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CORRECTIVE ACTION PLAN FOR ZONE E/ SITE 26-BUILDING 6 UNDERGROUND
STORAGE TANK 6A AND 6B (UST6A) (UST6B) CNC CHARLESTON SC
1/1/2001
CH2M HILL

**CORRECTIVE ACTION PLAN
FOR
ZONE E/ SITE 26-BUILDING 6
UNDERGROUND STORAGE TANK 6A AND 6B**

SITE IDENTIFICATION # 17626

**Charleston Naval Complex
Charleston, South Carolina**

**SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND**

Contract Number N62467-99-C-0960

January 2001



24 February 2000

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Columbia, SC 29201-1708

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Re: Final Assessment Report dated 20 January 2000
Zone E/Site 26-Building 6 (Site Identification # 17626)
Charleston Naval Complex/Charleston Naval Base
Charleston, SC
Charleston County

Dear Mr. Magwood:

The author has completed technical review of the referenced document. As submitted, the report provides a narrative and summary of previous assessment activities and analytical results from additional sampling conducted to establish the environmental fate of suspected contamination at the subject property. Analytical results provided indicate that concentrations of PAH and VOC compound(s) were reported in soil and groundwater samples obtained at the subject site. The reported concentrations exceed the RBSL (Risk-Based Screening Levels, SCDHEC *Risk-Based Corrective Action for Petroleum Releases*, 5 January 1998), proposed RBC (Risk-Based Concentrations for Residential Soils, EPA Region III Risk-Based Concentrations Table, 12 April 1999) and established groundwater MCLs (maximum contaminant levels) and/or established health advisories. Available analytical data and applied interpretations appear to indicate that a reasonable delineation and characterization of the extent and severity of soil and groundwater contamination have been developed for the Building 6 site. This information and data were then utilized to develop SSTL (site specific target levels) for CoC (contaminants of concern) in evidential discussion(s) for consideration of employing active remediation (soils) and intrinsic remediation (groundwater) at the subject site.

Although the author concurs that active remediation may be appropriate for this site, reasonable monitoring must be established to demonstrate reclamation of groundwater quality through time. Proposals that incorporate monitored natural attenuation must provide sufficient data to demonstrate the groundwater environment's assimilative capacity to provide for intrinsic biodegradation/natural attenuation for the known contaminants through time. Appropriate and reasonable data must be available/developed to demonstrate contaminant plume stability, contaminant stoichiometry and provide site specific information/data on attenuation (retardation and degradation) rates to verify predictive modeling applied to the site. Associated routine monitoring (groundwater and soil, as necessary) should be sufficient to demonstrate the rate and

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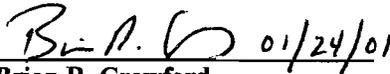
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**Submitted by:
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Contract Number: N62467-99-C-0960

January 2001

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Jed A. Heames
Site Superintendent
CH2M-JONES, LLC.

CERTIFICATION

I certify that the information contained in this report is true, and complete to the best of my knowledge, information, and belief.

Approved By: R. Jones No. 14220 / 02/06/31 / J.A. Jones

South Carolina Registration No. 14220

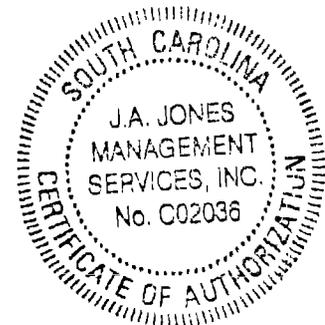


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ACRONYMS AND ABBREVIATIONS

bls	below land surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene Isomers
CAP	Corrective Action Plan
CNC	Charleston Naval Complex
EISOPQAM	Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
EPA	Environmental Protection Agency
ft	foot
mg/kg	microgram per kilogram
mg/L	microgram per liter
OVA	Organic Vapor Analyzer
QA	Quality Assurance
QC	Quality Control
RBSL	Risk-Based Screening Level
RDA	Redevelopment Authority
SAP	Sampling and Analysis Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SOUTHDIV	Southern Division Naval Facilities Engineering Command
SSTL	Site-Specific Target Level
TTNUS	Tetra Tech NUS
UST	Underground Storage Tank

1.0 INTRODUCTION

This Corrective Action Plan (CAP) has been prepared by CH2M-JONES, LLC. The plan is designed for Zone E/ Site 26-Building 6; Underground Storage Tank (UST) 6-A and 6-B located at the Charleston Naval Complex (CNC), Charleston, South Carolina.

The South Carolina Department of Health and Environmental Control (SCDHEC) has designated this site as Identification Number: 17626. This CAP recommends excavation of soils in the contaminated areas and intrinsic remediation and monitoring well abandonment as a corrective action for UST 6-A and UST6-B in accordance with SCDHEC Corrective Action Guidance, June 1997.

1.1 General Site Description

The CNC is in the city of North Charleston, on the west bank of the Cooper River in Charleston County, South Carolina as shown in Figure 1. This installation consists of two major areas: an undeveloped dredge materials area on the east bank of the Cooper River on Daniel Island in Berkley County, and a developed area on the west bank of the Cooper River. The developed portion of the base is on the peninsula bounded on the west by the Ashley River and on the east by the Cooper River. The site is located within the developed portion of the base as shown in Figure 2. (Tetra Tech, NUS [TTNUS], Rapid Assessment [RA] for Site 26, Building 6, 2000.)

The area surrounding CNC is “mature urban”, having long been developed with commercial, industrial, and residential land use. Commercial areas are primarily west of CNC; industrial areas are primarily to the north of the base along Shipyard Creek. A site vicinity map, which exhibits adjacent properties and structures, vicinity roads, current utilities, and vicinity surface drainage, is included as Figure 2.

Site 26- Building 6 also has four Area of Concerns (AOC) within the site. AOC 538 and 539 are located within the footprint of Building 6 and have potential contaminants at each (see Figure 12 in Section 8.0). Benzo(a)pyrene (BEQs) are a concern for soils, Arsenic is a concern for shallow groundwater, and Thallium is a concern for deep groundwater at AOC 538 and 539. AOCs 541 and 542 are located just east of building 6, and are within the proposed area to be excavated concerning the petroleum. Lead and BEQs in soils are the concerns for AOCs 541 and 542 (Zone E RCRA Facility Investigation Report, November 1997). There are no COCs other than naphthalene, above the RBSLs in the proposed areas for excavation. Given this information, the excavation proposed in this plan will not affect the AOCs from the RCRA perspective. This Corrective Action Plan is in effort to address the petroleum site only, all other AOCs will be addressed through the RCRA guidelines in a separate Corrective Action Plan (refer to Figure 12 for site map of AOCs and proposed excavation).

1.2 Objective

This CAP proposes soil excavation in contaminated areas and continuous groundwater monitoring plan to attempt to demonstrate the ground waters assimilative capacity to provide for

2.0 RECEPTOR SURVEY

A receptor survey of the site vicinity was conducted by TTNUS to identify potential receptors for petroleum hydrocarbon contamination. Figure 2 depicts the public utilities located within 250 feet of the former UST 6-A and 6-B study area. Specific information concerning the depth of utilities below land surface (bls) is currently unavailable, however, utilities at this site generally are between 2 to 6 feet (ft) bls. The following utility receptors were located:

UTILITY	ON-SITE OR DISTANCE/ DIRECTION FROM SITE	DEPTH TO UTILITY
Gas	80 ft east, 120 ft north	2-6-ft bls
Electrical	10 ft north of building 6 15 ft south of building 6	2-6-ft bls
Sewer	10 ft north of building 6	2-6-ft bls
Storm Drain	10 ft north of building 6 15 ft south of building 6	2-6-ft bls
Water	10 ft north of building 6	2-6-ft bls

According to the RA report completed by TTNUS, a survey of groundwater users within a 7-mile radius of CNC was conducted by the South Carolina Water Resources Commission to ascertain the extent of any shallow groundwater usage. Results of the water use investigation revealed that no drinking water wells, which utilize the shallow aquifer, are located within a 4 mile radius of CNC. Irrigation wells are not identified within 1,000 feet of the site. Numerous monitoring wells are located within 1,000 feet of the site. The nearest surface water body to the site is the Cooper River located approximately 1,000 ft North from the site (TTNUS, 2000).

2.1 Fate and Transport Modeling

The Dominico model was the fate and transport model used to determine groundwater site-specific target levels (SSTLs) in the risk analysis. The Dominico dilution/attenuation model is presented in the SCDHEC guidance document, *South Carolina Risk-Based Corrective Action for Petroleum Releases* (SCDHEC, 1988). This model is very conservative in that it assumes an infinite mass, aerial source condition through which groundwater flows. The model incorporates biological decay effects through a first-order decay process; however, this mechanism was ignored because SCDHEC guidance specifies that the decay rate must be assumed to be zero if site-specific decay rates have not been determined.

The impacted groundwater source area was modeled as 50 feet (15 meters) wide and 6.56 feet (2 meters) deep; these values are conservative defaults suggested by the American Society for Testing and Materials (ASTM) *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (ASTM 1997).

The maximum source concentrations are assumed to exist throughout the source area, further compounding the conservatism of the estimate (TTNUS 2000).

3.0 PROPOSED CORRECTIVE ACTION

This CAP provides a method for active remediation of the site by excavation (removal of the soils), conducting groundwater sampling to evaluate the active remediation of the site; and implementing intrinsic remediation and monitoring well abandonment as a corrective action in accordance with SCDHEC Corrective Action Guidance, June 1997. The proposed active remediation plan is described in Section 4.0.

As noted in Section 1.2 of this plan, this Corrective Action Plan is in effort to address the petroleum site only, all other AOCs will be addressed through the RCRA guidelines in a separate document.

3.1 Soil Remediation

Soils exceeded their RBSLs in two areas around Building 6 (see Figure 9). The recommended corrective actions are to remove those soils and continue to monitor the groundwater for a period of eighteen (18) months. Because the RA completed by TTNUS has already delineated the soils in the areas of the proposed excavation to some extent (see Figure 9), only a few additional delineation sampling will be necessary at this time. The following locations will be used for soil borings: between SB37 and SB34, approximately 10 feet east of SB36, approximately 10 feet west of SB36, approximately 10 feet north of SB22, and approximately 10 feet south of SB18. Two soil samples will be collected from each soil boring, one sample will be collected at surface level (0-2 foot) and a second soil sample will be collected in the subsurface layer (4-6 foot). A map of the proposed soil borings used for delineation is provided in Figure 12 in Section 8.0. A PID (Photo Ionization Detector) will be used in the field in order to screen each interval. Once the areas are delineated by the analytical results, excavation will begin. Details on the excavation procedures are included in Section 4.1 of this plan (refer to Figures 9 and 12 in Section 8.0).

3.2 Groundwater Remediation

Groundwater monitoring wells CNC26-M13 and CNC26-M12 had levels of naphthalene at 53.0 mg/kg and 31.0 mg/kg respectively. All other monitoring well analytical results were below the RBSLs. After soil excavation, groundwater wells onsite will be collected and sampled for naphthalene on a quarterly basis for eighteen (18) months after the excavation (see Section 4.6 for details on recommended parameters to be sampled).

4.0 PROPOSED ACTIVE REMEDIATION

Active remediation of the site will include excavation of soils at Site 26 and conducting groundwater sampling to evaluate the intrinsic remediation of the site. The additional groundwater monitoring will also provide information on the intrinsic/ natural attenuation standings at the site.

4.1 Excavation

Because the RA completed by TTNUS has already delineated the soils in the areas of the proposed excavation to some extent (see Figure 9), only a few additional delineation sampling will be necessary at this time (For details on soil locations see Section 3.1). Soils will be excavated up to those borings, which have no contaminants. The excavation will be to a depth of 6-7 feet bls or prior to reaching groundwater.

Schedule:

1. Establish the contaminated soil area by sampling soil borings. This step was completed in April 2000, by TTNUS.
2. Excavate contaminated soil to a depth of approximately 6-7 ft below land surface or prior to reaching groundwater.
3. Transport contaminated soil to an approved, permitted subtitle D landfill.
4. Backfill excavated area with clean fill dirt.
6. Sample monitoring well on site (see sampling schedule in Section 4.6).

4.2 Monitoring Well Installation

Because of the number of groundwater wells located at the site, no additional wells are to be installed at this time.

If any wells are unusable or new wells are warranted for any other reason, the wells will be installed to the same specification as existing monitoring wells unless site conditions change and warrant otherwise. The wells will be installed in accordance with South Carolina Well Standards and Regulations R.61-71. A utility locate will be completed prior to any well installation activities. Any necessary permits will be acquired prior to well installation activities.

4.3 Surveying

Surveying will be completed in order to locate prior soil boring locations.

Surveying of any new well locations will be conducted as a part of this CAP.

4.4 Soil Boring Schedule

CH2M-JONES, LLC will be using existing analytical results collected in April 2000 to delineate the areas to be excavated. No other soil borings will be collected at this time.

4.5 System Operation and Maintenance

N/A

4.6 Sampling and Analysis Plan

After the source is removed (excavation is completed), groundwater samples will be collected for eighteen months in order to provide evidence for intrinsic/natural remediation. The groundwater samples will be submitted to a certified laboratory for analysis of naphthalene by EPA Method 8260.

Groundwater level measurements will be collected from all monitoring wells prior to all groundwater sampling events. Measurements will be taken with an electrical water level indicator or interface probe if floating product is present. No groundwater samples will be collected if free product is measurable.

From three to six well volumes will be purged from each well prior to groundwater sampling. Field measurements of pH, groundwater temperature, specific conductance, dissolved oxygen, and turbidity will be taken during groundwater sampling events.

All sampling procedures will be conducted in accordance with EPA Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), 1996. Any contaminated groundwater collected during the well sampling events will be

containerized in DOT-approved (Specification 7H) 55-gallon drums and disposed of at a later date pending fluid contents analysis.

Sampling date or (Quarter)	Monitoring Wells Sampled	Field Measures	Laboratory Analytical
First quarter ¹	CNC-26: MW01, MW02, MW 05, MW06, MW 11, MW12, MW13	T°, pH, DO, Conductivity, Depth to water, Total depth, Turbidity	Naphthalene 8260 MW-06, MW-11, MW-12, & MW-13 Nitrate, sulfate, total dissolved iron, methane, alkalinity
Second quarter ²	CNC26-MW-06, MW-11, MW-12, MW-13	T°, pH, DO, Conductivity, Depth to water, Total depth, Turbidity	Naphthalene 8260 Nitrate, sulfate, total dissolved iron, methane, alkalinity
Third quarter ³	CNC26-MW-06, MW-11, MW-12, MW-13	T°, pH, DO, Conductivity, Depth to water, Total depth, Turbidity	Naphthalene 8260 Nitrate, sulfate, total dissolved iron, methane, alkalinity

1. First quarter is defined as the first quarter after receiving approval for this CAP.
2. Second quarter is defined as the second quarter after receiving approval for this CAP.
3. Third Quarter is defined as the third quarter after receiving approval for this CAP.

4.7 Reporting

Semi-annual monitoring reports will be submitted to SCDHEC. The reports will summarize and include copies of field and laboratory analytical data. Upon completion of active remediation, a Performance Evaluation Report will also be submitted to SCDHEC to summarize the remediation activities, evaluate the soil and water quality data, and provide recommendations for the site.

4.8 Equipment Decontamination

All drilling equipment, augers, well casing and screens, and soil and groundwater sampling equipment involved in field sampling activities will be decontaminated according to the EPA EISOPQAM.

4.9 Sample Handling

Sample handling will be conducted in accordance to the following references: EPA EISOPQAM, Code of Federal Regulations 136, 1990, and EPA Users Guide to Contract Laboratory Program, 1988. The following forms will be completed for packing/shipping process: sample labels,

chain-of-custody labels, appropriate labels applied to shipping coolers, and chain-of-custody forms.

4.10 Quality Control

In addition to periodic calibration of field equipment and the completions of the appropriate documentation, quality control (QC) samples will be collected during sampling events. QC samples may include field blanks, field duplicates, and trip blanks. Definitions of each can be found below as described by the EPA EISOPQAM:

- **Field Blank:** A sample collected using organic-free water, which has been run over/through sample collection equipment. These samples are used to determine if contaminants have been introduced by contact of the sample medium with sampling equipment. Equipment field blanks are often associated with collecting rinse blanks of equipment that has been field cleaned.
- **Field Duplicates:** Two or more samples collected from a common source. The purpose of a duplicate sample is to estimate the variability of a given characteristic or contamination associated with a population.
- **Trip Blank:** A sample, which is prepared prior to the sampling event in the actual container and is stored with the investigative samples throughout the sampling event. They are often packaged for shipment with the other samples and submitted for analysis. At no time after their preparation are trip blanks to be opened before they reach the laboratory. Trip blanks are used to determine if samples were contaminated during storage and/or transportation back to the laboratory (a measure of sample handling variability resulting in positive bias in contaminant concentration). If samples are to be shipped, trip blanks are to be provided with each shipment but not for each cooler.

4.11 Field Quality Assurance / Quality Control (QA/QC)

All sampling procedures will be conducted in accordance with EPA EISOPQAM. More information on field QC can be found in Sections 4.8 through 4.10.

QA/QC specifications for selected field measurements are summarized below.

Analysis	Control Parameter	Control Limit	Corrective Action
Air Monitoring	Check Calibration of OVA daily	Calibrate to manufactures specifications	Recalibrate. If unable to calibrate, replace.
pH of water	Continuing calibration check of pH 7.0 buffer	pH = 7.0	Recalibrate. If unable to calibrate, replace electrode.
Specific Conductance of water	Continuing calibration check of standard solution	> 1% of standard	Recalibrate.

4.12 Record keeping

In addition to required sampling documentation, standardized forms, log sheets and logbooks will be completed during all field activities.

5.0 SITE MANAGEMENT AND BASE SUPPORT

Throughout the investigation activities, work on the CNC will be coordinated through SOUTHDIV and SCDHEC.

The primary contacts for each are as follows:

1. SOUTHDIV point of contact
Gabe Magwood
Southern Division Engineering Command
2155 Eagle Drive
North Charleston, SC 29406
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6.0 REFERENCES

Ensafe/ Allen & Hoshall. July, 1996. Comprehensive Sampling and Analysis Plan.

South Carolina Department of Health and Environmental Control. 1997. Corrective Action Guidance.

Tetra Tech NUS, Inc.; 2000 Rapid Assessment for Site 26 (Building 6), Charleston, South Carolina.

United States Environmental Protection Agency. 1990. Code of Federal Regulations 136.

United States Environmental Protection Agency. 1988. EPA Users Guide to Contract Laboratory Program.

United States Environmental Protection Agency. 1996. EPA Environmental Investigations Standard Operating Procedures for Quality Assurance Manual.

TABLE 1
GROUNDWATER ELEVATIONS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 1

Well #	Total Depth of Well (ft)	Top of Casing Elevation, ft (MSL)	Date Measured	Depth to Water, ft (BTOC)	Depth to Product, ft (BTOC)	Product Thickness (ft)	Groundwater Elevation (MSL)
CNC26-MW01	12.12	8.78	9/22/1999	5.63	ND	ND	3.15
CNC26-MW02	12.23	8.52	9/22/1999	5.42	ND	ND	3.10
CNC26-MW03	12.28	9.38	9/22/1999	6.21	ND	ND	3.17
CNC26-MW04	12.10	8.98	9/22/1999	5.85	ND	ND	3.13
CNC26-MW05	12.03	8.01	9/22/1999	4.81	ND	ND	3.20
CNC26-MW06	12.15	7.51	9/22/1999	4.45	ND	ND	3.06
CNC26-MW07	12.00	9.12	9/22/1999	NM	ND	ND	NM
CNC26-MW08	12.01	9.21	9/22/1999	NM	ND	ND	NM
CNC26-MW09	33.15	8.74	9/22/1999	5.64	ND	ND	3.10
CNC26-MW10	32.40	8.73	9/22/1999	5.61	ND	ND	3.12
CNC26-MW11	14.00	8.65	9/22/1999	NM	ND	ND	NM
CNC26-MW12	12.90	NM	9/22/1999	NM	ND	ND	NM
CNC26-MW13	11.90	NM	9/22/1999	NM	ND	ND	NM
CNC26-X01	13.00	8.80	9/22/1999	5.53	ND	ND	3.27
CNC26-X02	13.22	8.83	9/22/1999	5.63	ND	ND	3.20
CNC26-X03	13.57	9.24	9/22/1999	6.15	ND	ND	3.09

Notes:

MSL - Mean Sea Level

BTOC - Below Top of Casing

NM - Not Measured

ND- Not Detected

ft - Feet

X - Existing

TABLE 2
GROUNDWATER FIELD MEASUREMENTS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Purge method	Volume (gallons)	Temp. (° C)	pH	Specific Conductivity (uMHOS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)
CNC26-MW01	9/22/1999	PP	3.50	29.9	6.37	1.810	7	1.11
CNC26-MW02	9/22/1999	PP	3.30	31.0	5.76	0.249	0	1.8
CNC26-MW03	9/22/1999	PP	3.00	29.6	6.27	2.510	6	1.86
CNC26-MW04	9/22/1999	PP	4.20	28.2	5.91	0.510	0	2.24
CNC26-MW05	9/22/1999	PP	3.42	27.5	5.92	0.419	0	1.26
CNC26-MW06	9/22/1999	PP	3.66	27.4	6.07	0.319	0	0.93
CNC26-MW07	9/22/1999	PP	4.00	26.5	5.87	0.181	0	3.54
CNC26-MW08	9/22/1999	PP	3.30	27.4	5.03	0.138	3	2.34
CNC26-MW09	9/22/1999	PP	13.14	25.7	6.53	0.520	4	0.9
CNC26-MW10	9/22/1999	PP	10.80	27.6	6.83	0.520	13	2.02
CNC26-MW11	9/22/1999	PP	4.00	26.8	5.91	0.100	5	1.3
CNC26-MW12	9/22/1999	PP	2.50	24.3	6.29	0.810	46	0.56
CNC26-MW13	9/22/1999	PP	1.20	24.8	6.66	0.757	319	0.4
CNC26-X01	9/22/1999	PP	6.00	25.3	6.23	6.030	45	1.88
CNC26-X02	9/22/1999	PP	3.63	26.6	6.19	0.686	5	1.96
CNC26-X03	9/22/1999	PP	6.50	25.5	6.25	0.761	6	1.89
CNC26-X04	9/22/1999	PP	4.38	26.0	6.21	0.257	8	1.86
CNC26-X05	9/22/1999	PP	3.39	26.4	6.79	0.194	8	2.32
CNC26-X06	9/22/1999	PP	3.00	26.7	6.14	0.150	13	0.85

Notes:

(° C) - Degrees Celsius

PP - Peristaltic pump, low flow technique

uMHOS/cm - Micro HOS per centimer

NTU - Nephelometric turbidity units

mg/l - milligrams per liter

X - Existing

TABLE 3

GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Dissolved Oxygen (mg/l)	Alkalinity (mg/l)	Carbon Dioxide (mg/l)	Sulfide (mg/l)	Ferrous Iron (mg/l)	Nitrite (mg/l)	Manganese (mg/l)	Nitrogen/Nitrate (mg/l)*	Sulfate (mg/l)*
CNC26-MW11	9/22/1999	2.50	24	38.2	0.02	0.03	0.035	0.1	NA	NA
CNC26-X02	9/22/1999	0.00	242	440	0.03	3.30	0.021	18.6	NA	NA
CNC26-X03	9/22/1999	1.00	231	250	0.09	0.98	0.375	0.8	NA	NA

Notes:

mg/l - Milligrams per liter

ug/l - Micrograms per liter

NA - Not Analyzed

TABLE 4
SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 26, BUILDING 6
Zone E, Former Charleston Naval Complex
North Charleston, South Carolina

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration
CNC26-B01	26SSB0104	0-4	0
	26SSB0108	4-8	150
CNC26-B02	26SSB0204	0-4	0
CNC26-B03	26SSB0304	0-4	0
CNC26-B04	26SSB0404	0-4	0
	26SSB0408	4-8	1500
CNC26-B05	26SSB0504	0-7	No Recording
CNC26-B06	26SSB0604	0-4	0
CNC26-B07	26SSB0704	0-4	3
CNC26-B08	26SSB0604	0-4	0
CNC26-B09	26SSB0904	0-4	0
CNC26-B10	26SSB1004	0-4	0
CNC26-B11	26SSB1104	0-4	0
CNC26-B12	26SSB1204	0-4	20
CNC26-B13	26SSB1304	0-4	0
CNC26-B14	26SSB1404	0-4	0
CNC26-B15	26SSB1504	0-4	0
CNC26-B16	26SSB1604	0-9	No Recording
CNC26-B17	26SSB1704	0-4	0
CNC26-B18	26SSB1804	0-4	150
CNC26-B19	26SSB1904	0-4	0
CNC26-B20	26SSB2004	0-4	0
CNC26-B21	26SSB2104	0-4	0
CNC26-B22	26SSB2204	0-4	50
CNC26-B23	26SSB2304	0-9	No Recording
CNC26-B24	26SSB2403	3	0
	26SSB2405	5	0
CNC26-B25	26SSB2501	1-12	No Recording
CNC26-B26	26SSB2601	1-12	No Recording
CNC26-B27	26SSB2701	1-12	No Recording
CNC26-B28	26SSB2801	1-8	No Recording
CNC26-B29	26SSB2901	1-12	No Recording
CNC26-B30	26SSB3003	3	0
	26SSB3005	5	0
	26SSB3009	9	70
CNC26-B31	26SSB3103	3	0
	26SSB3107	7	0
CNC26-B32	26SSB3203	3	6
	26SSB3206	6	60
CNC26-B33	26SSB3303	3	0
CNC26-B34	26SSB3403	3	0
	26SSB3406	6	30
CNC26-B35	26SSB3503	3	10
	26SSB3505	5	7

TABLE 4 - Continued

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 26, BUILDING 6
Zone E, Former Charleston Naval Complex
North Charleston, South Carolina

CNC26-B36	26SSB3603	3	0
	26SSB3605	5	0
CNC26-B37	26SSB3703	3	0
	26SSB3705	5	0
CNC26-B38	26SSB3805	5	0
CNC26-B39	26SSB3905	5	0
CNC26-B40	26SSB4001	1-12	No Recording
CNC26-B41	26SSB4101	1-8	No Recording
CNC26-B42	26SSB4201	1-8	No Recording
CNC26-B43	26SSB4305	5	0
	26SSB4308	8	180
CNC26-B44	26SSB4404	4	0
CNC26-B45	26SSB4504	4	0
CNC26-B46	26SSB4604	4	0
CNC26-B47	26SSB4704	4	0
CNC26-B48	26SSB4801	1-12	No Recording
CNC26-B49	26SSB4903	3	9
CNC26-B53	26SSB5304	4	0
	26SSB5307	7	0
CNC26-B54	26SSB5404	4	0
	26SSB5407	7	75
CNC26-B55	26SSB5504	4	0
CNC26-B56	26SSB5604	4	0
CNC26-B57	26SSB5703	3	0
CNC26-B58	26SSB5804	4	0

Notes:

OVA - organic vapor analyzer equipped with a flame ionization detector

TABLE 5
SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data ⁽¹⁾					
			Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	Total Xylenes (µg/Kg)	Naphthalene (µg/Kg)	Diesel Range Organics (mg/Kg)
CNC26-B01	26SFB010405	4-5	ND	ND	88.3	333.3	316	3300
CNC26-B02	26SFB020304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B03	26SFB030304	3-4	ND	ND	ND	ND	ND	189
CNC26-B04	26SFB040304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B05	26SFB050304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B06	26SFB060304	3-4	ND	ND	ND	ND	ND	45.8J
CNC26-B07	26SFB070304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B08	26SFB080304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B09	26SFB090304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B10	26SFB100304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B11	26SFB110304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B12	26SFB120304	3-4	ND	ND	ND	31	256	1330
CNC26-B13	26SFB130304	3-4	ND	ND	ND	ND	17	ND
CNC26-B14	26SFB140304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B15	26SFB150304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B16	26SFB160304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B17	26SFB170304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B18	26SFB180203	2-3	ND	ND	ND	140	135	79
CNC26-B19	26SFB190203	2-3	ND	ND	ND	ND	ND	ND
CNC26-B20	26SFB200304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B21	26SFB210304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B22	26SFB220304	3-4	ND	ND	274	170	425	2860
CNC26-B23	26SFB230304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B24	26SFB240506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B25	26SFB250607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B26	26SFB260607	6-7	ND	ND	30.7	251.2	251	638
CNC26-B27	26SFB270607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B28	26SFB280506	5-6	ND	ND	ND	34.5	99.5	9730
CNC26-B29	26SFB290607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B30	26SFB300607	6-7	ND	ND	ND	19.1J	98.2	3980
CNC26-B31	26SFB310607	6-7	ND	ND	ND	ND	ND	38400E
CNC26-B32	26SFB320607	6-7	ND	ND	ND	ND	ND	1050
CNC26-B33	26SFB330506	5-6	ND	ND	ND	39.2	113	8200E
CNC26-B34	26SFB340607	6-7	ND	21.2J	39.5	599	234	7680E
CNC26-B35	26SFB50506	5-6	ND	18.2J	59.8	467.2	348	63000E
CNC26-B36	26SFB360506	5-6	ND	19.5	ND	590	294	7480E
CNC26-B37	26SFB370506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B38	26SFB380506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B39	26SFB390506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B40	26SFB100405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B41	26SFB410405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B42	26SFB420405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B43	26SFB430405	4-5	ND	ND	ND	ND	52.9	2080
CNC26-B44	26SFB440405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B45	26SFB450405	4-5	ND	ND	ND	ND	ND	65.

TABLE 5 - Continued

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data ⁽¹⁾					
			Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	Total Xylenes (µg/Kg)	Naphthalene (µg/Kg)	Diesel Range Organics (mg/Kg)
CNC26-B46	26SFB460405	4-5	ND	ND	ND	ND	ND	182
CNC26-B47	26SFB470405	4-5	ND	ND	ND	ND	ND	231
CNC26-B48	26SFB480405	4-5	ND	ND	ND	ND	ND	524
CNC26-B49	26SFB490304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B53	26SFB530405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B54	26SFB530405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B55	26SFB550405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B56	26SFB560405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B57	26SFB570304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B58	26SFB580405	4-5	ND	ND	ND	ND	ND	ND

NOTES:

⁽¹⁾ Laboratory screening data was analyzed using USEPA Method 8020/8015M. Compounds not detected are reported as less than the instrument detection limit.

µg/Kg = micrograms per kilogram

mg/Kg = milligrams per kilogram

J = Estimated value-detection was above the instrument minimum detection level, but below the practical quantification limit.

E = Estimated value-detection exceeded the upper calibration range of the instrument.

TABLE 6
SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data ⁽¹⁾					
			Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	Diesel Range Organics (mg/L)
CNC26-B01	26GFB010811	8-11	ND	ND	ND	ND	ND	8.00
CNC26-B02	26GFB020407	4-7	ND	ND	ND	ND	18	118
CNC26-B03	26GFB030407	4-7	ND	ND	ND	17	50	137
CNC26-B04	26GFB040609	6-9	ND	ND	ND	ND	19	2.40
CNC26-B05	26GFB050407	4-7	ND	ND	ND	ND	ND	21
CNC26-B06	26GFB060407	4-7	ND	ND	ND	ND	19	ND
CNC26-B07	26GFB070609	6-9	ND	ND	ND	252	262	125
CNC26-B08	26GFB080609	6-9	ND	ND	ND	ND	119	ND
CNC26-B09	26GFB090406	4-6	ND	ND	ND	ND	ND	115
CNC26-B10	26GFB100407	4-7	ND	ND	ND	ND	61	58
CNC26-B11	26GFB110609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B12	26GFB120609	6-9	ND	ND	92	123	418	74
CNC26-B13	26GFB130609	6-9	ND	ND	ND	33	307	ND
CNC26-B14	26GFB140609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B15	26GFB150609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B16	26GFB160609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B17	26GFB170609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B18	26GFB180609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B19	26GFB190912	9-12	ND	ND	ND	ND	ND	ND
CNC26-B20	26GFB200609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B21	26GFB210609	6-9	ND	ND	ND	ND	41.6	12.0
CNC26-B22	26GFB220609	6-9	ND	ND	ND	ND	ND	2.00
CNC26-B23	26GFB230609	6-9	ND	ND	ND	ND	39.7	5.00
CNC26-B24	26GFB240608	6-8	ND	ND	11.9	41.3	269	290E
CNC26-B25	26GFB250712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B26	26GFB260712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B27	26GFB270607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B28	26GFB280608	6-8	ND	ND	ND	ND	38.2	3.99
CNC26-B29	26GFB290708	7-8	ND	ND	ND	ND	90.0	11.7
CNC26-B30	26GFB300712	7-12	ND	ND	17.7	72.7	248	42.5
CNC26-B31	26GFB310708	7-8	ND	ND	ND	18.9	79.4	14.8
CNC26-B32	26GFB320708	7-8	ND	ND	ND	31.1**	198**	62.9
CNC26-B33	26GFB330609	6-9	ND	ND	76.1	577.6**	1010**	43.1
CNC26-B34	26GFB340712	7-12	ND	ND	ND	ND	29.2	1.0J
CNC26-B35	26GFB350609	6-9	ND	ND	ND	7.19J	66.8	ND
CNC26-B36	26GFB360708	7-8	ND	ND	30.3	385	454E	32.7
CNC26-B37	26GFB370708	7-8	ND	ND	15.4J	169	411E	63.8
CNC26-B38	26GFB380708	7-8	ND	ND	31.7	163.13J	425E	32.5
CNC26-B39	26GFB390708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B40	26GFB400712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B41	26GFB410608	6-8	ND	ND	ND	ND	ND	ND
CNC26-B42	26GFB420608	6-8	ND	ND	ND	ND	ND	ND
CNC26-B43	26GFB430712	7-12	ND	ND	9.85J	75.2	225	18.5
CNC26-B44	26GFB440812	8-12	ND	ND	36.0	123	332	92.
CNC26-B45	26GFB450712	7-12	ND	ND	32.7	208	359	13

TABLE 6 - Continued

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data ⁽¹⁾					
			Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	Diesel Range Organics (mg/L)
CNC26-B46	26GFB460612	6-12	ND	ND	39.2	210	390	140
CNC26-B47	26GFB470712	7-12	ND	ND	20.0	68.6	ND	145
CNC26-B48	26GFB480612	6-12	ND	ND	ND	ND	130	3.24
CNC26-B49	26GFB490508	5-8	ND	ND	ND	ND	ND	ND
CNC26-B50	26GFB500512	5-12	ND	ND	ND	ND	ND	ND
CNC26-B51	26GFB510514	5-14	ND	ND	ND	ND	ND	ND
CNC26-B52	26GFB520512	5-12	ND	ND	ND	ND	ND	ND
CNC26-B53	26GFB530612	6-12	ND	ND	34.3	209.6	346	344E
CNC26-B54	26GFB540508	5-8	ND	ND	9.84J	81.9J	304	43.4
CNC26-B55	26GFB550708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B57	26GFB570508	5-8	ND	ND	ND	ND	ND	ND
CNC26-B58	26GFB580708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B59	26GFB590514	5-14	ND	ND	ND	ND	ND	ND

NOTES:

⁽¹⁾ Laboratory screening data was analyzed using USEPA Method 8020/8015M. Compounds not detected are reported as less than the instrument detection limit.

µg/L = micrograms per liter

mg/L = milligrams per liter

J = Estimated value-detection was above the instrument minimum detection level, but below the practical quantification limit.

E = Estimated value-detection exceeded the upper calibration range of the instrument.

TABLE 7
SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Soil Boring / Sample No.	Sample Date	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl-benzene (ug/kg)	Xylenes (total) (ug/kg)	Benzo(a)anthracene (ug/kg)	Benzo(b)fluoranthene (ug/kg)	Benzo(k)fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenzo(a,h)anthracene (ug/kg)	Naphthalene (ug/kg)
RBSL ⁽¹⁾		5	1622	1260	42471	73084	29097	231109	12998	87866	210
CNC26-B01 / 26SLB010405	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B01 / 26SLB010405D	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B03 / 26SLB030304	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	4 ^(J)
CNC26-B12 / 26SLB120304	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	1000
CNC26-B14 / 26SLB140405	24-Sep-99	< 6	< 6	< 6	< 6	< 400	< 400	< 400	< 400	< 400	< 6
CNC26-B18 / 26SLB180203	24-Jun-99	< 320	< 320	< 320	< 320	700	730	750	650.00	ND	3990.00
CNC26-B22 / 26SLB220304	28-Jun-99	< 5	< 5	< 5	< 5	< 3600	< 3600	< 3600	< 3600	< 3600	3998.00
CNC26-B26 / 26SLB260607	28-Jun-99	< 5	< 5	< 5	< 5	< 360	< 360	< 360	< 360	< 360	22.00
CNC26-B35 / 26SLB350405	23-Sep-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B36 / 26SLB360405	23-Sep-99	< 6	< 6	< 6	< 6	< 2000	< 2000	< 2000	< 2000	< 2000	33087.00
CNC26-TL ⁽²⁾ / 26TL00101	28-Jun-99	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5
CNC26-TL ⁽²⁾ / 26TL00102	24-Jun-99	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	3 ^(J)

All concentrations are in micrograms per kilograms (ug/kg).

NA - Not analyzed

⁽¹⁾ South Carolina Department of Health and Environmental Control Risk Based Screening Levels for sandy soils; depth to groundwater less than 5 feet.

⁽²⁾ Trip blank

TABLE 8
SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Monitoring Well/ Sample No.	Sample Date	Benzene (ug/L)	Ethyl- benzene (ug/L)	Toluene (ug/L)	Xylenes (total) (ug/L)	Naphthalene (ug/L)	Benzo(a) anthracene (ug/L)	Benzo(b) fluoranthene (ug/L)	Benzo(k) fluoranthene (ug/L)	Chrysene (ug/L)	dibenzo(a,h) anthracene (ug/L)	MTBE (ug/L)
RBSL ⁽¹⁾		5	700	1000	10000	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	40
CNC26M-01 / 26GLM0101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26M-02 / 26GLM0201	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-03 / 26GLM0301	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-04 / 26GLM0401	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-05 / 26GLM0501	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-06 / 26GLM0601	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-07 / 26GLM0701	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-07 / 26GLM0701D	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-08 / 26GLM0801	21-Aug-99	> 5	> 5	> 5	> 5	> 5	< 10	< 10	< 10	< 10	< 10	< 5

All concentrations are in ug/L.

⁽¹⁾ South Carolina Department of Health and Environmental Control Risk Based Screening Levels for ground water.

⁽²⁾ The Risk based screening level for individual PAH CoC is 10 ug/l or 25 ug/l for total PAHs.

⁽³⁾ Trip blank

⁽⁴⁾ Indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit.

TABLE 8- CONTINUED

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Monitoring Well/ Sample No.	Sample Date	Benzene (ug/L)	Ethyl- benzene (ug/L)	Toluene (ug/L)	Xylenes (total) (ug/L)	Naphthalene (ug/L)	Benzo(a) anthracene (ug/L)	Benzo(b) fluoranthene (ug/L)	Benzo(k) fluoranthene (ug/L)	Chrysene (ug/L)	dibenzo(a,h) anthracene (ug/L)	MTBE (ug/L)
RBSL ⁽¹⁾		5	700	1000	10000	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	40
CNC26M-09 / 26GLM09D01	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-10 / 26GLM10D01	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-11 / 26GLP1101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26P-12 / 26GLP1201	13-Sep-99	< 5	< 5	< 5	< 5	31	< 10	< 10	< 10	< 10	< 10	< 5
CNC26P-13 / 26GLP1301	13-Sep-99	< 5	< 5	< 5	< 5	53	< 10	< 10	< 10	< 10	< 10	< 5
CNC26X-01 / 26GLX0101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-02 / 26GLX0201	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-03 / 26GLX0301	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-04 / 26GLX0401	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5

All concentrations are in ug/L.

(1) South Carolina Department of Health and Environmental Control Risk Based Screening Levels for ground water.

(2) The Risk based screening level for individual PAH CoC is 10 ug/l or 25 ug/l for total PAHs.

(3) Trip blank

(J) Indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit.

TABLE 8- CONTINUED

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Monitoring Well/ Sample No.	Sample Date	Benzene (ug/L)	Ethyl- benzene (ug/L)	Toluene (ug/L)	Xylenes (total) (ug/L)	Naphthalene (ug/L)	Benzo(a) anthracene (ug/L)	Benzo(b) fluoranthene (ug/L)	Benzo(k) fluoranthene (ug/L)	Chrysene (ug/L)	dibenzo(a,h) anthracene (ug/L)	MTBE (ug/L)
RBSL ⁽¹⁾		5	700	1000	10000	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	40
CNC26X-05 / 26GLX0501	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-06 / 26GLX0601	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26TL ⁽³⁾ / 26TL00101	23-Aug-99	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5
CNC26TL ⁽³⁾ / 26TL00301	22-Sep-09	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5

NA - Not Analyzed

TABLE 9
FATE AND TRANSPORT INPUT PARAMETERS
SITE26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Parameter	Domenico Dilution/Attenuation Model ⁽¹⁾
Hydraulic Conductivity [m/sec]	2.23E-06
Hydraulic Gradient	0.0144
Porosity ^(a)	0.48
Estimated Plume Length [ft]	NA
Soil Bulk Density ^(a) [kg/L]	1.35
Partition Coefficient [L/kg]	chemical specific
Fraction of Organic Carbon in soil [g/g]	7.04E-04
First Order Decay Rate [sec ⁻¹]	0
Modeled Plume Length [ft]	NA
Modeled Plume Width [ft]	NA
Source Width ^(b) [m]	15
Source Thickness ^(b) [m]	2
Soluble Mass [kg]	Infinite ^(c)

Notes:

- (1) - *South Carolina Risk-Based Corrective Action for Petroleum Releases*, South Carolina Department of Health and Environmental Control, 1998.
- (a) - Determined from SCDHEC 1998 Tables C1 and C3
- (b) - Default value
- (c) - Assumption of the Domenico model

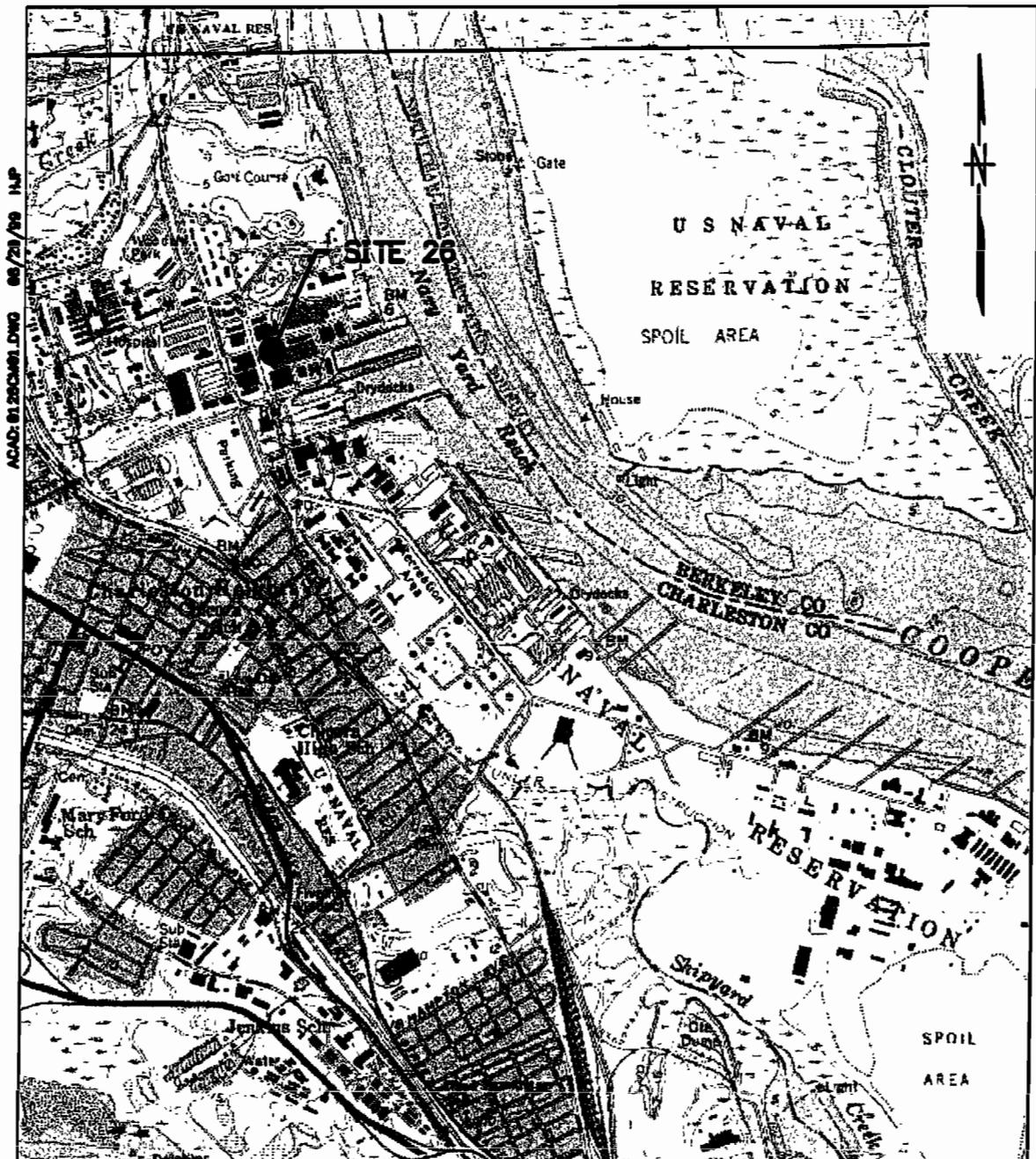
TABLE 10

**EXPOSURE PATHWAY ASSESSMENT - CURRENT USE
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (if pathway selected)
Air	Inhalation	No	No volatilization to enclosed space. No explosion hazard.	
	Explosion Hazard	No		
Groundwater	Ingestion	No	No water supply well downgradient or residential basements.	
	Dermal contact	No		
	Inhalation	No		
Surface Water	Ingestion	No	Cooper River approximately 600 feet downgradient. No completed pathway.	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No current complete pathway.	
	Dermal contact	No		
	Inhalation	No		

TABLE 11
EXPOSURE PATHWAY ASSESSMENT - FUTURE USE
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	No volatilization to enclosed space. No explosion hazard.	
	Explosion Hazard	No		
Groundwater	Ingestion	Yes	Future use of property expected to be industrial or commercial. Underground utility lines are close proximity to the site; therefore, construction worker exposure possible.	
	Dermal contact	Yes		
	Inhalation	Yes		
Surface Water	Ingestion	Yes	Cooper River 600 ft downgradient.	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	Yes	Underground utility lines are in close proximity to the site; therefore, construction worker exposure possible. Inhalation hazard discounted based on low levels of benzene in the soil. Presumed that upon excavating the trench, benzene volatilization from exposed soils will reach equilibrium prior to the construction worker entering the trench.	
	Dermal contact	Yes		
	Inhalation	No		



ACAD: 012800491.DWG 08/20/99 HJP



SOURCE: QUADRANGLE MAP SOUTH CAROLINA, REVISED 1879
 QUADRANGLE MAP NORTH CHARLESTON, REVISED, 1879

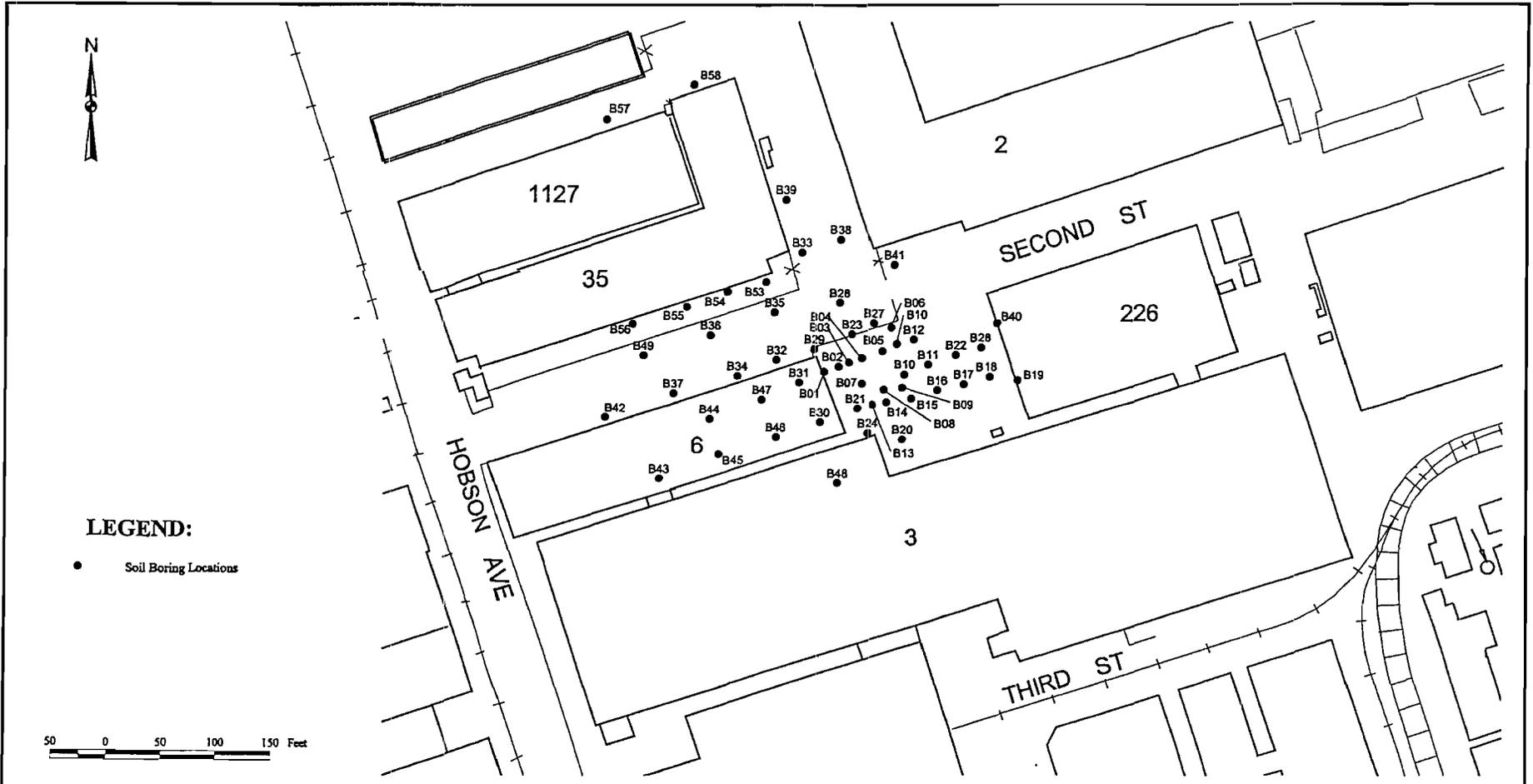


DRAWN BY	DATE
HJP	8/20/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



SITE LOCATION MAP
 SITE 26, BUILDING 6A & 6B, ZONE E
 CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. N0126	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



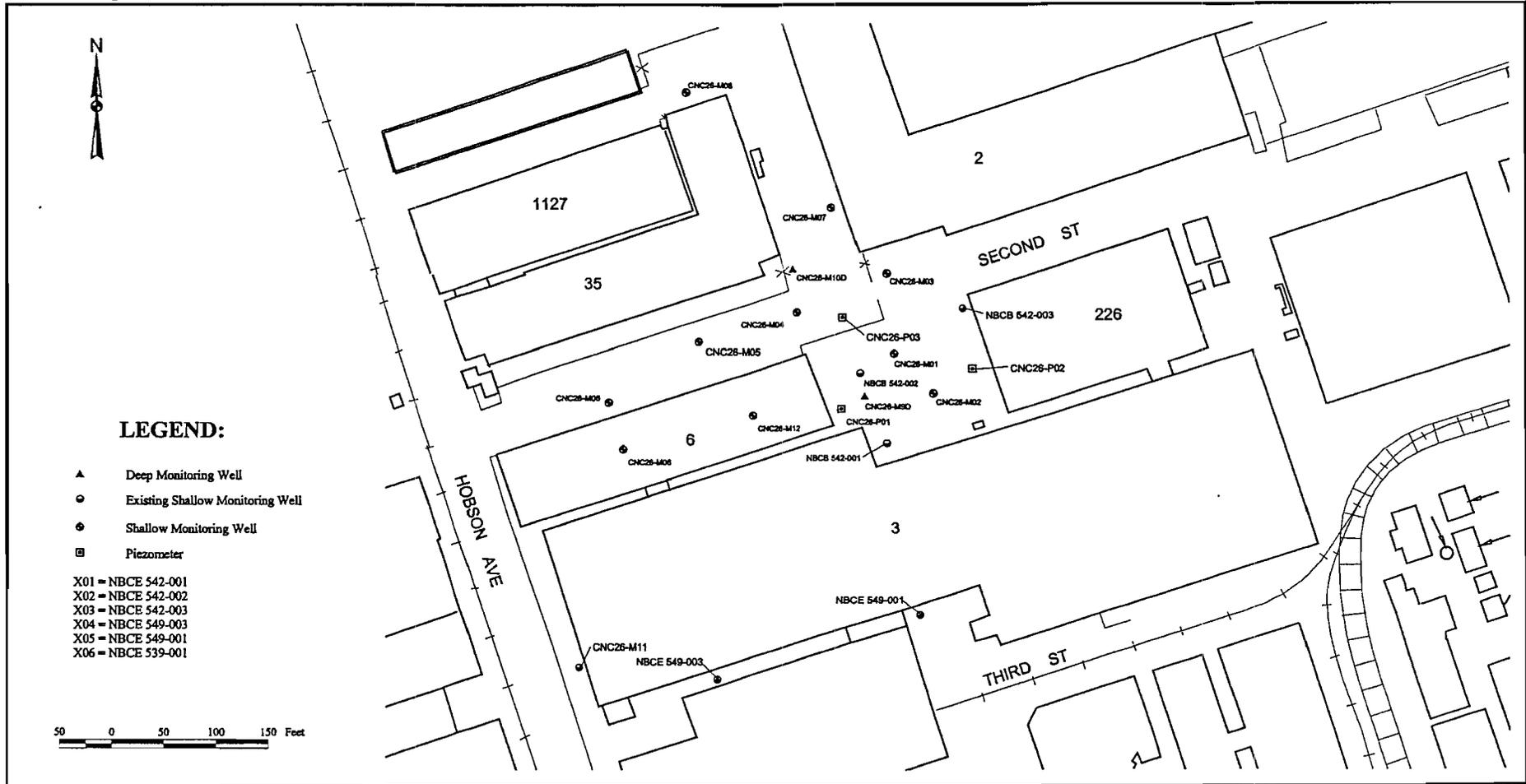
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	JAS	DATE	11-5-98
CHECKED BY		DATE	
COST/SCHED-AREA			
SCALE	AS NOTED		

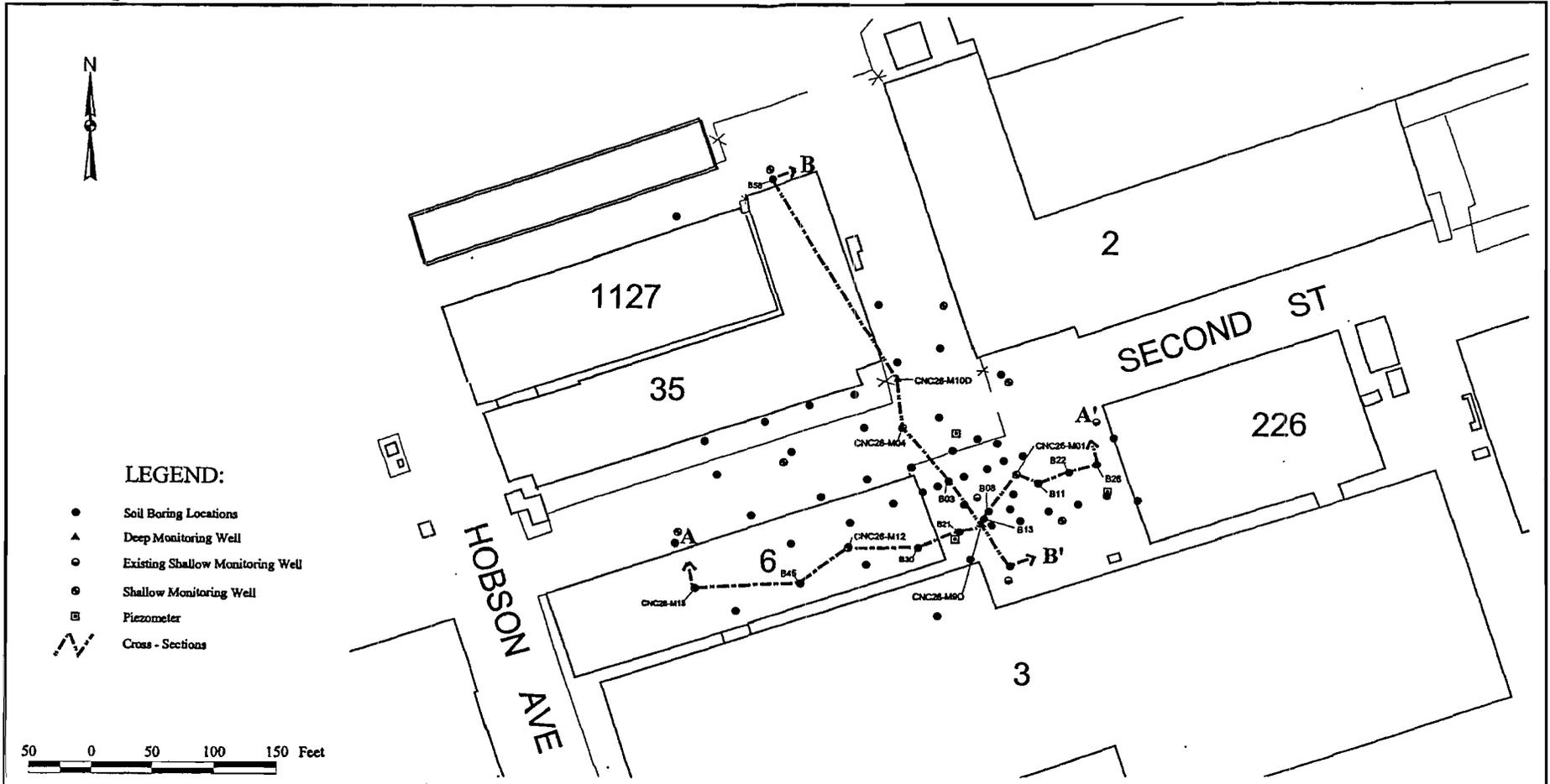


SITE MAP SHOWING
 FIELD SCREENING SAMPLE LOCATIONS
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

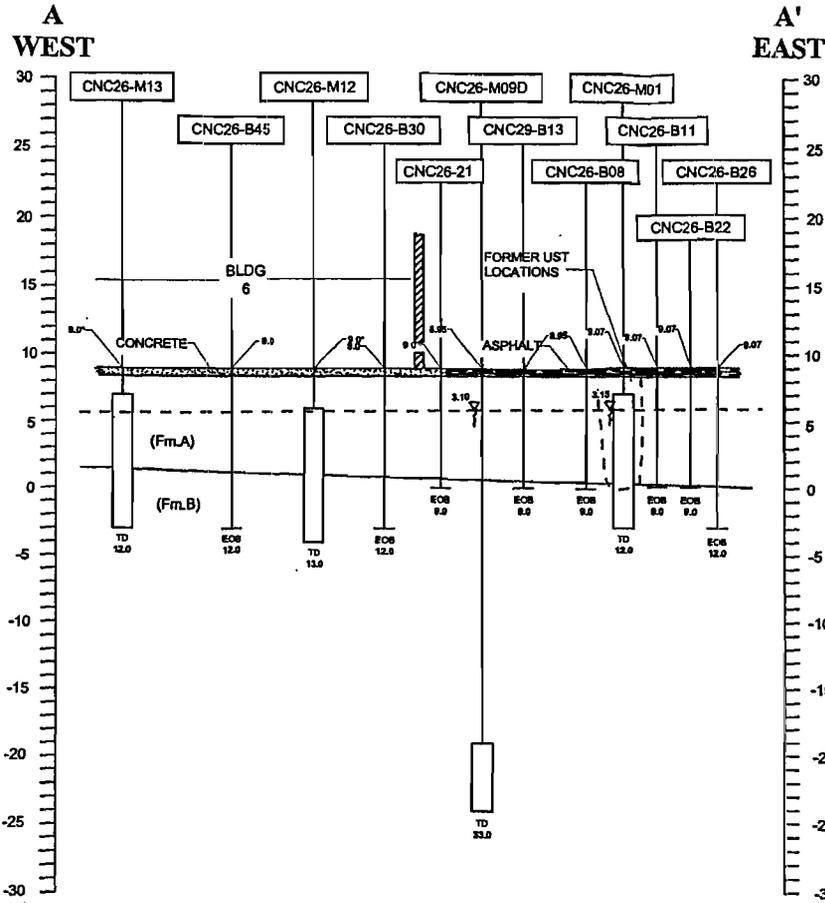
CONTRACT NO.		9128
APPROVED BY		DATE
APPROVED BY		DATE
DRAWING NO.	FIGURE 3	REV 0



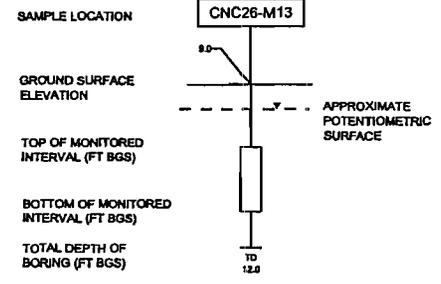
NO.	DATE	REVISIONS	BY	CHD	APPD	REFERENCES	DRAWN BY	DATE		CONTRACT NO.		
							JAS	11-8-1999		0128	APPROVED BY	DATE
										APPROVED BY	DATE	
										DRAWING NO.	REV	
							SCALE		SITE MAP SHOWING			
							AS NOTED		PERMANENT WELL LOCATIONS			
									SITE 26, BUILDING 6			
									ZONE E, CHARLESTON NAVAL COMPLEX			
									NORTH CHARLESTON, SOUTH CAROLINA			



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SITE MAP SHOWING LINES OF CROSS-SECTION SITE 26, BUILDING 6 ZONE E, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO.
							JAS	11-2-98			0126
							CHECKED BY	DATE		APPROVED BY	DATE
							CONSTRICTED-AREA			APPROVED BY	DATE
							SCALE			DRAWING NO.	REV.
							AS NOTED			FIGURE 5	0

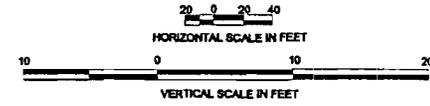


LEGEND



NOTES:
 FORMATION=(Fm.)=(Fm.A)=TAN TO BROWN SAND, SILTY SAND SANDY CLAY
 (Fm.B)=OLIVE, GREY SILTY SAND, SANDY CLAY, CLAY

ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
 * ASSUMED ELEVATION



NO.	DATE	REVISIONS	BY	CHKD	APPO	REFERENCES

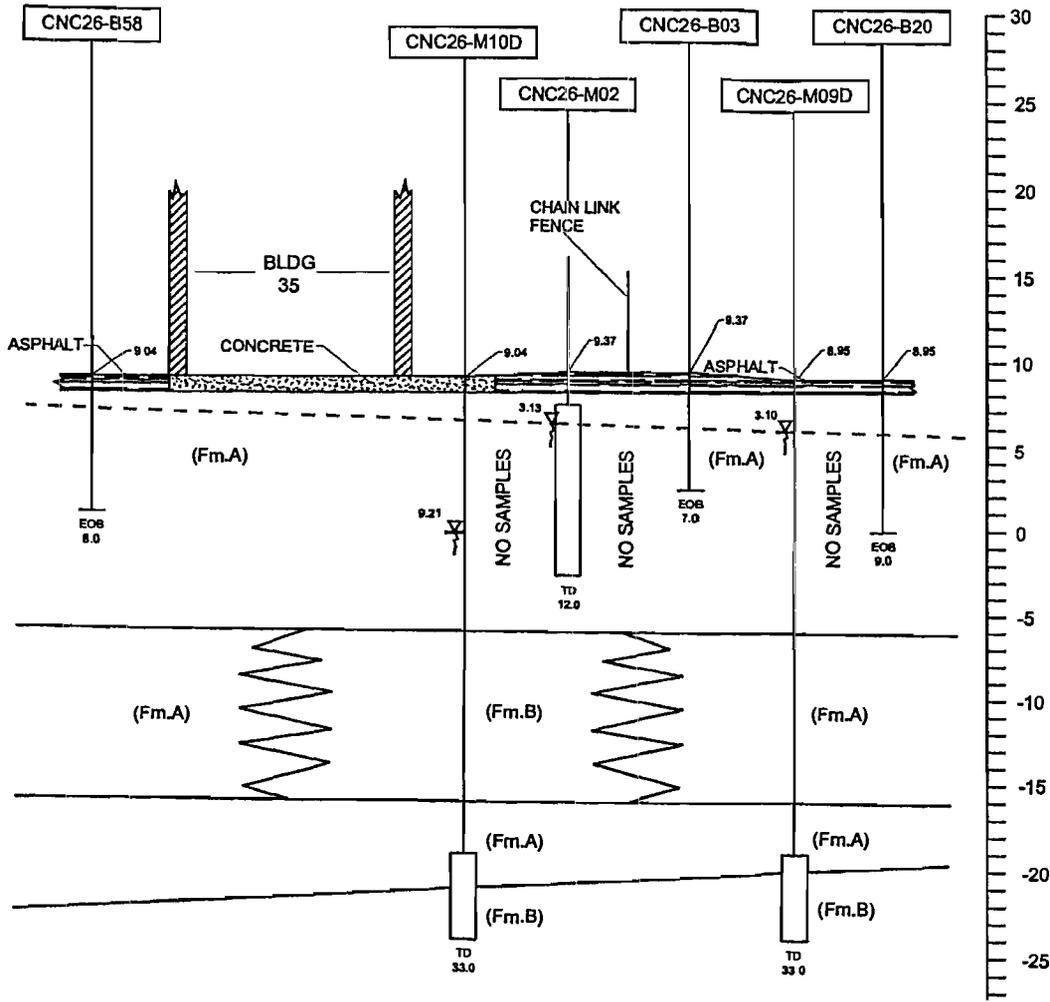
DRAWN BY	DATE
JAS	11-9-99
CHECKED BY	DATE
COST ESTIMATED AREA	
SCALE	
AS NOTED	



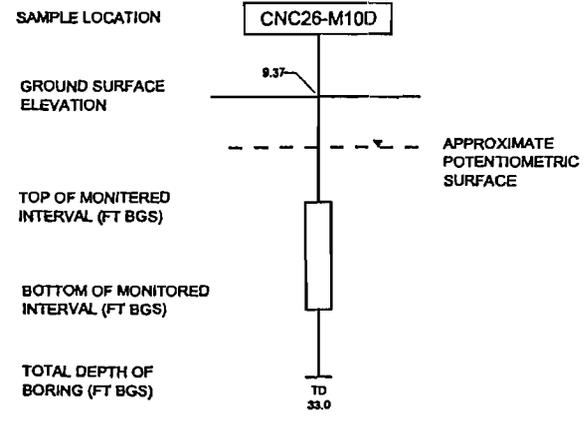
GEOLOGIC CROSS SECTION A - A'
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO.	0128
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	FIGURE 6
REV.	0

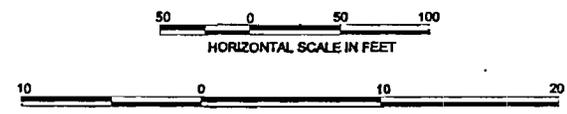
B WEST **B'** SOUTHEAST

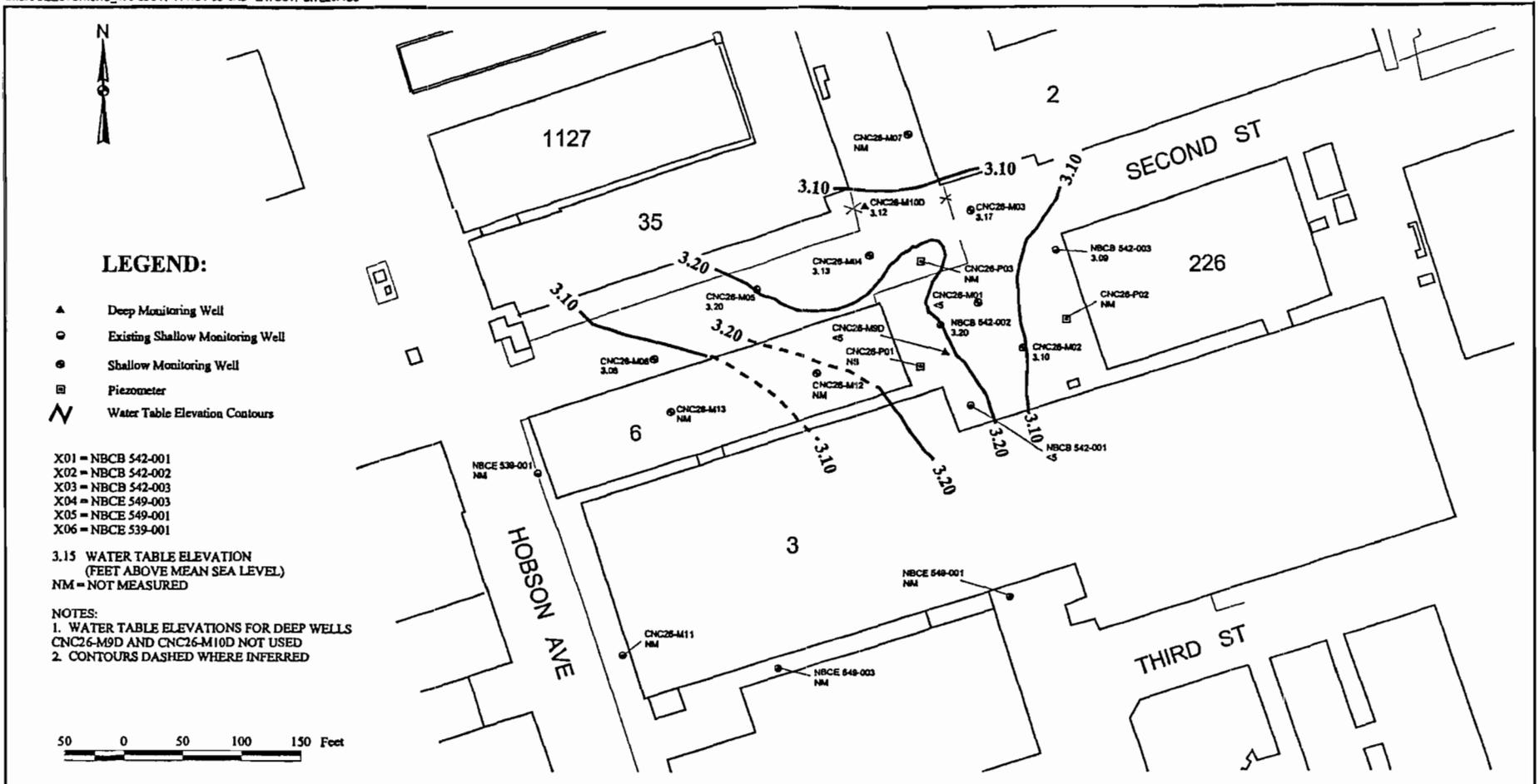


LEGEND



NOTES:
 FORMATION=(Fm.)=(Fm.A)=TAN TO BROWN SAND, SILTY SAND, SANDY CLAY
 (Fm.B)=OLIVE, GREY SILTY SAND, SANDY CLAY, CLAY
 ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
 * ASSUMED ELEVATION

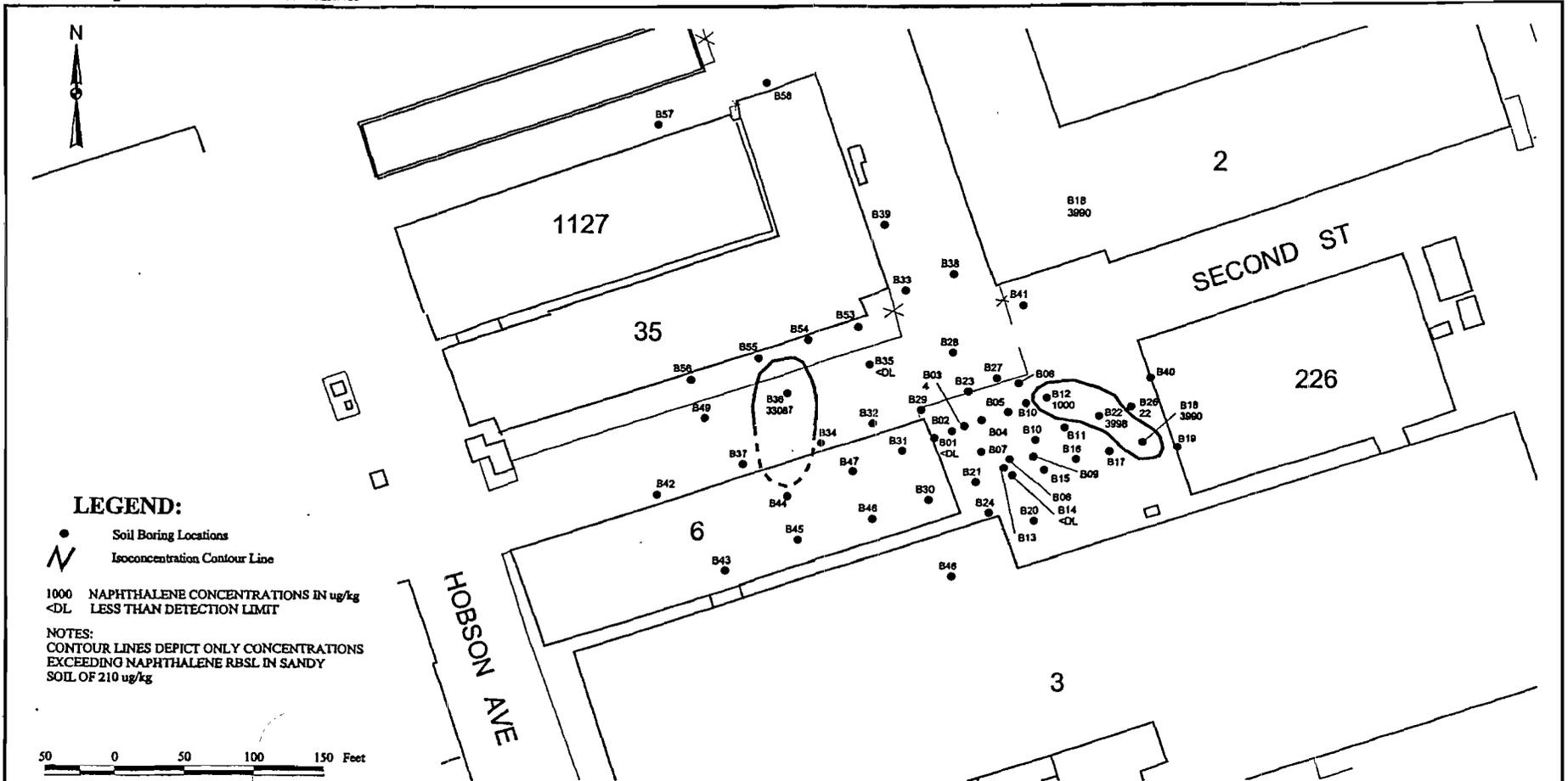




NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	CONTRACT NO.
							JAS	11-8-1989	0126
							CHECKED BY	DATE	APPROVED BY
									DATE
							COSTRCHED-AREA		APPROVED BY
									DATE
							SCALE		DRAWING NO.
							AS NOTED		FIGURE 8
									REV: 0



POTENTIOMETRIC SURFACE MAP
 (SEPTEMBER 22, 1989)
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	CONTRACT NO.
							JAS	11-8-99	0128
							CHECKED BY	DATE	APPROVED BY
							CONTRACTED-AREA		DATE
							SCALE		DRAWING NO
							AS NOTED		FIGURE 9
									REV.
									0



SOIL NAPHTHALENE CONCENTRATION MAP
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

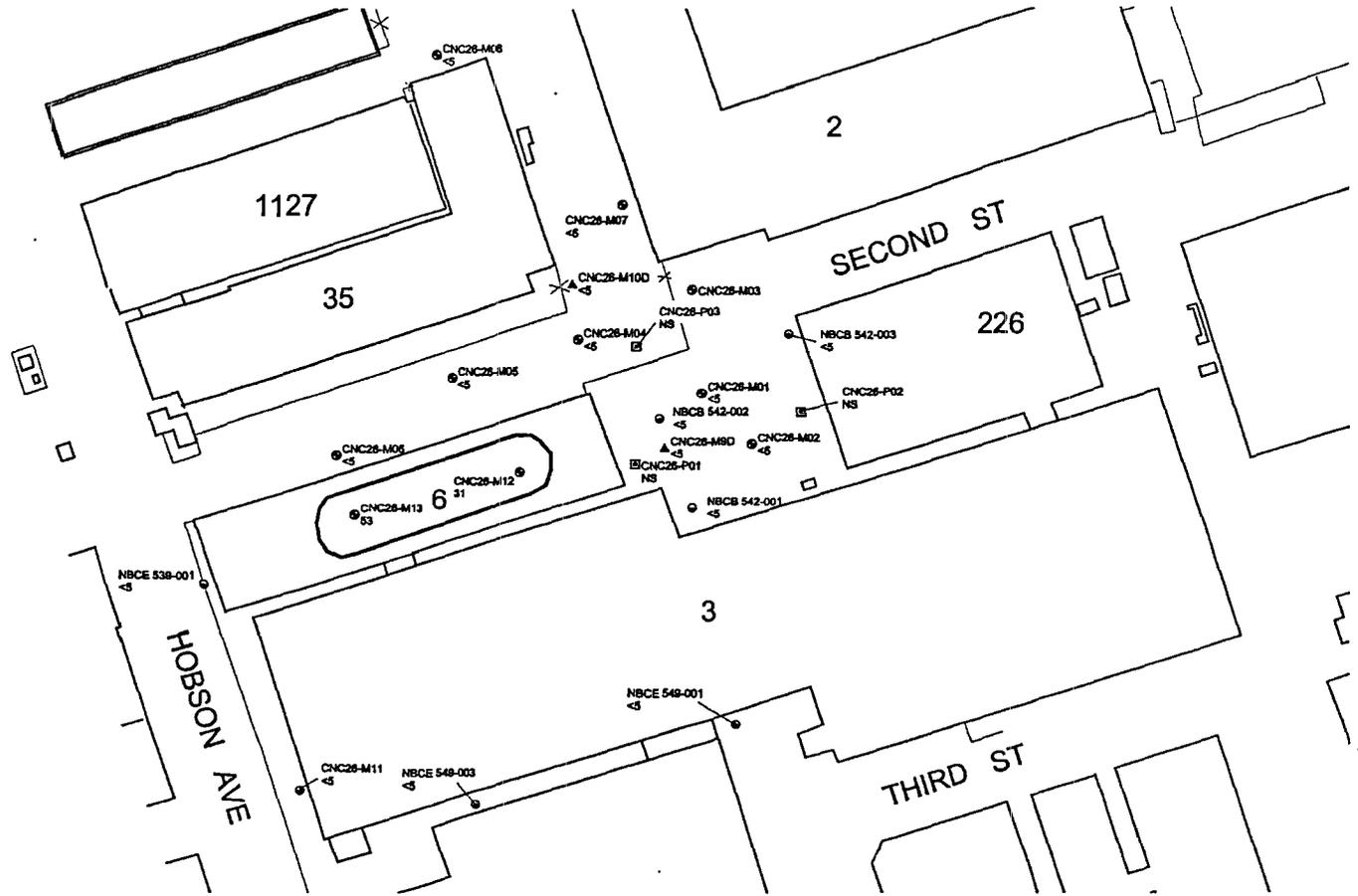


LEGEND:

- ▲ Deep Monitoring Well
- Existing Shallow Monitoring Well
- ⊙ Shallow Monitoring Well
- ⊞ Piezometer
- ~ Isoconcentration Contour Line

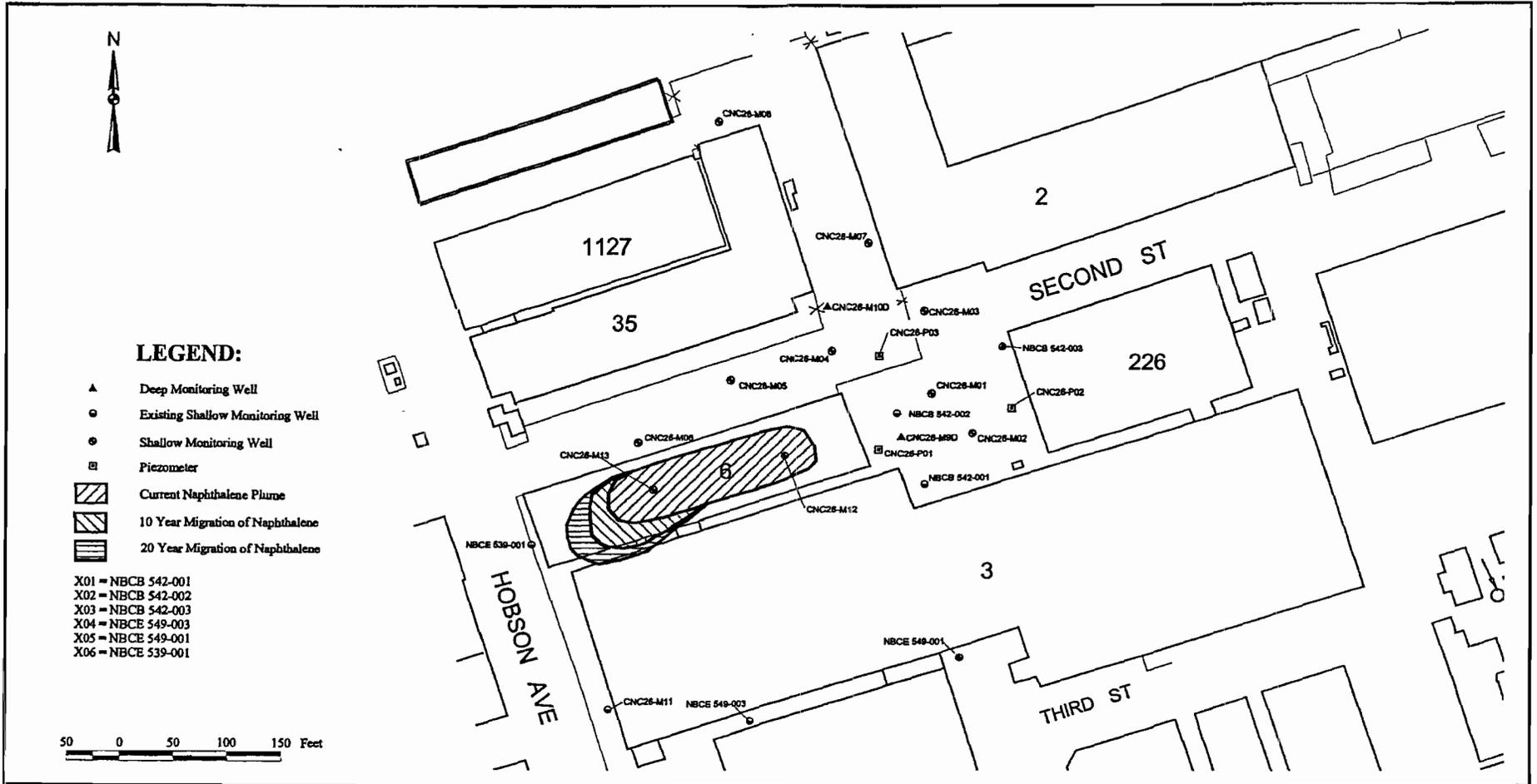
31 NAPHTHALENE CONCENTRATION IN ug/L
 NS NOT SAMPLED

NOTES:
 CONTOUR LINES DEPICT NAPHTHALENE IN
 GROUNDWATER EXCEEDING INTS RBSL
 OF 10 ug/L



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		CONTRACT NO.	
							JAS	11-4-99		0129	
							CHECKED BY	DATE		APPROVED BY	DATE
							CONTRICED-AREA			APPROVED BY	DATE
							SCALE	AS NOTED		DRAWING NO.	REV.
										FIGURE 10	0

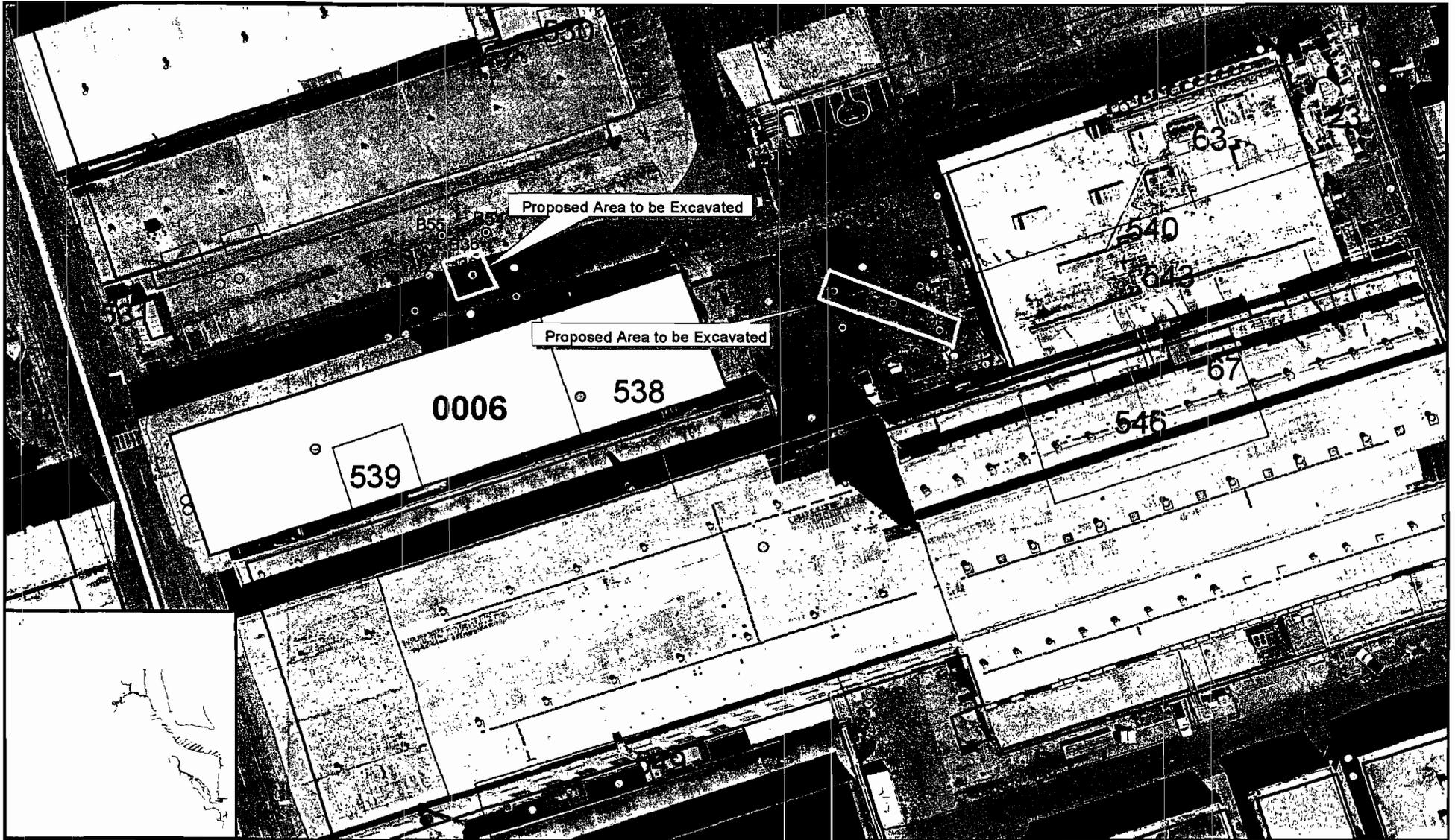
GROUNDWATER NAPHTHALENE
 CONCENTRATION MAP
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	CONTRACT NO.
							JAS	11-9-89	8128
							CHEKED BY	DATE	APPROVED BY
							DATE	DATE	DATE
							SCALE		DRAWING NO.
							AS NOTED		FIGURE 11
									REV
									0



PREDICTED 10 AND 20 YEAR MIGRATION
 SITE 26, BUILDING 6
 ZONE E, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA



- Groundwater Well
- ⊙ Existing Soil Boring
- Proposed Soil Boring

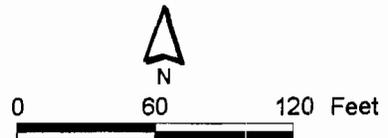


Figure 12
 Proposed Area to be Excavated
 Zone E/ Site 26-Building 6
 Charleston Naval Complex

CH2M-JONES