-13-1	Acrylonitrile	15.	UJ
107-05-1	3-Chloropropene	5.	U
126-99-8	Chloroprene	10.	U
106-93-4	1, 2-Dibromoethane	5.	U
74-95-3	Methylene bromide	5.	U
96-12-8	1,2-Dibromo-3-Chloropropane	5.	U
75-71-8	Dichlorodifluoromethane	5.	U
123-91-1	1,4-Dioxane	200.	UR
107-12-0	Propionitrile	10.	U
97-63-2	Ethyl methacrylate	5.	U
74-88-4	Methyl iodide	5.	U
78-83-1	Isobutyl alcohol	100.	U
126-98-7	Methacrylonitrile	5.	U
80-62-6	Methyl methacrylate	5.	U
630-20-6	1,1,1,2-Tetrachloroethane	5.	U
120-82-1	1,2,4-Trichlorobenzene	5.	U
96-18-4	1,2,3-Trichloropropane	5.	U
74-87-3	Chloromethane	10.	U
75-01-4	Vinyl chloride	10.	U
74-83-9	Bromomethane	10.	UR
75-00-3	Chloroethane	10.	UJ
75-69-4	Trichlorofluoromethane	5.	UJ
67-64-1	Acetone	23.	J
75-35-4	1,1-Dichloroethene	5.	U
75-15-0	Carbon disulfide	1.	J
75-09-2	Methylene chloride	5.	UJ
156-60-5	trans-1,2-Dichloroethene	5.	U

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9 VOA							
	SAMPLE ID ------->	GDB-H-W04D-03					
	ORIGINAL ID ----->	GDBHW04D03					
	LAB SAMPLE ID --->	L7330-2					
	ID FROM REPORT -->	GDBHW04D03					
	SAMPLE DATE ----->	06/26/96					
	DATE ANALYZED --->	07/03/96					
	MATRIX ---------->	Water					
	UNITS ---------->	UG/L	A				
CAS #	Parameter	L7330	VAL				
108-05-4	Vinyl acetate	5.	U				
75-34-3	1,1-Dichloroethane	5.	U				
78-93-3	2-Butanone (MEK)	10.	U				
67-66-3	Chloroform	5.	U				
71-55-6	1,1,1-Trichloroethane	5.	U				
56-23-5	Carbon tetrachloride	5.	U				
107-06-2	1,2-Dichloroethane	5.	U				
71-43-2	Benzene	5.	U				
79-01-6	Trichloroethene	5.	U				
78-87-5	1,2-Dichloropropane	5.	U				
75-27-4	Bromodichloromethane	5.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U				
108-88-3	Toluene	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U				
591-78-6	2-Hexanone	10.	U				
79-00-5	1,1,2-Trichloroethane	5.	U				
127-18-4	Tetrachloroethene	5.	U				
124-48-1	Dibromochloromethane	5.	U				
108-90-7	Chlorobenzene	5.	U				
100-41-4	Ethylbenzene	5.	U				
1330-20-7	Xylene (Total)	??????????					
110-57-6	trans-1,4-Dichloro-2-butene	??????????					
76-01-7	Pentachloroethane	??????????					

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-SVOA							
	SAMPLE ID ------->	GDB-H-W04D-04					
	ORIGINAL ID ----->	GDBHW04D04					
	LAB SAMPLE ID --->	6467-03					
	ID FROM REPORT -->	GDBHW04D04					
	SAMPLE DATE ----->	10/17/96					
	DATE EXTRACTED -->	10/21/96					
	DATE ANALYZED --->	11/01/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	6467.1	VAL				
108-95-2	Phenol	11.	U				
111-44-4	bis(2-Chloroethyl)ether	11.	U				
95-57-8	2-Chlorophenol	11.	U				
541-73-1	1,3-Dichlorobenzene	11.	U				
106-46-7	1,4-Dichlorobenzene	11.	U				
100-51-6	Benzyl alcohol	11.	U				
95-50-1	1,2-Dichlorobenzene	11.	U				
95-48-7	2-Methylphenol (o-Cresol)	11.	U				
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U				
106-44-5	4-Methylphenol (p-Cresol)	11.	U				
621-64-7	N-Nitroso-di-n-propylamine	11.	U				
67-72-1	Hexachloroethane	11.	U				
98-95-3	Nitrobenzene	11.	U				
78-59-1	Isophorone	11.	U				
88-75-5	2-Nitrophenol	11.	U				
105-67-9	2,4-Dimethylphenol	11.	U				
65-85-0	Benzoic acid	56.	U				
111-91-1	bis(2-Chloroethoxy)methane	11.	U				
120-83-2	2,4-Dichlorophenol	11.	U				
120-82-1	1,2,4-Trichlorobenzene	11.	U				
91-20-3	Naphthalene	11.	U				
106-47-8	4-Chloroaniline	11.	U				
87-68-3	Hexachlorobutadiene	11.	U				
59-50-7	4-Chloro-3-methylphenol	11.	U				
91-57-6	2-Methylnaphthalene	11.	U				
77-47-4	Hexachlorocyclopentadiene	11.	U				
88-06-2	2,4,6-Trichlorophenol	11.	U				
95-95-4	2,4,5-Trichlorophenol	28.	U				
91-58-7	2-Chloronaphthalene	11.	U				
88-74-4	2-Nitroaniline	28.	U				
131-11-3	Dimethyl phthalate	11.	U				
208-96-8	Acenaphthylene	11.	U				
606-20-2	2,6-Dinitrotoluene	11.	U				
99-09-2	3-Nitroaniline	28.	U				
83-32-9	Acenaphthene	11.	U				
51-28-5	2,4-Dinitrophenol	28.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-SVOA			
	SAMPLE ID ------->	GDB-H-W04D-04	
	ORIGINAL ID ----->	GDBHW04D04	
	LAB SAMPLE ID --->	6467-03	
	ID FROM REPORT -->	GDBHW04D04	
	SAMPLE DATE ----->	10/17/96	
	DATE EXTRACTED -->	10/21/96	
	DATE ANALYZED --->	11/01/96	
	MATRIX ---------->	Water	
	UNITS ----------->	UG/L	A

CAS #	Parameter	6467.1	VAL
100-02-7	4-Nitrophenol	28.	U
132-64-9	Dibenzofuran	11.	U
121-14-2	2,4-Dinitrotoluene	11.	U
84-66-2	Diethylphthalate	11.	U
7005-72-3	4-Chlorophenylphenylether	11.	U
86-73-7	Fluorene	11.	U
100-01-6	4-Nitroaniline	28.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	28.	U
86-30-6	N-Nitrosodiphenylamine	11.	U
101-55-3	4-Bromophenyl-phenylether	11.	U
118-74-1	Hexachlorobenzene	11.	U
87-86-5	Pentachlorophenol	28.	U
85-01-8	Phenanthrene	11.	U
120-12-7	Anthracene	11.	U
84-74-2	Di-n-butylphthalate	11.	U
206-44-0	Fluoranthene	11.	U
129-00-0	Pyrene	11.	U
85-68-7	Butylbenzylphthalate	11.	U
91-94-1	3,3'-Dichlorobenzidine	11.	U
56-55-3	Benzo(a)anthracene	11.	U
218-01-9	Chrysene	11.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	11.	U
117-84-0	Di-n-octyl phthalate	11.	U
205-99-2	Benzo(b)fluoranthene	11.	U
207-08-9	Benzo(k)fluoranthene	11.	U
50-32-8	Benzo(a)pyrene	11.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U
53-70-3	Dibenz(a,h)anthracene	11.	U
191-24-2	Benzo(g,h,i)perylene	11.	U
110-86-1	Pyridine	11.	U
62-75-9	N-Nitrosodimethylamine	11.	U
109-06-8	2-Picoline	28.	U
10595-95-6	N-Nitrosomethylethylamine	28.	U
66-27-3	Methyl methanesulfonate	11.	U
55-18-5	N-Nitrosodiethylamine	22.	U
62-50-0	Ethyl methanesulfonate	22.	U

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-SVOA							
	SAMPLE ID ------->	GDB-H-W04D-04					
	ORIGINAL ID ----->	GDBHW04D04					
	LAB SAMPLE ID --->	6467-03					
	ID FROM REPORT -->	GDBHW04D04					
	SAMPLE DATE ----->	10/17/96					
	DATE EXTRACTED -->	10/21/96					
	DATE ANALYZED --->	11/01/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	6467.1	VAL				
95-49-8	o-Chlorotoluene	11.	U				
106-43-4	p-Chlorotoluene	11.	U				
62-53-3	Aniline	11.	U				
930-55-2	N-Nitrosopyrrolidine	45.	U				
98-86-2	Acetophenone	11.	U				
59-89-2	N-Nitrosomorpholine	11.	U				
95-53-4	o-Toluidine	11.	U				
100-75-4	N-Nitrosopiperidine	22.	U				
87-61-6	1,2,3-Trichlorobenzene	11.	U				
126-68-1	O,O,O-Triethylphosphorothioate	11.	U				
122-09-8	a,a-Dimethylphenethylamine	45.	U				
87-65-0	2,6-Dichlorophenol	11.	U				
1888-71-7	Hexachloropropene	11.	U				
106-50-3	p-Phenylenediamine	110.	U				
924-16-3	N-Nitroso-di-n-butylamine	11.	U				
90-13-1	1-Chloronaphthalene	11.	U				
94-59-7	Safrole	11.	U				
95-94-3	1,2,4,5-Tetrachlorobenzene	11.	U				
120-58-1	Isosafrole	11.	U				
130-15-4	1,4-Naphthoquinone	11.	U				
99-65-0	1,3-Dinitrobenzene	22.	U				
608-93-5	Pentachlorobenzene	11.	U				
134-32-7	1-Naphthylamine	11.	U				
91-59-8	2-Naphthylamine	11.	U				
58-90-2	2,3,4,6-Tetrachlorophenol	11.	U				
92-87-5	Benzidine	28.	U				
99-55-8	5-Nitro-o-toluidine	11.	U				
122-39-4	Diphenylamine	11.	U				
465-73-6	Isodrin	11.	U				
103-33-3	Azobenzene	11.	U				
99-35-4	1,3,5-Trinitrobenzene	11.	U				
62-44-2	Phenacetin	22.	U				
297-97-2	Thionazin	22.	U				
92-67-1	4-Aminobiphenyl	22.	U				
82-68-8	Pentachloronitrobenzene	22.	U				
23950-58-5	Pronamide	11.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-SVOA							
	SAMPLE ID ------>	GDB-H-W04D-04					
	ORIGINAL ID ----->	GDBHW04D04					
	LAB SAMPLE ID --->	6467-03					
	ID FROM REPORT -->	GDBHW04D04					
	SAMPLE DATE ----->	10/17/96					
	DATE EXTRACTED -->	10/21/96					
	DATE ANALYZED --->	11/01/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	6467.1	VAL				
88-85-7	Dinoseb	22.	U				
56-57-5	4-Nitroquinoline 1-oxide	45.	U				
91-80-5	Methapyrilene	110.	U				
140-57-8	Aramite	22.	U				
60-11-7	p-(Dimethylamino)azobenzene	11.	U				
119-93-7	3,3-Dimethylbenzidine	22.	U				
53-96-3	Acetamidofluorene	22.	U				
57-97-6	7,12-Dimethylbenz(a)anthracene	11.	U				
56-49-5	3-Methyl cholanthrene	11.	U				
70-30-4	Hexachlorophene	110.	U				
143-50-0	Kepone	220.	U				
224-42-0	Dibenz(a,j)acridine	11.	U				
510-15-6	Chlorobenzilate	11.	U				
60-51-5	Dimethoate	11.	U				
56-38-2	Parathion	11.	U				
298-00-0	Methyl parathion	11.	U				
298-02-2	Phorate	11.	U				
298-04-4	Disulfoton	11.	U				
3689-24-5	Sulfotep	11.	U				
2303-16-4	Diallate	11.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-VOA							
	SAMPLE ID ------->	GDB-H-W04D-04					
	ORIGINAL ID ----->	GDBHW04D04					
	LAB SAMPLE ID --->	6467-03					
	ID FROM REPORT -->	GDBHW04D04					
	SAMPLE DATE ----->	10/17/96					
	DATE ANALYZED --->	10/23/96					
	MATRIX ---------->	Water					
	UNITS ----------->	UG/L	A				
CAS #	Parameter	6467.1	VAL				
74-87-3	Chloromethane	5.	U				
74-83-9	Bromomethane	5.	U				
75-01-4	Vinyl chloride	5.	U				
75-00-3	Chloroethane	5.	U				
75-09-2	Methylene chloride	5.	U				
67-64-1	Acetone	10.	U				
75-15-0	Carbon disulfide	5.	U				
75-35-4	1,1-Dichloroethene	5.	U				
75-34-3	1,1-Dichloroethane	5.	U				
156-60-5	trans-1,2-Dichloroethene	5.	U				
67-66-3	Chloroform	5.	U				
107-06-2	1,2-Dichloroethane	5.	U				
78-93-3	2-Butanone (MEK)	10.	U				
71-55-6	1,1,1-Trichloroethane	5.	U				
56-23-5	Carbon tetrachloride	5.	U				
108-05-4	Vinyl acetate	10.	U				
78-87-5	1,2-Dichloropropane	5.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U				
79-01-6	Trichloroethene	5.	U				
124-48-1	Dibromochloromethane	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U				
80-62-6	Methyl methacrylate	5.	U				
71-43-2	Benzene	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U				
75-25-2	Bromoform	5.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U				
591-78-6	2-Hexanone	10.	U				
127-18-4	Tetrachloroethene	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U				
108-88-3	Toluene	5.	U				
108-90-7	Chlorobenzene	5.	U				
100-41-4	Ethylbenzene	5.	U				
100-42-5	Styrene	5.	U				
1330-20-7	Xylene (Total)	5.	U				
75-71-8	Dichlorodifluoromethane	5.	U				
75-69-4	Trichlorofluoromethane	5.	U				
74-88-4	Methyl iodide	5.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

APX9-VOA			
	SAMPLE ID ------->	GDB-H-W04D-04	
	ORIGINAL ID ----->	GDBHW04D04	
	LAB SAMPLE ID --->	6467-03	
	ID FROM REPORT -->	GDBHW04D04	
	SAMPLE DATE ----->	10/17/96	
	DATE ANALYZED --->	10/23/96	
	MATRIX ---------->	Water	
	UNITS ----------->	UG/L	A

CAS #	Parameter	6467.1	VAL
107-05-1	3-Chloropropene	5.	U
107-12-0	Propionitrile	50.	UR
75-05-8	Acetonitrile	50.	UR
107-02-8	Acrolein	50.	U
126-99-8	Chloroprene	10.	U
107-13-1	Acrylonitrile	50.	U
123-91-1	1,4-Dioxane	50.	UR
126-98-7	Methacrylonitrile	50.	U
74-95-3	Methylene bromide	5.	U
78-83-1	Isobutyl alcohol	500.	UR
106-93-4	1, 2-Dibromoethane	5.	U
630-20-6	1,1,1,2-Tetrachloroethane	5.	U
95-47-6	o-Xylene	5.	U
96-18-4	1,2,3-Trichloropropane	5.	U
110-57-6	trans-1,4-Dichloro-2-butene	5.	U
96-12-8	1,2-Dibromo-3-Chloropropane	5.	U
97-63-2	Ethyl methacrylate	5.	U
76-01-7	Pentachloroethane	5.	U

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SW-VOA	SAMPLE ID ------>	GDB-G-W004-04		GDB-G-W04D-04					
	ORIGINAL ID ----->	GDBGW00404		GDBGW04D04					
	LAB SAMPLE ID --->	6467-01		6467-02					
	ID FROM REPORT -->	GDBGW00404		GDBGW04D04					
	SAMPLE DATE ----->	10/17/96		10/17/96					
	DATE EXTRACTED -->	10/19/96		10/19/96					
	DATE ANALYZED --->	10/25/96		10/25/96					
	MATRIX ---------->	Water		Water					
	UNITS ---------->	UG/L	A	UG/L	A				
CAS #	Parameter	6467	VAL	6467	VAL				
74-87-3	Chloromethane	10.	UJ	10.	UJ				
75-01-4	Vinyl chloride	5.	U	5.	U				
74-83-9	Bromomethane	10.	U	10.	U				
75-00-3	Chloroethane	5.	U	5.	U				
67-64-1	Acetone	10.	U	10.	U				
75-15-0	Carbon disulfide	5.	U	5.	U				
75-35-4	1,1-Dichloroethene	5.	U	5.	U				
75-09-2	Methylene chloride	5.	U	5.	U				
75-34-3	1,1-Dichloroethane	5.	U	5.	U				
156-59-2	cis-1,2-Dichloroethene	5.	U	5.	U				
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U				
67-66-3	Chloroform	5.	U	5.	U				
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U				
110-75-8	2-Chloroethyl vinyl ether	5.	U	5.	U				
78-93-3	2-Butanone (MEK)	10.	U	10.	U				
56-23-5	Carbon tetrachloride	5.	U	5.	U				
108-05-4	Vinyl acetate	5.	UJ	5.	UJ				
107-06-2	1,2-Dichloroethane	5.	U	5.	U				
71-43-2	Benzene	5.	U	5.	U				
79-01-6	Trichloroethene	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U				
78-87-5	1,2-Dichloropropane	5.	U	5.	U				
75-27-4	Bromodichloromethane	5.	U	5.	U				
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U				
108-88-3	Toluene	5.	U	5.	U				
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U				
75-25-2	Bromoform	5.	U	5.	U				
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U				
591-78-6	2-Hexanone	10.	U	10.	U				
127-18-4	Tetrachloroethene	5.	U	5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U				
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U				
100-42-5	Styrene	5.	U	5.	U				
1330-20-7	Xylene (Total)	5.	U	5.	U				

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SW846-SVOA	SAMPLE ID ------->	GDB-G-W004-03		GDB-G-W004-04		GDB-G-W04D-03		GDB-G-W04D-04			
	ORIGINAL ID ----->	GDBGW00403		GDBGW00404		GDBGW04D03		GDBGW04D04			
	LAB SAMPLE ID --->	L7333-16		6467-01RX		L7333-22		6467-02			
	ID FROM REPORT -->	GDBGW00403		GDBGW00404		GDBGW04D03		GDBGW04D04			
	SAMPLE DATE ----->	06/26/96		10/17/96		06/26/96		10/17/96			
	DATE EXTRACTED -->	06/28/96		10/23/96		06/28/96		10/21/96			
	DATE ANALYZED --->	07/03/96		10/28/96		07/03/96		10/24/96			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A		
CAS #	Parameter	L7333	VAL	6467	VAL	L7333	VAL	6467	VAL		
111-44-4	bis(2-Chloroethyl)ether	11.	U	11.	U	11.	U	11.	U		
108-60-1	2,2'-oxybis(1-Chloropropane)	11.	U	11.	U	11.	U	11.	U		
67-72-1	Hexachloroethane	11.	U	11.	U	11.	U	11.	U		
111-91-1	bis(2-Chloroethoxy)methane	11.	U	11.	U	11.	U	11.	U		
91-20-3	Naphthalene	11.	U	11.	U	11.	U	11.	U		
87-68-3	Hexachlorobutadiene	11.	U	11.	UJ	11.	U	11.	U		
77-47-4	Hexachlorocyclopentadiene	11.	U	11.	UJ	11.	U	11.	U		
91-58-7	2-Chloronaphthalene	11.	U	11.	U	11.	U	11.	U		
131-11-3	Dimethyl phthalate	11.	U	11.	U	11.	U	11.	U		
208-96-8	Acenaphthylene	11.	U	11.	U	11.	U	11.	U		
83-32-9	Acenaphthene	11.	U	11.	U	11.	U	11.	U		
84-66-2	Diethylphthalate	11.	U	11.	U	11.	U	11.	U		
86-73-7	Fluorene	11.	U	11.	U	11.	U	11.	U		
7005-72-3	4-Chlorophenylphenylether	11.	U	11.	U	11.	U	11.	U		
101-55-3	4-Bromophenyl-phenylether	11.	U	11.	UJ	11.	U	11.	U		
118-74-1	Hexachlorobenzene	11.	U	11.	U	11.	U	11.	UJ		
85-01-8	Phenanthrene	11.	U	11.	U	11.	U	11.	U		
120-12-7	Anthracene	11.	U	11.	U	11.	U	11.	U		
84-74-2	Di-n-butylphthalate	11.	U	11.	U	11.	U	11.	U		
206-44-0	Fluoranthene	11.	U	11.	UJ	11.	U	11.	U		
129-00-0	Pyrene	11.	U	11.	U	11.	U	11.	U		
85-68-7	Butylbenzylphthalate	11.	U	11.	U	11.	U	11.	U		
56-55-3	Benzo(a)anthracene	11.	U	11.	U	11.	U	11.	U		
91-94-1	3,3'-Dichlorobenzidine	22.	U	11.	U	22.	U	11.	UJ		
218-01-9	Chrysene	11.	U	11.	UJ	11.	U	11.	U		
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	11.	U	11.	UJ	11.	U	11.	U		
117-84-0	Di-n-octyl phthalate	11.	U	11.	U	11.	U	11.	U		
205-99-2	Benzo(b)fluoranthene	11.	U	11.	U	11.	U	11.	U		
207-08-9	Benzo(k)fluoranthene	11.	U	11.	U	11.	U	11.	U		
50-32-8	Benzo(a)pyrene	11.	U	11.	U	11.	U	11.	U		
193-39-5	Indeno(1,2,3-cd)pyrene	11.	U	11.	U	11.	U	11.	U		
53-70-3	Dibenz(a,h)anthracene	11.	U	11.	U	11.	U	11.	U		
191-24-2	Benzo(g,h,i)perylene	11.	U	11.	U	11.	U	11.	U		
108-95-2	Phenol	11.	U	11.	U	11.	U	11.	U		
95-57-8	2-Chlorophenol	11.	UJ	11.	U	11.	U	11.	U		
100-51-6	Benzyl alcohol	22.	U	11.	U	22.	U	11.	U		

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SW846-SVOA	SAMPLE ID ------->	GDB-G-W004-03		GDB-G-W004-04		GDB-G-W04D-03		GDB-G-W04D-04			
	ORIGINAL ID ----->	GDBGW00403		GDBGW00404		GDBGW04D03		GDBGW04D04			
	LAB SAMPLE ID --->	L7333-16		6467-01RX		L7333-22		6467-02			
	ID FROM REPORT -->	GDBGW00403		GDBGW00404		GDBGW04D03		GDBGW04D04			
	SAMPLE DATE ----->	06/26/96		10/17/96		06/26/96		10/17/96			
	DATE EXTRACTED -->	06/28/96		10/23/96		06/28/96		10/21/96			
	DATE ANALYZED --->	07/03/96		10/28/96		07/03/96		10/24/96			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ----------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A		
CAS #	Parameter	L7333	VAL	6467	VAL	L7333	VAL	6467	VAL		
95-48-7	2-Methylphenol (o-Cresol)	11.	U	11.	U	11.	U	11.	U		
621-64-7	N-Nitroso-di-n-propylamine	11.	U	11.	U	11.	U	11.	U		
98-95-3	Nitrobenzene	11.	U	11.	U	11.	U	11.	U		
78-59-1	Isophorone	11.	U	11.	U	11.	U	11.	U		
88-75-5	2-Nitrophenol	11.	U	11.	U	11.	U	11.	U		
105-67-9	2,4-Dimethylphenol	11.	U	11.	U	11.	U	11.	U		
120-83-2	2,4-Dichlorophenol	11.	U	11.	U	11.	U	11.	U		
106-47-8	4-Chloroaniline	22.	U	11.	U	22.	U	11.	U		
59-50-7	4-Chloro-3-methylphenol	22.	U	11.	U	22.	U	11.	U		
91-57-6	2-Methylnaphthalene	11.	U	11.	U	11.	U	11.	U		
88-06-2	2,4,6-Trichlorophenol	11.	U	11.	U	11.	U	11.	U		
95-95-4	2,4,5-Trichlorophenol	11.	U	28.	U	11.	U	28.	U		
88-74-4	2-Nitroaniline	56.	U	28.	U	56.	U	28.	U		
606-20-2	2,6-Dinitrotoluene	11.	U	11.	U	11.	U	11.	U		
99-09-2	3-Nitroaniline	56.	U	28.	U	56.	U	28.	U		
51-28-5	2,4-Dinitrophenol	56.	UJ	28.	UJ	56.	UJ	28.	U		
132-64-9	Dibenzofuran	11.	U	11.	U	11.	U	11.	U		
100-02-7	4-Nitrophenol	56.	U	28.	U	56.	U	28.	U		
121-14-2	2,4-Dinitrotoluene	11.	U	11.	U	11.	U	11.	U		
100-01-6	4-Nitroaniline	22.	U	28.	U	22.	U	28.	UJ		
534-52-1	2-Methyl-4,6-Dinitrophenol	56.	U	28.	U	56.	U	28.	U		
87-86-5	Pentachlorophenol	56.	U	28.	UJ	56.	U	28.	UJ		
541-73-1	1,3-Dichlorobenzene	11.	U	11.	U	11.	U	11.	U		
106-46-7	1,4-Dichlorobenzene	11.	UJ	11.	U	11.	U	11.	U		
95-50-1	1,2-Dichlorobenzene	11.	U	11.	U	11.	U	11.	U		
106-44-5	4-Methylphenol (p-Cresol)	11.	U	11.	U	11.	U	11.	U		
65-85-0	Benzoic acid	56.	U	56.	U	56.	U	56.	U		
120-82-1	1,2,4-Trichlorobenzene	11.	U	11.	U	11.	U	11.	U		
86-30-6	N-Nitrosodiphenylamine	11.	U	11.	U	11.	U	11.	U		
86-74-8	Carbazole	11.	U	11.	U	11.	U	11.	U		
110-86-1	Pyridine	??????????		11.	U	??????????		11.	U		
103-33-3	Azobenzene	??????????		11.	U	??????????		11.	U		

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SW846-VOA	SAMPLE ID ------->	GDB-G-W004-03	GDB-G-W04D-03			
	ORIGINAL ID ----->	GDBGW00403	GDBGW04D03			
	LAB SAMPLE ID --->	L7333-4	L7333-13			
	ID FROM REPORT -->	GDBGW00403	GDBGW04D03			
	SAMPLE DATE ----->	06/26/96	06/26/96			
	DATE ANALYZED --->	07/01/96	06/30/96			
	MATRIX ---------->	Water	Water			
	UNITS ----------->	UG/L A	UG/L A			

CAS #	Parameter	L7333	VAL	L7333	VAL
9999900-05-0	m+p Xylene	5.	U	5.	U
95-47-6	o-Xylene	5.	U	5.	U
100-42-5	Styrene	5.	U	5.	U
75-25-2	Bromoform	5.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U	5.	U
541-73-1	1,3-Dichlorobenzene	5.	U	5.	U
106-46-7	1,4-Dichlorobenzene	5.	U	5.	U
95-50-1	1,2-Dichlorobenzene	5.	U	5.	U
74-87-3	Chloromethane	5.	U	5.	U
75-01-4	Vinyl chloride	5.	U	5.	U
74-83-9	Bromomethane	5.	UR	5.	UJ
75-00-3	Chloroethane	5.	U	5.	UJ
75-69-4	Trichlorofluoromethane	5.	U	5.	U
67-64-1	Acetone	10.	U	11.	U
75-35-4	1,1-Dichloroethene	5.	U	5.	U
75-15-0	Carbon disulfide	5.	U	5.	U
75-09-2	Methylene chloride	5.	U	5.	U
156-60-5	trans-1,2-Dichloroethene	5.	U	5.	U
108-05-4	Vinyl acetate	10.	U	10.	U
75-34-3	1,1-Dichloroethane	5.	U	5.	U
78-93-3	2-Butanone (MEK)	10.	U	10.	U
156-59-2	cis-1,2-Dichloroethene	5.	U	5.	U
67-66-3	Chloroform	1.4	J	5.	U
71-55-6	1,1,1-Trichloroethane	5.	U	5.	U
56-23-5	Carbon tetrachloride	5.	U	5.	U
107-06-2	1,2-Dichloroethane	5.	U	5.	U
71-43-2	Benzene	5.	U	5.	U
79-01-6	Trichloroethene	5.	U	5.	U
78-87-5	1,2-Dichloropropane	5.	U	5.	U
75-27-4	Bromodichloromethane	5.	U	5.	U
110-75-8	2-Chloroethyl vinyl ether	20.	U	20.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10.	U	10.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U	5.	U
108-88-3	Toluene	5.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	5.	U	5.	U
591-78-6	2-Hexanone	10.	UJ	10.	UJ
79-00-5	1,1,2-Trichloroethane	5.	U	5.	U

*** Validation Complete ***

Quarterly RFI Groundwater Samples
Former UST NS705 Site
97 Navy Way, North Charleston SC

SW846-VOA	SAMPLE ID ------->	GDB-G-W004-03	GDB-G-W04D-03				
	ORIGINAL ID ----->	GDBGW00403	GDBGW04D03				
	LAB SAMPLE ID --->	L7333-4	L7333-13				
	ID FROM REPORT -->	GDBGW00403	GDBGW04D03				
	SAMPLE DATE ----->	06/26/96	06/26/96				
	DATE ANALYZED --->	07/01/96	06/30/96				
	MATRIX ---------->	Water	Water				
	UNITS ---------->	UG/L A	UG/L A				

CAS #	Parameter	L7333	VAL	L7333	VAL				
127-18-4	Tetrachloroethene	5.	U	5.	U				
124-48-1	Dibromochloromethane	5.	U	5.	U				
108-90-7	Chlorobenzene	5.	U	5.	U				
100-41-4	Ethylbenzene	5.	U	5.	U				

*** Validation Complete ***

Table E-1 Risk-Based Screening Levels
Quarters Building NS705
97 Navy Way
North Charleston, South Carolina

Chemical of Concern	Soil Screening Levels (mg/kg)				Groundwater (ug/L)	
	Groundwater Protection		Soil Ingestion			
	Level	Source[1]	Level	Source[1]	Level	Source[1]
BTEX						
Benzene	0.007	B3	22.000	B6	5.000	B1
Ethylbenzene	1.500	B3	7800.000	B6	700.000	B1
Toluene	1.700	B3	16000.000	B6	1000.000	B1
Xylenes (total)	44.000	B3	160000.000	B6	10000.000	B1
Naphthalene	0.200	B3	3100.000	B6	25.000	B1
MTBE			390.000	B6	40.000	B1
PAHs						
Acenaphthene	20.000	SCAP	4700.000	RBC	220.000	SCAP
Acenaphthylene [2]	20.000	SCAP	4700.000		220.000	SCAP
Anthracene	430.000	SCAP	23000.000	RBC	150.000	SCAP
Benzo(a)anthracene	0.700	B3	0.880	B6		
Benzo(a)pyrene	4.000	SCAP	0.088	RBC	0.200	SDWA
Benzo(b)fluoranthene	0.660	B3	0.880	B6		
Benzo(ghi)perylene [3]	98.000	SCAP	3100.000			
Benzo(k)fluoranthene	4.600	B3	8.800	B6		
Chrysene	0.660	B3	88.000	B6		
Dibenzo(a,h)anthracene	2.600	B3	0.088	B6		
Fluoranthene	98.000	SCAP	3100.000	RBC	150.000	SCAP
Fluorene	16.000	SCAP	3100.000	RBC	150.000	SCAP
Indeno(1,2,3-c,d)pyrene	14.000	SSG	0.880	RBC		
Naphthalene	0.200	B3	3100.000	B6	25.000	SCAP
Phenanthrene [3]	98.000	SCAP	3100.000		150.000	SCAP
Pyrene	140.000	SCAP	2300.000	RBC	110.000	SCAP
TOTAL CPAHs [4]					25.000	B1
RCRA Metals						
Mercury [5]	2.000	SSG	23.000	RBC	2.000	SDWA
Silver	34.000	SSG	390.000	RBC		
Arsenic	29.000	SSG	0.430	RBC	50.000	SDWA
Barium	16000.000	SSG	5500.000	RBC	2000.000	SDWA
Cadmium	8.000	SSG	39.000	RBC	5.000	SDWA
Chromium	38.000	SSG	78000.000	RBC	100.000	SDWA
Chromium VI	38.000	SSG	390.000	RBC		
Lead [6]	400.000	SSG	400.000		15.000	SDWA
Selenium	5.000	SSG	390.000	RBC	50.000	SDWA

Notes

1 Sources:

B1 - Table B1 of Appendix B of the SCDHEC RBCA dated June 20, 1997

B3 - Table B3 of Appendix B of the SCDHEC RBCA dated June 20, 1997

B6 - Table B6 of Appendix B of the SCDHEC RBCA dated June 20, 1997

RBC - EPA Region III RBC Table dated April 1, 1998. Residential soil ingestion RBCs from the RBC Table were used as soil ingestion RBSLs for COCs not listed in Table B6 of the SCDHEC RBCA document. The RBC Table was also used to identify carcinogenic PAHs (see Note 4 below).

SCAP - Soil Corrective Action Plan (SCAP) dated January 28, 1997. In accordance with SCDHEC correspondence dated September 2, 1997 (Paul Bristol to J. T. Amey) the SCAP was used for to provide groundwater protection RBSLs for COCs not listed in Table B3 of the SCDHEC RBCA (except RCRA metals, see "SSG" below). Also, tapwater RBCs from the SCAP were used as Groundwater RBSLs for non-carcinogenic PAHs.

SDWA - Safe Drinking Water Act MCLs, where available, were used as groundwater RBSLs for COCs not listed in Table B1 of the SCDHEC RBCA.

SSG - EPA Soil Screening Guidance: Technical Background Document dated May 1996. Some groundwater protection SSLs for RCRA metals given in the SCAP were Upper Tolerance Limits (UTLs) based on high background concentrations specific to RFI Zone I at the NAVBASE. Accordingly, generic groundwater protection SSLs from Appendix A of the Soil Screening Guidance: Technical Background Document were used in preference to the SCAP SSLs. These generic SSLs are based on a Dilution and attenuation Factor (DAF) of 20 and an assumed soil PH of 6.8. Also, the generic SSL for Indeno(1,2,3-c,d)pyrene (not listed in SCDHEC RBCA or SCAP) was used as a groundwater protection RBSL.

2 Acenaphthene was used as a surrogate to determine groundwater protection SSL and tapwater RBC in the SCAP. Using the same principle, Acenaphthene was used as a surrogate to determine the soil ingestion RBSL used in this report; the RBC table soil ingestion RBC for Acenaphthene was used as the soil ingestion RBSL for Acenaphthalene during this CA)

3 Fluoranthene was used as a surrogate to determine groundwater protection SSL and tapwater RBC in the SCAP. Using the same principle, fluoranthene was used as a surrogate to determine the soil ingestion RBSL used in this report; the RBC table soil ingestion RBC for Fluoranthene was used as the soil ingestion RBSL for Benzo(ghi)perylene and Phenanthrene during this CA.

4 CPAHs - Total carcinogenic PAHs; carcinogens are indicated by bold type. The SDWA MCL for Benzo(a)pyrene still applies, it can be no more than 0.2 ug/L of the 25 ug/L groundwater RBSL for carcinogenic PAHs.

5 Groundwater Protection SSL and residential soil ingestion RBC are based on Reference Dose (RfD) for Mercuric Chloride.

6 Soil screening level of 400 mg/kg for lead based on EPA Revised Interim soil Lead Guidance for CERCLA Sites (1994).