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Section : 02.03
Site 20903-5640 (White Oak)
Doc. #: 0005
00072

Post-Removal Action Report
for
Site 4 and Site 33

at the former
Naval Surface Warfare Center – White Oak
Silver Spring and Adelphi, Maryland

Engineering Field Activity Chesapeake
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
Contract Task Order 0304

December 1999

TETRA TECH NUS, INC.

Section: 02.03
Site 20903-5640 (White Oak)
Doc. #: 0005
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POST-REMOVAL ACTION REPORT
FOR
SITE 4 AND SITE 33

AT THE FORMER
NAVAL SURFACE WARFARE CENTER – WHITE OAK
SILVER SPRING AND ADELPHI, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Engineering Field Activity Chesapeake
Environmental Branch Code 18
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
Washington, D.C. 20374-2121

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ACRONYMS

µg/L	micrograms per Liter
ALC	Adelphi Laboratory Center
AM	Action Memorandum
BCT	BRAC Cleanup Team
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
DRO	Diesel Range Organics
EE/CA	Engineering Evaluation/Cost Analysis
GSA	General Services Administration
IR	Installation Restoration
MADEP	Massachusetts Department of Environmental Protection
MDE	Maryland Department of the Environment
mg/kg	milligrams per kilogram
ND	Non-detect
NSWC	Naval Surface Warfare Center
OSWER	Office of Solid Waste and Emergency Response
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
ppm	parts per million
PRG	Preliminary Removal Goal
RAC	Remedial Action Contractor
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAP	Sampling and Analysis Plan
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Incorporated
UCL	Upper Confidence Limit

U.S. EPA	United States Environmental Protection Agency
USNR	United States Naval Reserve
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The Northern Division of the Naval Facilities Engineering Command has issued Contract Task Order (CTO) 304 to Tetra Tech NUS, Incorporated (TtNUS) (formerly Brown & Root Environmental) under Comprehensive Long-term Environmental Action Navy (CLEAN) Contract No. N62472-90-D-1298. Under CTO 304, TtNUS performed an Engineering Evaluation/Cost Analysis (EE/CA) for the former Naval Surface Warfare Center (NSWC) White Oak, located in Silver Spring and Adelphi, Maryland.

The work is part of the Navy's Installation Restoration (IR) Program, which is designed to identify contamination of Navy and Marine Corps facilities resulting from past operations and to institute corrective measures, as needed. The Navy determined that non-time-critical removal actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) were appropriate for two sites at the former NSWC-White Oak. An EE/CA prepared in January 1999 developed, evaluated, and recommended removal actions to address contaminated soil and solid waste at Site 4, the Chemical Burial Area, and material within an underground tank at Site 33, the Building 25 Plating Shop Equalization Tank. The recommendations were subsequently published in an Action Memorandum (AM) for public review and comment, and accepted for use in March 1999.

This Post-Removal Action Report discusses the site histories, EE/CA recommendations, and the confirmatory sampling activities in support of the removal actions at Site 4 and Site 33. Detailed discussions regarding erosion/sediment control, tree clearing, excavation, groundwater monitoring well maintenance, transportation and off-site disposal of hazardous and non-hazardous material, and site restoration are not provided in this document. Refer instead to the Removal Action Report submitted by the Remedial Action Contraction (RAC), OHM/IT Corporation. As of the publication of this document, the RAC's report is still being compiled. Consequently, a more complete document reference is unavailable.

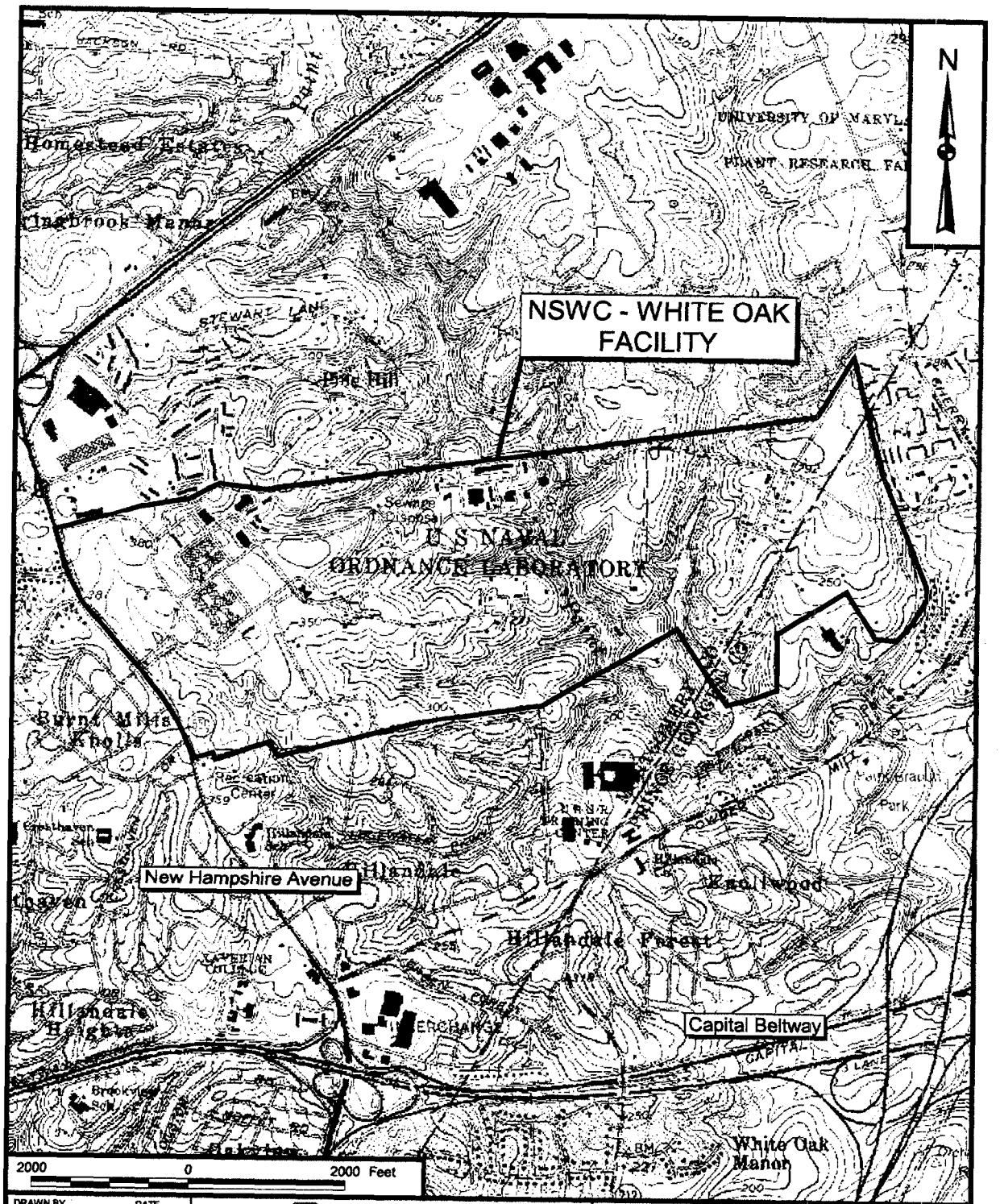
The confirmatory sampling activities were performed in conjunction with procedures set forth in the Post-Removal Sampling and Analysis Plan (SAP) (TtNUS, 1999b) and the Master Work Plans for the former NSWC-White Oak (Brown & Root Environmental, 1998). Ensuring data integrity was of specific importance to this activity. This was done by following the sample handling and custody procedures set forth in the Master Field Sampling Plan for NSWC-White Oak and TtNUS Standard Operating Procedures. Data quality was assured through the collection of field quality control samples, specifically trip blanks. A copy of the SAP is provided in Appendix A.

1.1 FACILITY DESCRIPTION

NSWC-White Oak was a Navy-owned and -operated facility for naval surface warfare research. The facility is located approximately 5 miles north of Washington, D.C., adjacent to New Hampshire Avenue in Silver Spring and Adelphi, Maryland (see Figure 1-1). NSWC-White Oak covers approximately 710 acres and is located in both Prince George's and Montgomery Counties. Adjacent to the southern corner of the property is the U.S. Army's Adelphi Laboratory Center (ALC) and the United States Naval Reserve (USNR) Training Center. A mixture of residential, park, industrial, and commercial properties border the remainder of the facility. After the facility was closed, the property was transferred to the General Services Administration (GSA) and the U.S. Army. The GSA-managed property is now called the Federal Research Center at White Oak. Figure 1-2 identifies the locations of Sites 4 and 33.

1.2 REPORT FORMAT

Section 1.0 of this report contains this brief introduction. Sections 2.0 and 3.0 present site histories, summaries of the findings of the EE/CA (including the removal action objectives), and discussions of the confirmatory sampling activities performed at Sites 4 and 33, respectively.



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CHECKED BY KMS — DATE 12/1/99	SITE VICINITY MAP SITE 4 AND SITE 33 POST-REMOVAL ACTION REPORT NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY Colleen M. Kepley-Uglich — DATE 12-1-99	
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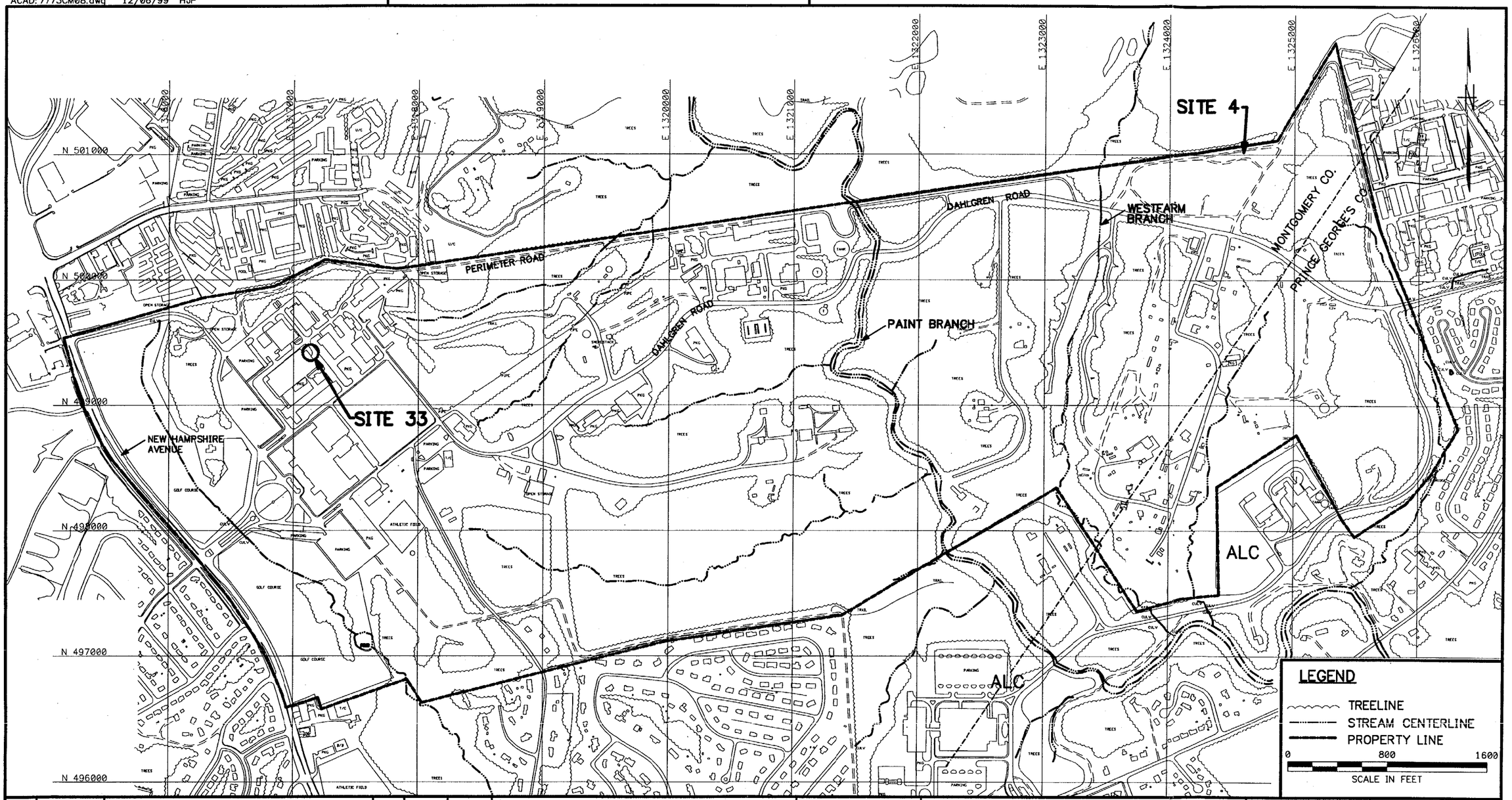

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SITE LOCATION MAP
SITE 4 AND SITE 33
POST – REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 7773
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2.0 SITE 4 – THE CHEMICAL BURIAL AREA

Site 4, the Chemical Burial Area, is located south of Perimeter Road in the northeastern corner of the former NSWC-White Oak. The approximate location is shown on Figure 1-2, and a site layout map is provided on Figure 2-1. The overall area of the site is approximately 1.1 acres. Land north of the site is private property and is used as a quarry. An area in the southeastern corner of Site 4 was formerly used for telephone pole storage.

The site was in use from the mid-1950s until the early 1970s to dispose of chemicals. Previous investigations of the site were based on the belief that four discrete burial trenches were in operation. Additional investigation in support of the EE/CA determined that disposal of material at Site 4 was not confined to discrete trenches. In preparation for disposal, an area was excavated to hold the approximate amount of material for disposal. Based on this information, waste was thought to be present throughout two burial areas, as shown on Figure 2-1.

Wastes reportedly disposed at the site include acids, explosive compounds, kerosene, chlorinated solvents, and unidentified laboratory compounds. The total volume of waste disposed in the area was estimated to be between 400 and 600 cubic feet. Material buried at the site included domestic and construction debris, with a smaller fraction consisting of chemical waste and solvents.

Odors consistent with fuel-type compounds were noted during the EE/CA investigation. The source of such odors could not be determined with certainty, but it appeared from the results of the investigation that petroleum products, or debris containing residual fuel, had been disposed of at Site 4. Disposal of such materials had never been suspected at Site 4 and as such, analysis for these compounds, to evaluate their presence or absence, was never performed. For the purpose of the removal action, the BRAC Cleanup Team (BCT) decided that confirmatory samples would also be analyzed for total petroleum hydrocarbons (TPH) and a Preliminary Removal Goal (PRG) for TPH would be applied to the removal action.

2.1 EE/CA INVESTIGATION

The EE/CA identified two goals for the interim removal action at Site 4. The primary objective was to remediate soil and solid waste that was present at Site 4 to limit it as a potential source for groundwater contamination and to ensure that it will no longer pose a human health risk to future land users. Groundwater remediation is currently being evaluated at Site 4, and implementation of a groundwater remedial alternative is expected in 1 to 2 years. As such, a secondary objective for the soil removal

action was that it be completed before the groundwater remedial alternative is implemented (TtNUS, 1999a).

Four removal action alternatives were evaluated for use at Site 4 based on effectiveness, implementability, and cost considerations. The recommended removal action for Site 4 included excavating material, disposing of the material in an off-site landfill or hazardous waste incinerator, restoring the site with clean backfill, and revegetating. This removal action was presented in an AM and accepted for use at Site 4.

2.2 PRELIMINARY REMOVAL GOALS

Clean-up goals (PRGs) were established for the Site 4 removal action. PRGs are chemical-specific concentrations that dictate clean-up standards that must be met by a removal action in order to be protective of human health and the environment. The PRGs developed for Site 4 were presented in the SAP (TtNUS, 1999b) and are provided in Table 2-1.

The PRGs established for Site 4 were primarily United States Environmental Protection Agency (U.S. EPA) Region III industrial Risk-Based Concentrations (RBCs) (U.S. EPA, 1999). Industrial values (as opposed to residential) were used because future land use at Site 4 is unknown. Other standards were used for parameters for which a RBC does not exist, specifically lead and TPH. The PRG for lead was based on the Office of Solid Waste and Emergency Response's (OSWER) industrial standard for lead. The PRG for TPH was based on State of Maryland underground storage tank closure regulations. For inorganic analytes, the greater of the RBC concentration and basewide background concentration was used as the PRG. Background concentrations for NSWC-White Oak were presented in the Background Investigation Report (TtNUS, 1998).

Based on historic burial activities, analytes previously identified at the site, and contaminants of concern in the site groundwater, confirmatory samples from Site 4 were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), TCL pesticides and polychlorinated biphenyls (PCBs), Target Analyte List (TAL) inorganics plus cyanide, explosives (Method 8330), TCL dioxins/furans, and TPH.

2.3 REMOVAL ACTION IMPLEMENTATION

The removal action was performed by the Naval Facilities Engineering Command Atlantic Division RAC beginning in June 1999. Excavation and off-site disposal were completed by the end of August. Approximately 23,000 tons (18,000 cubic yards) of contaminated soil and solid waste were removed from Site 4 and transported to a municipal solid waste landfill for disposal. An additional 187 tons of PCB-

contaminated soil were excavated and disposed at a hazardous waste landfill in accordance with federal regulations, although PCBs and PCB-contaminated media are not in and of themselves characteristic or listed hazardous waste. Hazardous waste was not identified during the removal action; therefore, incineration was not required. Figure 2-2 provides the approximate limits of excavation.

The approximate limits of excavation, shown on Figure 2-2, and the extent of buried waste, shown on Figure 2-1, vary for several reasons: 1) the excavation limits were not surveyed and are only approximate, and 2) there were areas where the extent of buried waste was inferred, as shown by dashed lines on Figure 2-1.

During the EE/CA investigation, test pits were located based on information available about the nature of burial activities at Site 4. Locations where the extent of buried waste are inferred were not investigated during the EE/CA and the expected limits of waste were determined based on other available information. For example, in the northwest corner, waste was not encountered during installation of monitoring wells 04GW11 and 04GW11A so the limit of waste was placed south and east of these wells. Additionally, waste was not expected to extend past the fence, which was the inferred NSWC-White Oak property boundary. The test pit excavated along the eastern end of Burial Area 1 encountered natural soils throughout, so the extent of waste was placed just west of the test pit location. It was also believed that the access road, which separated Burial Areas 1 and 2, existed prior to the start of burial activities at Site 4. Therefore, two distinct burial areas were anticipated.

During the removal action, excavation proceeded until no trash was visible and no organic vapors were detected by the photoiozination detector (PID). Confirmatory samples were collected throughout the duration of the removal action, once a sufficient area was cleared of solid waste and debris. Non-bias confirmatory samples were collected on a grid, using a random number generator to determine the sample location within the grid. Random number charts were used in the field.

A grid spacing of 30 feet by 30 feet (900 square feet) was used across the bottom of the excavations. Each grid was subdivided into 6-foot by 6-foot squares; therefore, a 900-square-foot grid had 25 subdivisions. Due to the irregular shape of the excavations, some grids measured less than 900 square feet. For the side walls, a grid measuring 50 feet long by the depth of the excavation was used. Each grid was subdivided into 5-foot by 5-foot squares. The subdivisions were numbered sequentially and the random number chart was used to select the subdivision from which a sample was collected. Refer to the SAP, provided in Appendix A, for additional information regarding these sampling procedures.

Each sample collected was assigned a unique tracking number. This 12-digit alphanumeric code identifies the sample location as follows:

0004 Site Number

SB Media (subsurface soil)

NN Sample Number (sequential ordering of samples collected, beginning with 01)

NN Grid Subdivision (2-digit numeric indicator of the grid subdivision that was sampled)

NN Sample Depth (2-digit numeric indicator of sample depth from grade)

For example, the first sample collected at Site 4 had sample identification number 0004-SB-01-1815, indicating that the sample was collected from the 18th subdivision and 15 feet below grade.

Thirty-eight confirmatory samples were collected across the site. Approximate sample locations are provided on Figure 2-2. Analytical data are summarized in Table 2-2, and the complete data set is provided in Appendix B.1. Soil sample log sheets are provided in Appendix B.2.

As analytical data were received, they were compared to the PRGs. At locations where there were exceedances, additional excavation was performed. In general, PRGs were met across the site with the exception of nutrients and TPH. Exceedances of two nutrients, calcium and sodium, were not considered to be of concern because these inorganics are essential human nutrients and do not pose a risk to human health.

Additional excavation was performed in the northwest corner of the site because the TPH concentration in sample 0004-SB-07-0302 [290 milligrams per kilogram (mg/kg)] exceeded the initial PRG that had been established (100 mg/kg). In addition, waste was also visible on the wall of the excavation. Sample 0004-SB-16-0202 was collected after the additional soil and waste were removed. There were no exceedances of PRGs in this sample.

Although waste was clearly visible on the northern excavation wall, confirmatory samples 0004-SB-08-1207, 0004-SB-12-0202, and 0004-SB-17-1715 were collected because the excavation had reached the fence line and assumed property line. Several polynuclear aromatic hydrocarbons (PAHs) were detected at concentrations in excess of PRGs in sample 0004-SB-08-1207. The TPH PRG was exceeded in sample 0004-SB-17-1715. A property line survey determined that the NSWC-White Oak property line was approximately 1.5 feet north of the fence line. To facilitate site cleanup, the Navy received permission from the adjacent property owner to continue excavating on the adjacent property. Following the additional excavation, samples 0004-SB-23-1207, 0004-SB-24-1407, and 0004-SB-25-0202 were collected from the excavation wall and 0004-SB-26-2210 and 0004-SB-27-2210 were collected from the floor on or adjacent to the adjacent property. There were exceedances of the PRGs for benzo(a)pyrene and TPH in sample 0004-SB-26-2210 and for TPH in sample

0004-SB-27-2210. Additional discussion of the two TPH exceedances is provided in Section 2.3.1. Discussion of the benzo(a)pyrene exceedance is presented below.

The confirmatory sampling analytical data will be used in the final Site 4 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) risk assessment. The benzo(a)pyrene concentration in sample 0004-SB-26-2210 was screened against the RFI screening criteria. Based on this comparison, the exceedance was not of concern and the material was allowed to remain on site. Sample 0004-SB-26-2210 was collected 10 feet bgs, a depth at which the compound was not expected to pose a risk because it is insoluble in water and human health risks associated with benzo(a)pyrene are by inhalation and dermal contact. The benzo(a)pyrene concentration was 1.3 mg/kg compared to its PRG of 0.78 mg/kg. Samples 0004-SB-07-0302, 0004-SB-08-1207, 0004-SB-12-0202, and 0004-SB-17-1715 will not be included in the risk assessment because the sources of these samples were subsequently excavated and are no longer present at Site 4.

2.3.1 TPH Exceedances

Table 2-3 summarizes the TPH concentrations in the confirmatory samples. Note that the results associated with samples 0004-SB-07-0302, 0004-SB-08-1207, 0004-SB-12-0202, and 0004-SB-17-1715 are not included in the table as these sample locations were subsequently excavated and new samples were collected. TPH comprises a generic mixture of hydrocarbon material that cannot be differentiated into specific organic compounds. This usually occurs because the source material of the TPH has gone through changes in its composition as a result of weathering. Weathering involves a number of processes including volatilization, hydrolysis, photolysis, biodegradation, biotransformation, physical breakup, and dissolution. The weathering results in material that no longer contains any identifiable VOCs, SVOCs, or PAHs.

The PRG for TPH was initially 100 mg/kg, as presented in Table 2-1. After collecting approximately 25 confirmatory samples, samples 0004-SB-13-2420, 0004-SB-18-2315, and 0004-SB-22-1007 contained TPH concentrations above this clean-up goal. However, there is no human health risk associated with TPH because it is a generic indicator parameter, and it was felt that continued excavation due to TPH exceedances was not warranted. Further excavation was determined to not be necessary since the primary removal action objective of protection of groundwater would be met as long as it could be shown that the residual TPH concentrations would not impact groundwater.

Because the mixture of materials that comprise TPH are not identifiable, no chemical- or toxicity-specific characteristics could be applied. The Massachusetts Department of Environmental Protection (MADEP) recommends a surrogate approach for evaluating the impact of TPH on groundwater. The most toxic surrogate compound is pyrene. Using pyrene as a surrogate, a soil concentration of 1,700 mg/kg was

calculated to be protective of groundwater. A narrative detailing the approach which was used to calculate a soil screening value is provided in Appendix B.3. With approval of the Maryland Department of the Environment (MDE), and consent of the U.S. EPA, the PRG for TPH was revised to 1,700 mg/kg. Since the TPH concentrations in samples 0004-SB-13-2420, 0004-SB-18-2315, and 0004-SB-22-1007 were below this revised PRG, further excavation in these areas was not required. This new PRG was then applied to the screening of remaining samples (0004-SB-26-2210 through 0004-SB-38-0403).

Following the calculation and acceptance of this revised PRG, samples 0004-SB-28 and 0004-SB-29 were collected and their TPH concentrations exceeded the revised PRG. However, using statistical analysis it was shown that by assuming the TPH concentrations at Site 4 are lognormally distributed, the 95 percent upper confidence limit (UCL) of the mean, the geometric mean, and the arithmetic mean of TPH concentrations in samples 0004-SB-01-1815 through 0004-SB-29 were below 1,700 mg/kg. It could therefore be concluded that TPH was not present at concentrations that would significantly impact groundwater. As such, further excavation was not required in the vicinity of sample locations 0004-SB-28 and 0004-SB-29.

Once confirmatory sampling was completed at Site 4, the TPH concentration averages were once again calculated to verify that these values were still below 1,700 mg/kg. The 95 percent UCL of the mean was 526 mg/kg, the geometric mean was 67 mg/kg, and the arithmetic mean was 359 mg/kg. Since these values were below the PRG of 1,700 mg/kg, it was determined that the residual TPH concentrations in the soil at Site 4 were protective of groundwater.

2.3.2 Other Findings

The SAP directed the RAC to perform preliminary field screening of the excavation to determine that excavation was complete and confirmatory sampling could proceed. As previously discussed, in addition to visual observations of the excavation, a PID was used to screen the excavation for organic vapors.

In the southeastern corner of the site, excavation extended to approximately 30 feet below ground surface (bgs) due to the continued presence of elevated PID readings. Since no visible sign of contamination was present, two samples were collected from the bottom of the excavation and analyzed for VOCs and SVOCs. The samples, 0004-B1-22 and 0004-B2-16, were collected 22 and 16 feet bgs, respectively. Data are provided in Appendix B.4 and approximate sample locations are shown on Figure 2-2. Only a few parameters were detected in these two samples and all at concentrations below PRGs. It appeared from this information that the soil was not the source of the elevated organic vapor concentrations.

In this area, the depth of excavation had been advanced to within 20 feet of groundwater that has historically contained the highest trichloroethene (TCE) concentrations found to date at NSWC-White Oak. To evaluate whether vadose zone vapors from the groundwater were the source of the elevated PID readings, a soil gas sample was collected from this area and analyzed for VOCs and SVOCs. Analytical results indicated that the sample contained two VOCs at elevated concentrations, 1,1,1-trichloroethane at 20 parts per million (ppm) and TCE at 1,300 ppm. Analytical data are provided in Appendix B.5. Based on this data, it was concluded that the groundwater in this area was the source of the organic vapors measured by the PID and further excavation was not required.

Confirmatory samples 0004-SB-28, 0004-SB-29, and 0004-SB-31 were collected from the floor of the excavation in this area. There were no parameters present at concentrations in excess of PRGs in these three samples, with the exception of the elevated TPH concentrations in 0004-SB-28 and 0004-SB-29 that were discussed in Section 2.3.1.

During excavation in Burial Area 1, heavily stained soil was excavated from approximately 6 feet below grade. The soil contained an oily residue and a large area was stained a black color. A sample was collected from this material to attempt to determine the origin of the staining. Sample 0004-black-99 was analyzed for TCL PCBs, TPH, and diesel range organics (DRO). The analytical data did not provide conclusive evidence as to the origin of the material. Excavation was continued and this material was removed. Analytical results are provided in Appendix B.6. Confirmatory samples 0004-SB-09-2420 and 0004-SB-10-0116 were collected from grids that included the area that had contained this heavily stained soil. There were no exceedances of PRGs in these two samples.

2.4 SITE RESTORATION

Following completion of excavation and confirmatory sampling, Site 4 was backfilled with clean soil and returned to grades similar to that which existed prior to the removal action. The area was also vegetated. Additional information regarding the removal action and site restoration will be provided in the RAC's removal action report.

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TABLE 2-1

PRELIMINARY REMOVAL GOALS
SITE 4 - THE CHEMICAL BURIAL AREA
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

PARAMETER	PRG [1]
VOLATILES (mg/kg)	
1,1,1-Trichloroethane	4100
1,1,2,2-Tetrachloroethane	29
1,1,2-Trichloroethane	100
1,2-Dichloroethane	63
1,2-Dichloroethene (total)	1800
2-Butanone	120000
Acetone	20000
Benzene	200
Carbon Disulfide	20000
Chlorobenzene	4100
Chloroform	940
Ethylbenzene	20000
M+p-Xylenes	410000
Methylene Chloride	760
Styrene	41000
Tetrachloroethene	110
Toluene	41000
Trichloroethene	520
Xylenes, Total	410000
SEMIVOLATILES (mg/kg)	
1,4-Dichlorobenzene	240
2-Methylnaphthalene	4100
2-Nitroaniline [3]	120
Acenaphthene	12000
Acenaphthylene [4]	4100
Anthracene	61000
Benzo(a)anthracene	7.8
Benzo(a)pyrene	0.78
Benzo(b)fluoranthene	7.8
Benzo(g,h,i)perylene [4]	4100
Benzo(k)fluoranthene	78
Bis(2-Ethylhexyl)phthalate	410
Carbazole	290
Chrysene	780
Di-n-butyl phthalate	20000
Dibenzo(a,h)anthracene	0.78
Dibenzofuran	820
Diethyl Phthalate	160000
Fluoranthene	8200
Fluorene	8200
Indeno(1,2,3-cd)pyrene	7.8
N-Nitrosodiphenylamine	1200
Naphthalene	4100
Pentachlorophenol	48
Phenanthrene [4]	4100
Phenol	120000
Pyrene	6100

PARAMETER	PRG [1]
PESTICIDES/PCBs (mg/kg)	
Aroclor-1260	2.9
INORGANICS (mg/kg)	
Aluminum	200000
Antimony	82
Arsenic [2]	12.15
Barium	14000
Beryllium	410
Cadmium	100
Calcium [2]	247
Chromium [5]	610
Cobalt	12000
Copper	8200
Cyanide	4100
Iron	61000
Lead [6]	1000
Magnesium [2]	2987
Manganese	4100
Mercury	61
Nickel	4100
Potassium [2]	2792
Selenium	1000
Silver	1000
Sodium [2]	69.4
Thallium	14
Vanadium	1400
Zinc	61000
EXPLOSIVES (mg/kg)	
1,3,5-Trinitrobenzene	6100
1,3-Dinitrobenzene	20
2,4,6-Trinitrotoluene	190
2-Amino-4,6-dinitrotoluene [7]	410
4-Nitrotoluene	2000
HMX	10000
RDX	52
Tetryl	2000
MISCELLANEOUS PARAMETERS (mg/kg)	
Total Petroleum Hydrocarbons (TPH) [8]	100
Dioxin (TCDD)	0.000038

1 Value presented is the U.S. EPA Region III industrial RBC, unless otherwise indicated (April 1999).
2 Background Concentrations for Subsurface Soil at NSWC-White Oak. TtNUS, 1998.
3 Based on withdrawn reference dose.
4 Value for naphthalene used.
5 Value for hexavalent chromium used.
6 Office of Solid Waste and Emergency Response (OSWER) Standard for Lead, industrial.
7 Value for 2,4-dinitrotoluene used.
8 Maryland Underground Storage Tank Closure Regulations (Code of Maryland Regulations 26.10)

TABLE 2-2

SUMMARY OF COMPOUNDS DETECTED IN SOIL
SITE 4 - THE CHEMICAL BURIAL AREA
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 1 OF 3

PARAMETER	FREQUENCY OF DETECTION	RANGE OF EXCEEDANCES OF PRG VALUES	LOCATIONS OF EXCEEDANCES	PRG SCREENING VALUES [1]
VOLATILES (mg/kg)[2]				
1,1,2,2-Tetrachloroethane	2/38	NO EXC.	-	29
1,2-Dichloroethene (total)	1/38	NO EXC.	-	1800
2-Butanone	1/38	NO EXC.	-	120000
Acetone	10/38	NO EXC.	-	20000
Benzene	1/38	NO EXC.	-	200
Bromomethane	3/38	NO EXC.	-	290
Chlorobenzene	2/38	NO EXC.	-	4100
Methylene Chloride	9/38	NO EXC.	-	760
Tetrachloroethene	2/38	NO EXC.	-	110
Toluene	6/38	NO EXC.	-	41000
Trichloroethene	2/38	NO EXC.	-	520
Xylenes, Total	2/38	NO EXC.	-	410000
SEMIVOLATILES (mg/kg)				
2-Methylnaphthalene	2/38	NO EXC.	-	4100
Acenaphthene	3/38	NO EXC.	-	12000
Acenaphthylene	3/38	NO EXC.	-	4100
Anthracene	3/38	NO EXC.	-	61000
Benzo(a)anthracene	6/38	NO EXC.	-	7.8
Benzo(a)pyrene	7/38	1.3	0004-SB-26-2210	0.78
Benzo(b)fluoranthene	7/38	NO EXC.	-	7.8
Benzo(g,h,i)perylene	7/38	NO EXC.	-	4100
Benzo(k)fluoranthene	6/38	NO EXC.	-	78
Bis(2-Ethylhexyl)phthalate	20/38	NO EXC.	-	410
Carbazole	2/38	NO EXC.	-	290
Chrysene	8/38	NO EXC.	-	780
Di-n-butyl phthalate	5/38	NO EXC.	-	20000
Dibenzo(a,h)anthracene	5/38	NO EXC.	-	0.78
Dibenzofuran	2/38	NO EXC.	-	820
Diethyl Phthalate	1/38	NO EXC.	-	160000
Fluoranthene	7/38	NO EXC.	-	8200
Fluorene	3/38	NO EXC.	-	8200
Indeno(1,2,3-cd)pyrene	7/38	NO EXC.	-	7.8
Naphthalene	2/38	NO EXC.	-	4100
Phenanthrene	10/38	NO EXC.	-	4100
Pyrene	12/38	NO EXC.	-	6100
PESTICIDES/PCBs (mg/kg)[2]				
4,4'-DDD	4/38	NO EXC.	-	24
4,4'-DDE	10/38	NO EXC.	-	17
4,4'-DDT	7/38	NO EXC.	-	17
Aldrin	2/38	NO EXC.	-	0.34
Alpha-Chlordane	19/38	NO EXC.	-	16
Aroclor-1248	1/38	NO EXC.	-	2.9
Aroclor-1254	2/38	NO EXC.	-	2.9
Aroclor-1260	31/38	NO EXC.	-	2.9
Dieldrin	16/38	NO EXC.	-	0.36
Endosulfan I	9/38	NO EXC.	-	1200

TABLE 2-2

SUMMARY OF COMPOUNDS DETECTED IN SOIL
SITE 4 - THE CHEMICAL BURIAL AREA
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 2 OF 3

PARAMETER	FREQUENCY OF DETECTION	RANGE OF EXCEEDANCES OF PRG VALUES	LOCATIONS OF EXCEEDANCES	PRG SCREENING VALUES [1]
Endosulfan II	6/38	NO EXC.	-	1200
Endosulfan Sulfate	7/38	NO EXC.	-	1200
Endrin	14/38	NO EXC.	-	61
Endrin Aldehyde	14/38	NO EXC.	-	61
Gamma-Chlordane	12/38	NO EXC.	-	16
Heptachlor	9/38	NO EXC.	-	1.3
Heptachlor Epoxide	3/38	NO EXC.	-	0.63
Methoxychlor	2/38	NO EXC.	-	1000
alpha-BHC	3/38	NO EXC.	-	0.91
beta-BHC	4/38	NO EXC.	-	3.2
delta-BHC	2/38	NO EXC.	-	3.2
gamma-BHC (Lindane)	4/38	NO EXC.	-	4.4
INORGANICS (mg/kg)				
Aluminum	38/38	NO EXC.	-	200000
Antimony	17/38	NO EXC.	-	82
Arsenic	36/38	NO EXC.	-	12.15
Barium	38/38	NO EXC.	-	14000
Beryllium	12/38	NO EXC.	-	410
Calcium	38/38	251 - 2480	0004-SB-01-1815, 0004-SB-03-1107, 0004-SB-05-0515, 0004-SB-07-0302, 0004-SB-08-1207, 0004-SB-10-0116, 0004-SB-11-1412, 0004-SB-12-0202, 0004-SB-14-0820, 0004-SB-15-0302, 0004-SB-16-0202, 0004-SB-17-1715, 0004-SB-21-1912, 0004-SB-22-1007, 0004-SB-23-1207, 0004-SB-24-1407, 0004-SB-25-0202, 0004-SB-26-2210, 0004-SB-27-2210, 0004-SB-32-0903, 0004-SB-33-1203, 0004-SB-36-2002, 0004-SB-37-0403, 0004-SB-38-0403	247
Chromium	38/38	NO EXC.	-	610
Cobalt	32/38	NO EXC.	-	12000
Copper	38/38	NO EXC.	-	8200
Cyanide	17/38	NO EXC.	-	4100
Iron	38/38	NO EXC.	-	61000
Lead	38/38	NO EXC.	-	1000
Magnesium	38/38	NO EXC.	-	2987
Manganese	38/38	NO EXC.	-	4100
Mercury	17/38	NO EXC.	-	61
Nickel	32/38	NO EXC.	-	4100
Potassium	34/38	NO EXC.	-	2792
Selenium	14/38	NO EXC.	-	1000
Silver	11/38	NO EXC.	-	1000
Sodium	25/38	77.7	0004-SB-12-0202	69.4
Thallium	1/38	NO EXC.	-	14
Vanadium	38/38	NO EXC.	-	1400
Zinc	38/38	NO EXC.	-	61000
EXPLOSIVES (mg/kg)[2]				
1,3,5-Trinitrobenzene	1/38	NO EXC.	-	6100
1,3-Dinitrobenzene	1/38	NO EXC.	-	20
2,4,6-Trinitrotoluene	3/38	NO EXC.	-	190
2,4-Dinitrotoluene	6/76	NO EXC.	-	410
2,6-Dinitrotoluene	1/76	NO EXC.	-	200

TABLE 2-2

SUMMARY OF COMPOUNDS DETECTED IN SOIL
SITE 4 - THE CHEMICAL BURIAL AREA
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 3 OF 3

PARAMETER	FREQUENCY OF DETECTION	RANGE OF EXCEEDANCES OF PRG VALUES	LOCATIONS OF EXCEEDANCES	PRG SCREENING VALUES (1)
2-Amino-4,6-dinitrotoluene	3/38	NO EXC.	-	410
2-Nitrotoluene	4/38	NO EXC.	-	2000
3-Nitrotoluene	5/38	NO EXC.	-	4100
4-Amino-2,6-dinitrotoluene	5/38	NO EXC.	-	410
4-Nitrotoluene	2/38	NO EXC.	-	2000
HMX	1/38	NO EXC.	-	10000
RDX	2/38	NO EXC.	-	52
MISCELLANEOUS COMPOUNDS (mg/kg)				
Total Petroleum Hydrocarbons	33/38	130 - 5900	0004-SB-07-0302, 0004-SB-08-1207, 0004-SB-13-2420, 0004-SB-17-1715, 0004-SB-18-2315, 0004-SB-22-1007, 0004-SB-26-2210, 0004-SB-27-2210, 0004-SB-28, 0004-SB-29, 0004-SB-32-0903, 0004-SB-33-1203, 0004-SB-37-0403	100
Dioxin (TCDD)	34/38	NO EXC.	-	0.000038

1 Values as reported in Table 2-1.
2 Italics indicate parameters that were detected in confirmatory samples but were not found in prior samples and, as such, a PRG was not established. Industrial RBC levels have been included for reference purposes.
NO EXC - None of the detected concentrations exceeded the PRG value.

Associated Samples:

0004-SB-01-1815	0004-SB-11-1412	0004-SB-21-1912	0004-SB-31
0004-SB-02-2012	0004-SB-12-0202	0004-SB-22-1007	0004-SB-32-0903
0004-SB-03-1107	0004-SB-13-2420	0004-SB-23-1207	0004-SB-33-1203
0004-SB-04-1015	0004-SB-14-0820	0004-SB-24-1407	0004-SB-34-0702
0004-SB-05-0515	0004-SB-15-0302	0004-SB-25-0202	0004-SB-35-1803
0004-SB-06-1712	0004-SB-16-0202	0004-SB-26-2210	0004-SB-36-2002
0004-SB-07-0302	0004-SB-17-1715	0004-SB-27-2210	0004-SB-37-0403
0004-SB-08-1207	0004-SB-18-2315	0004-SB-28	0004-SB-38-0403
0004-SB-09-2420	0004-SB-19-0315	0004-SB-29	
0004-SB-10-0116	0004-SB-20-0202	0004-SB-30	

TABLE 2-3

TPH DATA
SITE 4 - THE CHEMICAL BURIAL AREA
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE	SAMPLE CONCENTRATION	STATISTICAL CONCENTRATION (1)	LN CONCENTRATION
0004-SB-01-1815	19	19	2.94
0004-SB-02-2012	8.7 (2)	4.4	1.48
0004-SB-03-1107	19	19	2.94
0004-SB-04-1015	12	12	2.48
0004-SB-05-0515	65	65	4.17
0004-SB-06-1712	17	17	2.83
0004-SB-09-2420	16	16	2.77
0004-SB-10-0116	16	16	2.77
0004-SB-11-1412	36	36	3.58
0004-SB-13-2420	230	230	5.44
0004-SB-14-0820	20	20	3.00
0004-SB-15-0302	37	37	3.61
0004-SB-16-0202	31	31	3.43
0004-SB-18-2315	390	390	5.97
0004-SB-19-0315	91	91	4.51
0004-SB-20-0202	53	53	3.97
0004-SB-21-1912	34	34	3.53
0004-SB-22-1007	520	520	6.25
0004-SB-23-1207	13	13	2.56
0004-SB-24-1407	87	87	4.47
0004-SB-25-0707	7.7	7.7	2.04
0004-SB-26-2210	270	270	5.60
0004-SB-27-2210	170	170	5.14
0004-SB-28	3000	3000	8.01
0004-SB-29	5900	5900	8.68
0004-SB-30	ND	55	4.01
0004-SB-31	ND	55	4.01
0004-SB-32-0903	410	410	6.02
0004-SB-33-1203	250	250	5.52
0004-SB-34-0702	ND	55	4.01
0004-SB-35-1803	ND	50	3.91
0004-SB-36-2002	ND	55	4.01
0004-SB-37-0403	160	160	5.08
0004-SB-38-0403	ND	55	4.01

Average	**358.91**	**4.20**
Upper Confidence Limit	**745**	**526**

1 Statistical concentration is the value used to calculate the mean. Where the laboratory result is ND, one half the detection limit was used.
2 Sample result was qualified due to blank contamination. Half the detected concentration was used in the calculation.
All concentrations are in units of mg/kg.
ND Nondetect

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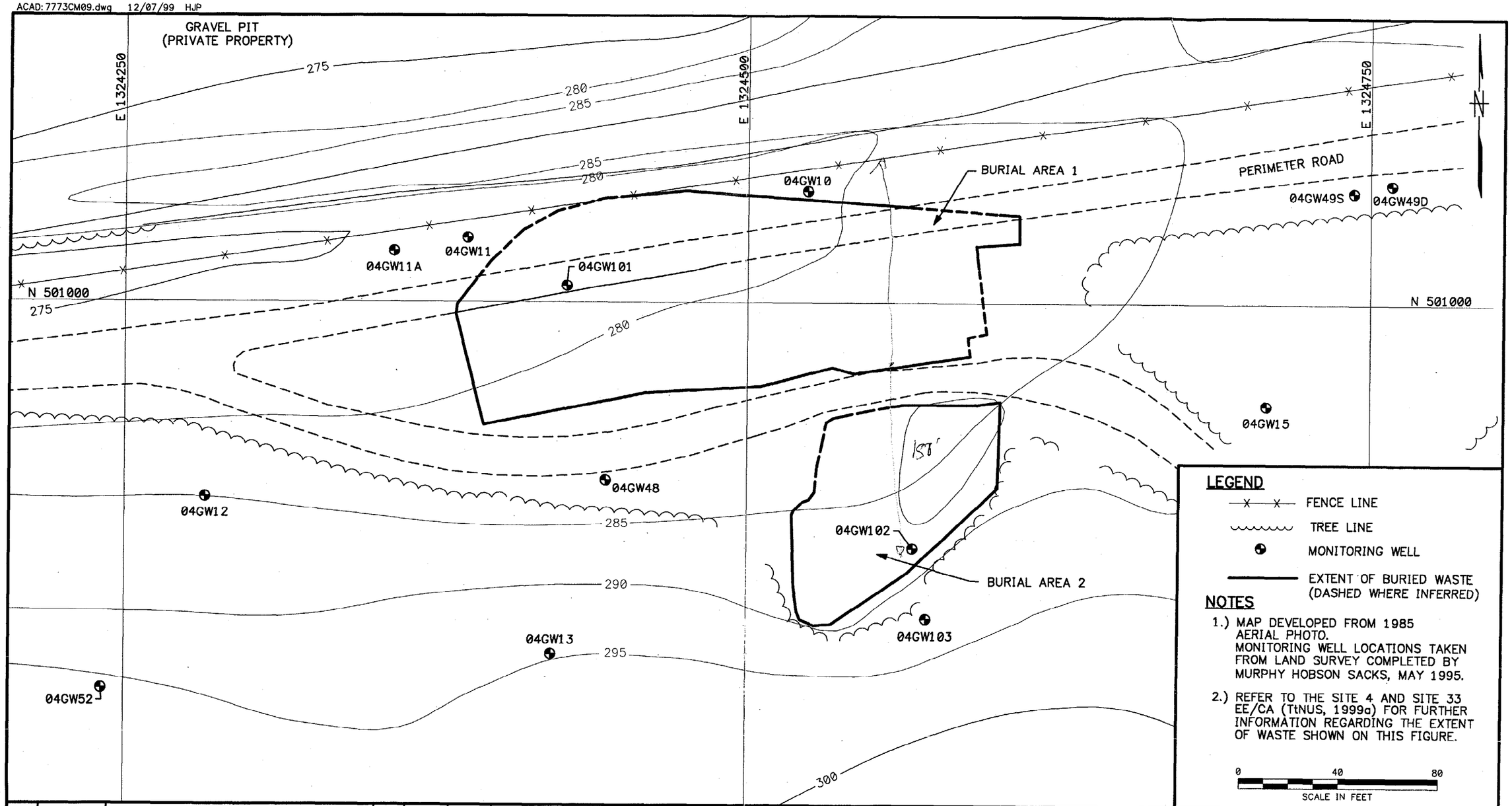


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY MF DATE 10/20/98
CHECKED BY KMS DATE 12/10/99
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

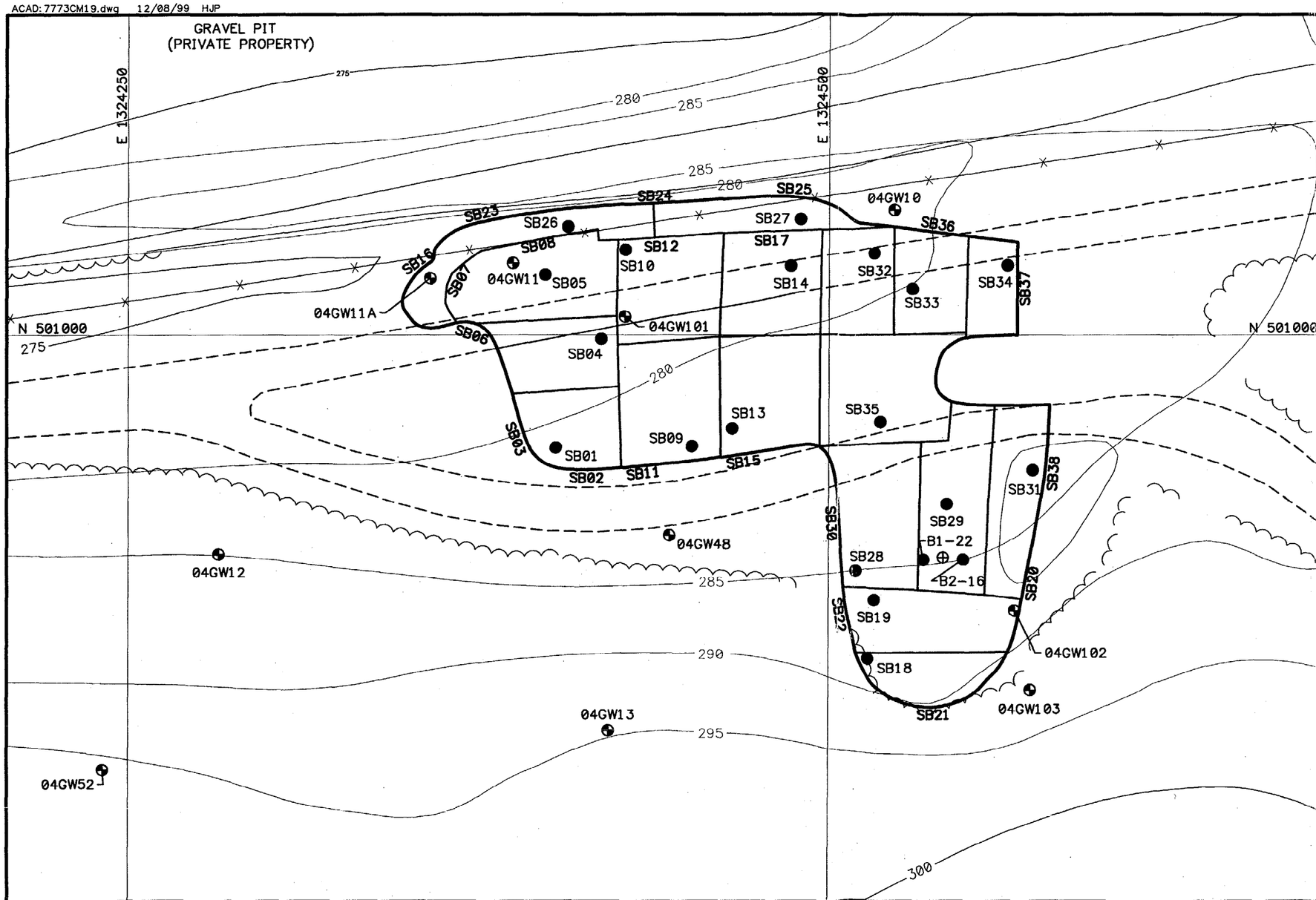
EXTENT OF BURIED WASTE – SITE 4
SITE 4 AND SITE 33
POST – REMOVAL ACTION REPORT
NSWC–WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 7773
OWNER NO. 0304
APPROVED BY Doreen M Cupley-Hall DATE 12-10-99
APPROVED BY DATE
DRAWING NO. FIGURE 2–1
REV. 0

FORM CADD NO. TtNUS_BH.DGN – REV 0 – 1/20/98

00072BB22

ACAD: 7773CM19.dwg 12/08/99 HJP



LEGEND

- FENCE LINE
- TREE LINE
- MONITORING WELL
- LIMIT OF EXCAVATION (APPROXIMATE)
- SAMPLING GRID BOUNDARY (APPROXIMATE)
- **SB38** WALL SAMPLE
- SB31 FLOOR SAMPLE
- APPROXIMATE SOIL GAS SAMPLE LOCATION

NOTES

1.) MAP DEVELOPED FROM 1985 AERIAL PHOTO. MONITORING WELL LOCATIONS TAKEN FROM LAND SURVEY COMPLETED BY MURPHY HOBSON SACKS, MAY 1995.

2.) LIMITS OF EXCAVATION AND SOIL SAMPLE LOCATIONS ARE APPROXIMATE. A SURVEY WAS NOT PREFORMED.

3.) SAMPLE ID'S IN BOLD INDICATE WALL SAMPLES. ALL OTHER SAMPLES FROM THE EXCAVATION FLOOR.

4.) TO SIMPLIFY THE FIGURE, THE SITE INDICATOR (0004) AND GRID/DEPTH INDICATEORS WERE OMITTED FROM THE SAMPLE IDS.

0 40 80
SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 9/15/99
CHECKED BY KMS DATE 12/10/99
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

LIMITS OF EXCAVATION AND CONFIRMATORY SAMPLING LOCATIONS– SITE 4
SITE 4 AND SITE 33 POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 7773
OWNER NO. 0304
APPROVED BY DATE 12-10-99
APPROVED BY DATE
DRAWING NO. FIGURE 2-2
REV. 0

FORM CADD NO. T-NUS_BH.DGN - REV 0 - 1/20/98

3.0 SITE 33 – BUILDING 25, PLATING SHOP EQUALIZATION TANK

Site 33 (Solid Waste Management Unit [SWMU] 39) was a tank located on the eastern side of the Building 25 Plating Shop, located in the northwestern portion of the facility. The approximate site location is shown on Figure 1-2 and a site layout map is provided on Figure 3-1. The tank was approximately 10 feet west of Taylor Road and was a closed underground concrete tank measuring approximately 5 feet by 7 feet by 9 feet deep, with terra cotta inlet and outlet pipes. The tank was covered by a metal lid and contained a weir.

Use of the tank began in the late 1940s and continued until 1984 when operations in the Plating Shop ceased. The shop operations included electroplating, chemical etching and milling, anodizing, conversion coating, electroless plating, and circuit board manufacturing. The wastes generated in the shop consisted of rinse tank wastewater, plating bath wastes, sodium hydroxide cleaners, and cyanide stripper baths. Wastewater from the Plating Shop, containing chromium, cadmium, copper, lead, nickel, and cyanide, entered the tank via floor drains. The tank overflow was discharged to the facility's sanitary sewer system.

3.1 EE/CA INVESTIGATION

The removal action objective defined in the EE/CA was to evaluate the contents of the tank and determine an appropriate removal action. It was determined during the EE/CA that, although the tank and its contents did not pose risks to human health or the environment, future land use at the former NSWC-White Oak is unknown; therefore, removing the tank as a housekeeping measure was deemed appropriate. The recommended removal action for Site 33 included pumping residual water out of the tank, washing the tank interior, demolishing the tank, removing the broken concrete for disposal off site, restoring the site with clean backfill, and revegetating (TtNUS, 1999a).

3.2 PRGS

Clean-up goals were established for the Site 33 removal action. The PRGs developed for Site 33 were presented in the Post-Removal SAP (TtNUS, 1999b) and are provided in Table 3-1. As at Site 4, a combination of U.S. EPA Region III industrial RBCs and background values for inorganics at NSWC-White Oak were used.

Samples from Site 33 were analyzed for TCL VOCs, TCL SVOCs, TAL inorganics plus cyanide, and TCL pesticides/PCBs.

3.3 REMOVAL ACTION IMPLEMENTATION

The removal action was performed by the RAC on July 8 and 9, 1999. Two confirmatory samples were collected: sample 0033-SB-01-20(beneath) was collected 20 feet bgs, below the centerline of the tank, and sample 0033-SB-02-08(outlet) was collected 8 feet bgs, on the eastern side of the tank, below the tank outlet pipe. Approximate sample locations are shown on Figure 3-1. Analytical data are summarized in Table 3-1 and the complete data set is provided in Appendix C.1. Soil sample log sheets are provided in Appendix C.2.

The SAP proposed a third sample be collected from beneath the inlet pipe. Once the RAC began removing the tank, it became apparent that the western wall of the tank and the building wall were the same wall. The inlet pipe did not contact the soil but exited from the basement of Building 25 and passed directly through the concrete wall into the tank.

The only compounds that were detected at concentrations in excess of PRGs in the two samples were calcium, magnesium, potassium, and sodium. These exceedances were not of concern because these metals are essential human nutrients and do not pose a risk to human health.

Site 11, the Industrial Wastewater Disposal Area 100, is located southeast of Site 33 at the end of Taylor Road. Site 11 contained leaching wells that were used for wastewater disposal from laboratory activities. Due to the proximity of Site 33 to Site 11, the confirmatory sampling analytical data will be used in the final Site 11 RFI risk assessment (TtNUS, 1999c).

3.4 SITE RESTORATION

Following completion of excavation and confirmatory sampling, Site 33 was backfilled with clean soil and returned to grades similar to that which existed prior to the removal action. The area was also vegetated. Additional information regarding the removal action and site restoration will be provided in the RAC's post-removal action report.

TABLE 3-1

PRELIMINARY REMOVAL GOALS
SITE 33 - BUILDING 25, PLATING SHOP EQUALIZATION TANK
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

PARAMETER	PRG [1]
VOLATILES (mg/kg)	
1,1,1-Trichloroethane	4100
1,1,2,2-Tetrachloroethane	29
1,1,2-Trichloroethane	100
1,2-Dichloroethane	63
1,2-Dichloroethene (total)	1800
2-Butanone	120000
Acetone	20000
Benzene	200
Carbon Disulfide	20000
Chlorobenzene	4100
Chloroform	940
Ethylbenzene	20000
M+p-Xylenes	410000
Methylene Chloride	760
Styrene	41000
Tetrachloroethene	110
Toluene	41000
Trichloroethene	520
Xylenes, Total	410000
SEMIVOLATILES (mg/kg)	
1,4-Dichlorobenzene	240
2-Methylnaphthalene	4100
2-Nitroaniline [3]	120
Acenaphthene	12000
Acenaphthylene [4]	4100
Anthracene	61000
Benzo(a)anthracene	7.8
Benzo(a)pyrene	0.78
Benzo(b)fluoranthene	7.8
Benzo(g,h,i)perylene [4]	4100
Benzo(k)fluoranthene	78
Bis(2-Ethylhexyl)phthalate	410
Carbazole	290
Chrysene	780
Di-n-butyl phthalate	20000
Dibenzo(a,h)anthracene	0.78
Dibenzofuran	820
Diethyl Phthalate	160000
Fluoranthene	8200
Fluorene	8200
Indeno(1,2,3-cd)pyrene	7.8
N-Nitrosodiphenylamine	1200
Naphthalene	4100
Pentachlorophenol	48
Phenanthrene [4]	4100
Phenol	120000
Pyrene	6100

PARAMETER	PRG [1]
PESTICIDES/PCBs (mg/kg)	
Aroclor-1260	2.9
INORGANICS (mg/kg)	
Aluminum	200000
Antimony	82
Arsenic [2]	12.15
Barium	14000
Beryllium	410
Cadmium	100
Calcium [2]	247
Chromium [5]	610
Cobalt	12000
Copper	8200
Cyanide	4100
Iron	61000
Lead [6]	1000
Magnesium [2]	2987
Manganese	4100
Mercury	61
Nickel	4100
Potassium [2]	2792
Selenium	1000
Silver	1000
Sodium [2]	69.4
Thallium	14
Vanadium	1400
Zinc	61000

1 Value presented is the U.S. EPA Region III industrial RBC, unless otherwise indicated (April 1999).
2 Background Concentrations for Subsurface Soil at NSWC-White Oak. TtNUS, 1998.
3 Based on withdrawn reference dose.
4 Value for naphthalene used.
5 Value for hexavalent chromium used.
6 Office of Solid Waste and Emergency Response (OSWER) Standard for Lead, industrial.

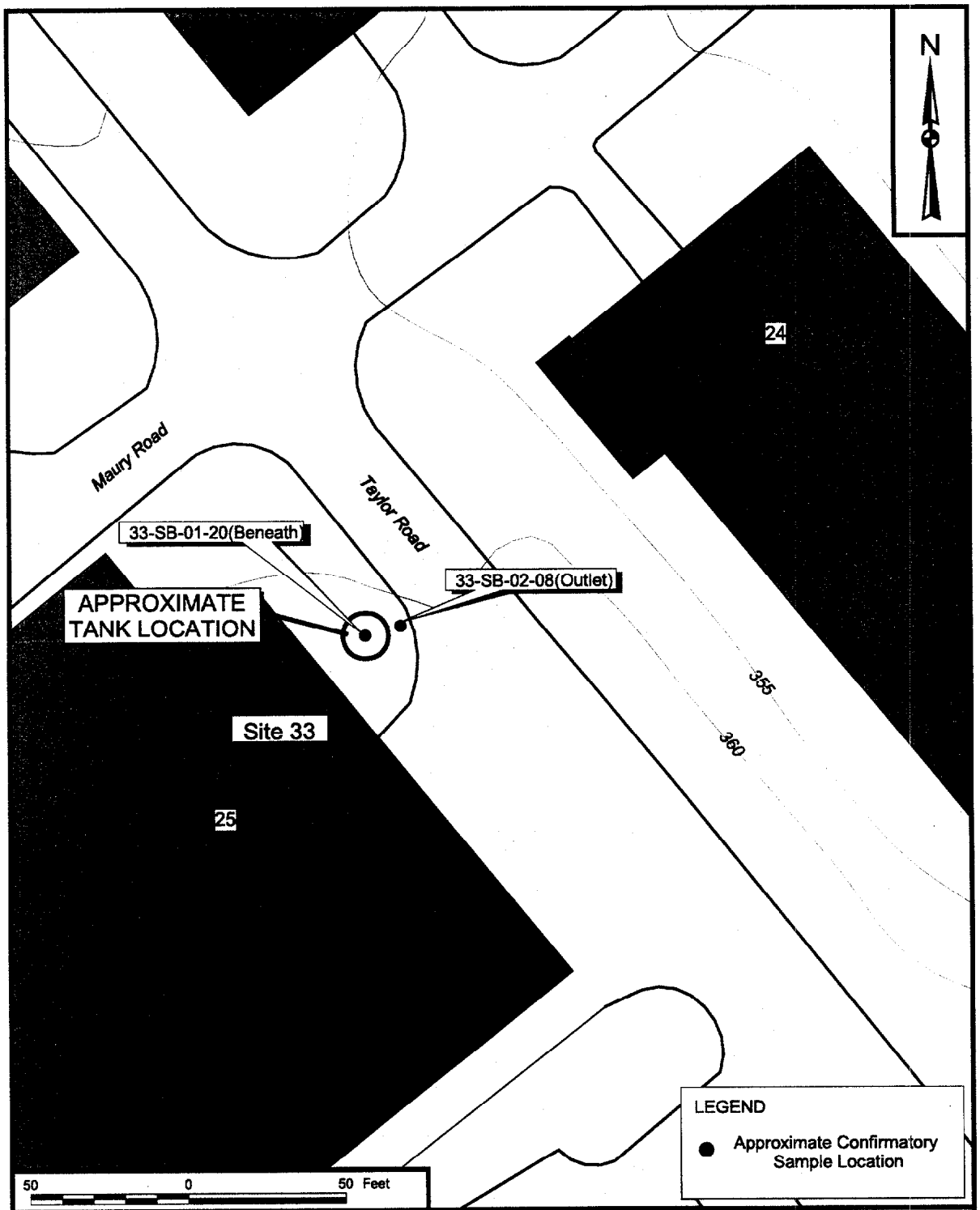
TABLE 3-2

SUMMARY OF COMPOUNDS DETECTED IN SOIL
SITE 33 - BUILDING 25, PLATING SHOP EQUALIZATION TANK
POST-REMOVAL ACTION REPORT
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	RANGE OF EXCEEDANCES OF PRG VALUES	LOCATIONS OF EXCEEDANCES	PRG SCREENING VALUES (1)
SEMIVOLATILES (mg/kg)				
Benzo(a)pyrene	1/2	NO EXC.	-	0.78
Bis(2-Ethylhexyl)phthalate	1/2	NO EXC.	-	410
Pyrene	1/2	NO EXC.	-	6100
PESTICIDES/PCBs (mg/kg)(2)				
4,4'-DDD	2/2	NO EXC.	-	24
4,4'-DDE	2/2	NO EXC.	-	17
4,4'-DDT	2/2	NO EXC.	-	17
Alpha-chlordane	2/2	NO EXC.	-	16
Dieldrin	2/2	NO EXC.	-	0.36
Endrin	1/2	NO EXC.	-	61
Gamma-chlordane	1/2	NO EXC.	-	16
Heptachlor	2/2	NO EXC.	-	1.3
alpha-BHC	1/2	NO EXC.	-	0.91
INORGANICS (mg/kg)				
Aluminum	2/2	NO EXC.	-	200000
Arsenic	2/2	NO EXC.	-	12.15
Barium	2/2	NO EXC.	-	14000
Beryllium	2/2	NO EXC.	-	410
Cadmium	1/2	NO EXC.	-	100
Calcium	2/2	780-1370	0033-SB-01-20(BENEATH) 0033-SB-02-08(OUTLET)	247
Chromium	2/2	NO EXC.	-	610
Cobalt	2/2	NO EXC.	-	12000
Copper	2/2	NO EXC.	-	8200
Cyanide	1/2	NO EXC.	-	4100
Iron	2/2	NO EXC.	-	61000
Lead	2/2	NO EXC.	-	1000
Magnesium	2/2	5320	0033-SB-02-08(OUTLET)	2987
Manganese	2/2	NO EXC.	-	4100
Nickel	2/2	NO EXC.	-	4100
Potassium	2/2	3390	0033-SB-02-08(OUTLET)	2792
Selenium	1/2	NO EXC.	-	1000
Silver	1/2	NO EXC.	-	1000
Sodium	2/2	99.5 - 185	0033-SB-01-20(BENEATH) 0033-SB-02-08(OUTLET)	69.4
Thallium	1/2	NO EXC.	-	14
Vanadium	2/2	NO EXC.	-	1400
Zinc	2/2	NO EXC.	-	61000

1 Values as reported in Table 3-1.
2 Italics indicate parameters that were detected in confirmatory samples but were not found in prior samples and, as such, a PRG was not established. Industrial RBC levels have been included for reference purposes.
NO EXC - None of the detected concentrations exceeded the PRG value.

Associated Samples: 0033-SB-01-20(BENEATH); 0033-SB-02-08(OUTLET)



DRAWN BY MJJ	DATE 10/15/98	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7773 / OWNER NO. 0304
CHECKED BY KMS	DATE 12/10/99	SITE LAYOUT MAP SITE 33 - BLDG 25 PLATING SHOP EQUALIZATION TANK SITE 4 AND SITE 33 POST-REMOVAL ACTION REPORT NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY Howard M. Tupley-Yelch / DATE 12-10-99
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-1 / REV 0

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APPENDIX A

POST-REMOVAL SAMPLING AND ANALYSIS PLAN

Post-Removal Sampling and Analysis Plan

for

Sites 4 and 33

at the former Naval Surface Warfare Center White Oak

Silver Spring, Maryland

Engineering Field Activity Chesapeake
Naval Facilities Engineering Command

Contract Number N62472-90-D-1298
Contract Task Order 0304

April 1999

039902/P

POST-REMOVAL SAMPLING AND ANALYSIS PLAN FOR SITES 4 AND 33

AT THE FORMER NAVAL SURFACE WARFARE CENTER WHITE OAK SILVER SPRING, MARYLAND

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Engineering Field Activity Chesapeake
Environmental Branch Code 18
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
Washington, D.C. 20374-2121

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 0304

APRIL 1999

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ACRONYMS

ALC	Adelphi Laboratory Center
B&R	Brown & Root
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action Navy
COMAR	Code of Maryland Regulations
CTO	Contract Task Order
EE/CA	Engineering Evaluation/Cost Analysis
FSP	Field Sampling Plan
GSA	General Services Administration
HASP	Health and Safety Plan
IDW	Investigation-Derived Waste
IR	Installation Restoration
mg/kg	milligram/kilogram
NA	Not Applicable
NSWC	Naval Surface Warfare Center
OSWER	Office of Solid Waste and Emergency Response
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PRG	Preliminary Removal Goal
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAC	Remedial Action Contractor
RBC	Risk-based Concentration
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency
USNR	United States Naval Reserve
VOC	Volatile Organic Compound

1.0 INTRODUCTION AND PROJECT BACKGROUND

The Northern Division of the Naval Facilities Engineering Command issued Contract Task Order (CTO) 304 to Tetra Tech NUS, Inc. (TtNUS) (formerly Brown & Root [B&R] Environmental) under Comprehensive Long-term Environmental Action Navy (CLEAN) Contract No. N62472-90-D-1298. Under CTO 304, TtNUS performed an Engineering Evaluation/Cost Analysis (EE/CA) for the former Naval Surface Warfare Center (NSWC) White Oak, located in Silver Spring, Maryland.

The work is part of the Navy's Installation Restoration (IR) Program, which is designed to identify contamination of Navy and Marine Corps facilities resulting from past operations and to institute corrective measures, as needed. The Navy has determined that a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is appropriate for two sites at the former NSWC-White Oak. The EE/CA recommended non-time-critical removal actions to address contaminated soil and solid waste at Site 4 and an underground tank at Site 33. This Post-Removal Sampling and Analysis Plan (SAP) presents a plan to perform confirmatory sampling and analysis to verify that contaminated soil has been successfully removed as part of the removal actions.

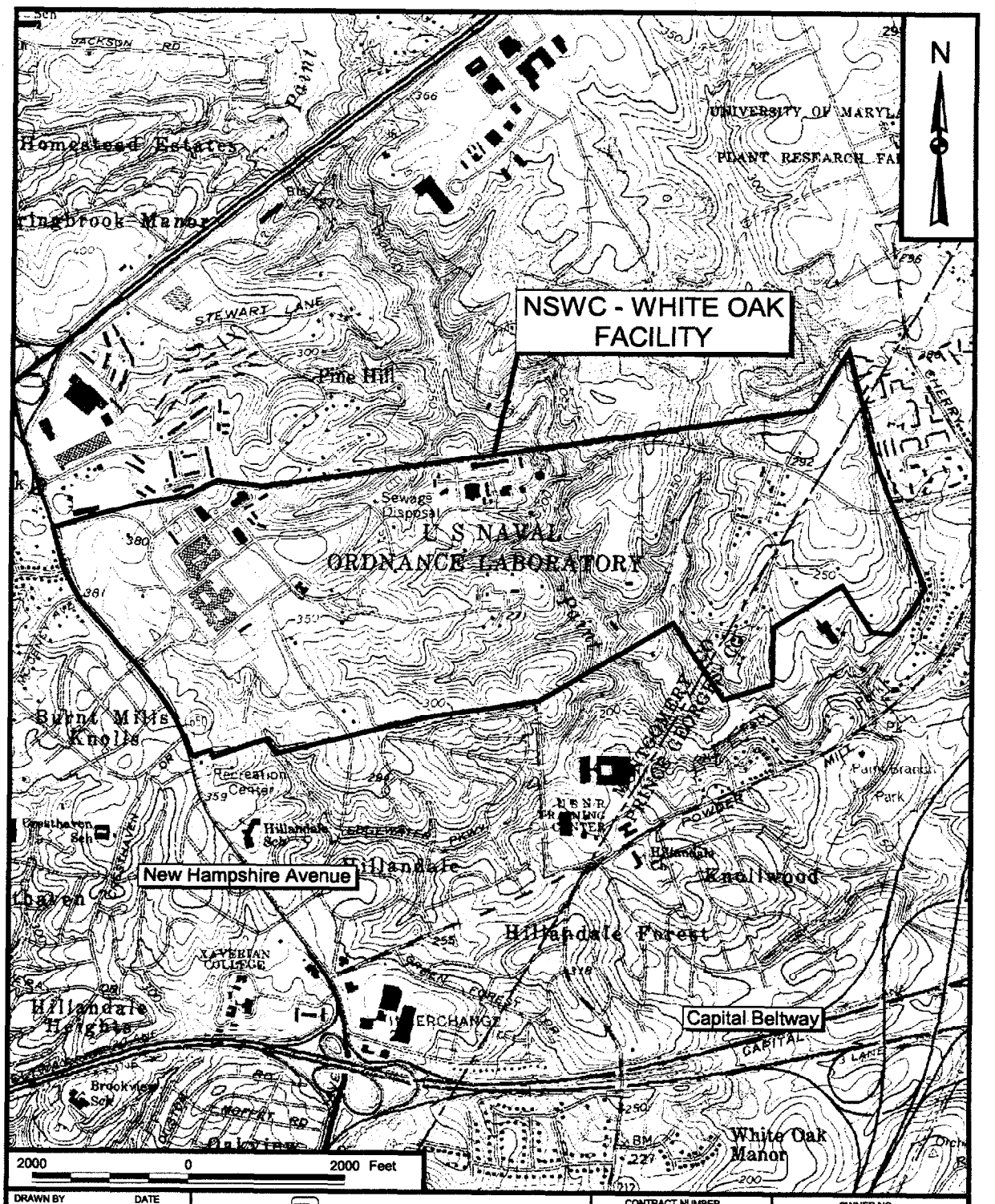
1.1 PROJECT BACKGROUND

NSWC-White Oak was a Navy-owned and -operated facility for naval surface warfare research. The facility is located approximately 5 miles north of Washington, D.C. off New Hampshire Avenue in Silver Spring, Maryland (see Figure 1-1), covers approximately 710 acres, and is located in both Prince George's and Montgomery Counties. Adjacent to the southern corner of the property is the U.S. Army's Adelphi Laboratory Center (ALC) and the United States Naval Reserve (USNR) Training Center. A mixture of residential, park, industrial, and commercial properties border the remainder of the facility. When the facility was closed, the property was transferred to the General Services Administration (GSA) and the U.S. Army. The GSA-managed property is now called the Federal Research Center at White Oak.

Figure 1-2 identifies the two sites addressed in this report, Site 4, the Chemical Burial Area, and Site 33, Building 25 Plating Shop Equalization Tank.

1.1.1 Site 4 – Chemical Burial Area

Site 4 is located south of Perimeter Road in the northeastern corner of the former NSWC-White Oak. The approximate site location is shown on Figure 1-2 and a site layout map is provided on Figure 1-3.



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CHECKED BY	DATE	SITE VICINITY MAP SITE 4 AND SITE 33 SAP NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY	DATE
KMS	4/22/99		Lorraine M Sipsey	4/22/99
COST/SCHEDULE-AREA			APPROVED BY	DATE
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AS NOTED			FIGURE 1-1	0

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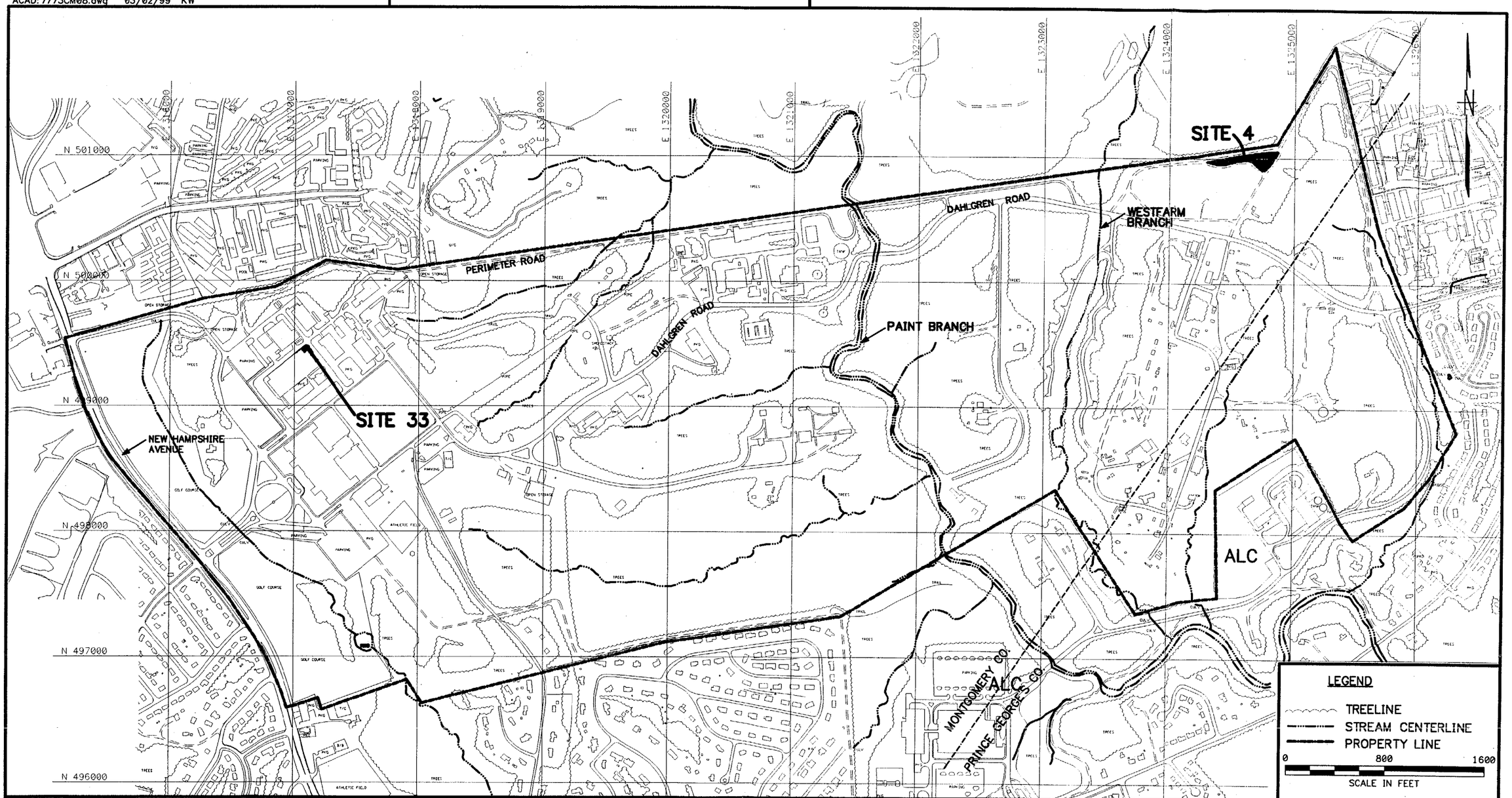

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Tetra Tech NUS, Inc.

SITE LOCATION MAP
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 7773
OWNER NO. 0304
APPROVED BY Lorraine M. Tupley DATE 4/22/99
APPROVED BY DATE
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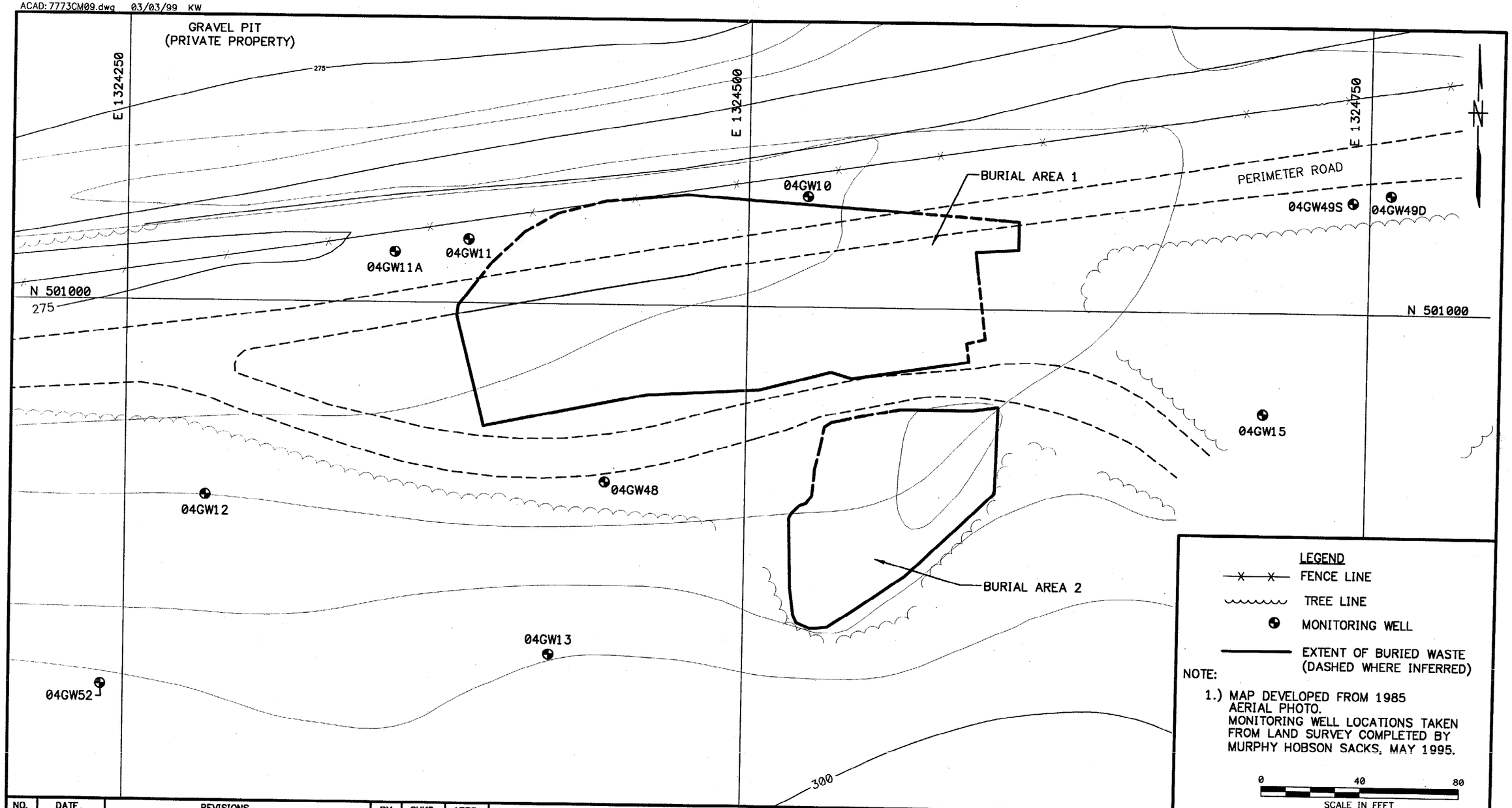

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Tetra Tech NUS, Inc.

EXTENT OF BURIED WASTE – SITE 4
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 7773
OWNER NO. 0304
APPROVED BY DATE 4/22/99
APPROVED BY DATE
DRAWING NO. FIGURE 1-3
REV. 0

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The overall area of the site is approximately 1.1 acres. Land north of the site is private property and is used as a quarry. An area in the southeastern corner of Site 4 was formerly used for telephone pole storage.

The site was used from the mid-1950s to the early 1970s to dispose of chemicals. Previous investigations of the site were based on the belief that four discrete trenches were used for disposal activities. Recent discussions with former NSWC-White Oak personnel, as well as additional investigation at the site, have determined that disposal of material at Site 4 was not confined to discrete trenches. In preparation for disposal, an area was excavated to approximate the amount of material to be disposed. The approximate boundary of waste is shown on Figure 1-3.

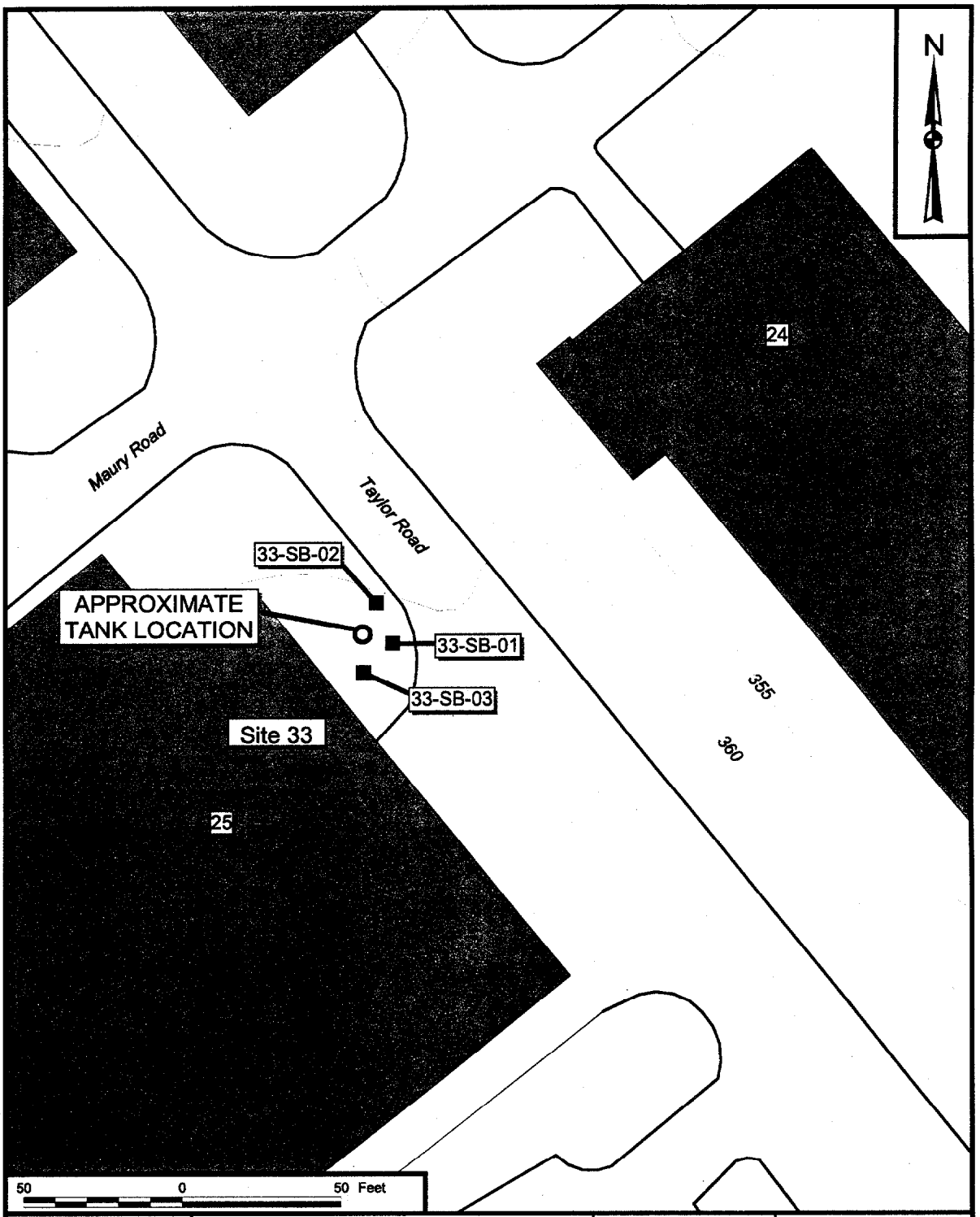
Wastes reportedly disposed at the site include acids, explosive compounds, kerosene, chlorinated solvents, and unidentified laboratory compounds. The total volume of waste disposed in the area was estimated to be between 400 and 600 cubic feet. Based on visual observations of waste and analytical results, approximately 6,900 cubic yards of soil and solid waste require remediation under this removal action. This volume was calculated by measuring the area shown on Figure 1-3 and multiplying by an average depth of waste. Depths used to calculate waste volume were 8 feet for the area north of Perimeter Road, 10 feet for all of Burial Area 1, including the material underlying Perimeter Road, and 8 feet for Burial Area 2. The waste is primarily domestic and construction debris, with a smaller fraction of chemical waste, solvents, and fuel-type materials (TtNUS, 1999).

The selected removal action for Site 4 includes excavation to the limits of waste identified on Figure 1-3 and off-site incineration or landfill disposal. The site will be backfilled to grade and vegetated.

1.1.2 Site 33 – Building 25, Plating Shop Equalization Tank

Site 33 is a tank located on the eastern side of the Building 25 Plating Shop, located in the northwestern portion of the facility. The tank is approximately 10 feet from Taylor Road and is a closed underground concrete tank measuring approximately 5 feet by 7 feet by 9 feet deep, with terra-cotta inlet and outlet pipes. The tank is covered by a metal lid and contains a weir. A site layout map is provided on Figure 1-4.

Use of the tank began in the late 1940s and continued until 1984 when operations in the Plating Shop ceased. The shop operations included electroplating, chemical etching and milling, anodizing, conversion coating, electroless plating, and circuit board manufacturing. The wastes generated in the shop consisted of rinse tank wastewater, plating bath wastes, sodium hydroxide cleaners, and cyanide stripper baths. Wastewater from the Plating Shop, containing chromium, cadmium, copper, lead, nickel, and cyanide,



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CHECKED BY KMS — DATE 4/22/99	SITE LAYOUT MAP SITE 33 - BLDG 25 PLATING SHOP EQUALIZATION TANK SITE 4 AND SITE 33 SAP NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY Lorraine M Sapley — DATE 4/22/99	
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 1-4	REV 0

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entered the tank via floor drains. The tank overflow was discharged to the facility's sanitary sewer system.

Under the selected removal action, approximately 1,050 gallons of water and sediment will be pumped out of the tank and disposed off site. The tank interior will be washed with a high-pressure water spray to remove residual dirt and sediment. The rinse water will also be collected and disposed off site. The tank will then be demolished and approximately 5 cubic yards of concrete will be disposed off site. Influent and effluent pipes will be sealed or removed, the site will be backfilled to grade, and vegetated (TtNUS, 1999).

1.2 SAP OBJECTIVE

The removal actions will be performed by the Naval Facilities Engineering Command Atlantic Division Remedial Action Contractor (RAC), OHM, beginning in May 1999. The RAC will be responsible for preliminary field analysis to confirm that grossly contaminated soil and solid waste have been removed. TtNUS will perform confirmatory sampling and analysis. The objective of this SAP is to identify sample locations and describe the procedures that TtNUS will use to obtain and analyze soil samples.

1.3 SAP ORGANIZATION

Section 1.0 presented the project background and the SAP objective. Section 2.0 provides a summary of the field operations, including the rationale for the confirmatory sampling methodology. Section 3.0 presents sampling procedures.

2.0 FIELD OPERATIONS

The RAC will perform preliminary field screening and analysis to make a determination regarding excavation of soil with significant levels of contamination. After the RAC has made the preliminary determination that an area of the excavation is complete, TtNUS will perform the initial round of confirmatory sampling and analysis in that area.

If the initial round of confirmatory sampling and analysis indicates that soil remaining at the site contains parameters at concentrations that are above the removal action goals, the RAC will perform additional excavation. TtNUS will then perform additional rounds of confirmatory sampling and analysis. However, subsequent samples will only be analyzed for those parameters that were found to be in excess of removal action goals in the previous round. The full suite of parameters will only be analyzed once. The process will continue until all parameters are detected at concentrations below the removal action goals. An exception to this procedure will be made in the event that additional excavation reveals stained soil or obvious waste material. In this event, soil and solid waste will be removed by the RAC. Confirmatory samples will be collected and analyzed for the full suite of parameters.

The initial round of confirmatory sampling and analysis will be performed in accordance with the procedures contained in Section 2.2. Additional sampling and analysis will be performed in accordance with Section 2.3.

2.1 SITE-SPECIFIC SAMPLING AND ANALYSIS

The Preliminary Removal Goals (PRGs) for Site 4 and Site 33 subsurface soil, provided in Table 2-1, are primarily United States Environmental Protection Agency (U.S. EPA) Region III industrial Risk-Based Concentrations (RBCs). Other standards have been used for parameters for which an RBC does not exist, specifically lead and total petroleum hydrocarbons (TPH). For inorganic analytes, the greater of the RBC concentration and basewide background concentration will be used as the PRG. Background concentrations for White Oak were presented in the Background Investigation Report (TtNUS, 1998). Background concentrations for inorganics in subsurface soil at White Oak are provided in Table 2-1.

Based on historic burial activities, analytes previously identified at the site, and contaminants of concern in the site groundwater, confirmatory samples from Site 4 will undergo analysis for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals plus cyanide, TCL pesticides and polychlorinated biphenyls (PCBs), explosives (Method 8330), TCL dioxins/furans, and TPH.

TABLE 2-1

REMOVAL ACTION PRGs
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 1 OF 2

Parameter	N/C [1]	Industrial RBC [2]	Background [3]
VOLATILES (mg/kg)			
1,1,1-Trichloroethane	N	4100	NA
1,1,2,2-Tetrachloroethane	C	29	NA
1,1,2-Trichloroethane	C	100	NA
1,2-Dichloroethane	C	63	NA
1,2-Dichloroethene (total)	N	1800	NA
2-Butanone	N	120000	NA
Acetone	N	20000	NA
Benzene	C	200	NA
Carbon Disulfide	N	20000	NA
Chlorobenzene	N	4100	NA
Chloroform	C	940	NA
Ethylbenzene	N	20000	NA
M+p-Xylenes	N	410000	NA
Methylene Chloride	C	760	NA
Styrene	N	41000	NA
Tetrachloroethene	C	110	NA
Toluene	N	41000	NA
Trichloroethene	C	520	NA
Xylenes, Total	N	410000	NA
SEMIVOLATILES (mg/kg)			
1,4-Dichlorobenzene	C	240	NA
2-Methylnaphthalene	N	4100	NA
2-Nitroaniline [4]	N	120	NA
Acenaphthene	N	12000	NA
Acenaphthylene [5]	N	4100	NA
Anthracene	N	61000	NA
Benzo(a)anthracene	C	7.8	NA
Benzo(a)pyrene	C	0.78	NA
Benzo(b)fluoranthene	C	7.8	NA
Benzo(g,h,i)perylene [5]	N	4100	NA
Benzo(k)fluoranthene	C	78	NA
Bis(2-Ethylhexyl)phthalate	C	410	NA
Carbazole	C	290	NA
Chrysene	C	780	NA
Di-n-butyl phthalate	N	20000	NA
Dibenzo(a,h)anthracene	C	0.78	NA
Dibenzofuran	N	8200	NA
Diethyl Phthalate	N	160000	NA
Fluoranthene	N	8200	NA
Fluorene	N	8200	NA
Indeno(1,2,3-cd)pyrene	C	7.8	NA
N-Nitrosodiphenylamine	C	1200	NA
Naphthalene	N	4100	NA
Pentachlorophenol	C	48	NA
Phenanthrene [5]	N	4100	NA
Phenol	N	120000	NA
Pyrene	N	6100	NA
PESTICIDES/PCBs (mg/kg)			
Aroclor-1260	C	2.9	NA

TABLE 2-1

REMOVAL ACTION PRGs
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 2 OF 2

Parameter	N/C [1]	Industrial RBC [2]	Background [3]
INORGANICS (mg/kg)			
Aluminum	N	200000	20961
Antimony	N	82	0.42
Arsenic	C	3.8	12.15
Barium	N	14000	40.09
Beryllium	N	4100	2.37
Cadmium	N	100	0.179
Calcium	NA	--	247
Chromium [6]	N	610	41.05
Cobalt	N	12000	16.6
Copper	N	8200	21.62
Cyanide	N	4100	--
Iron	N	61000	28681
Lead	N	1000 [7]	21.23
Magnesium	NA	--	2987
Manganese	N	4100	503
Mercury	N	20 [8]	0.051
Nickel	N	4100	13.84
Potassium	NA	--	2792
Selenium	N	100	2.73
Silver	N	100	0.096
Sodium	NA	--	69.4
Thallium	N	14	--
Vanadium	N	1400	44.31
Zinc	N	61000	84.2
EXPLOSIVES (mg/kg)			
1,3,5-Trinitrobenzene	N	6100	NA
1,3-Dinitrobenzene	N	20	NA
2,4,6-Trinitrotoluene	C	190	NA
2-Amino-4,6-dinitrotoluene [9]	N	410	NA
4-Nitrotoluene	N	2000	NA
HMX	N	10000	NA
RDX	C	52	NA
Tetryl	N	2000	NA
MISCELLANEOUS PARAMETERS (mg/kg)			
Total Petroleum Hydrocarbons (TPH)	NA	100 [10]	NA
Dioxin (TCDD)	C	0.000038	NA

1 Carcinogen/Noncarcinogen. Values for noncarcinogens were divided by a factor of 10.
2 USEPA Region III, October 1, 1998.
3 Background Concentrations for Subsurface Soil at NSWC-White Oak. (TtNUS, 1998).
4 Based on withdrawn RfD.
5 Value for naphthalene used.
6 Value for hexavalent chromium used.
7 Office of Solid Waste and Emergency Response (OSWER) Standard for Lead, industrial.
8 Value for methyl mercury used.
9 Value for 2,4-dinitrotoluene used.
10 This standard based on Maryland UST Closure Regulations (COMAR 26.10)
-- No value available.
NA Not applicable.

Samples from Site 33 will undergo analysis for TCL VOCs, TCL SVOCs, TAL metals plus cyanide, and TCL pesticides/PCBs. Specific analytical methods to be used during the confirmation sampling activities are provided in Table 2-2.

2.2 INITIAL SAMPLING AND ANALYSIS

The anticipated areas for the initial excavation at Site 4 are shown on Figure 1-3. The anticipated excavation area for Site 33 includes the tank and the soil immediately surrounding it. The actual excavation areas will be determined by the RAC, based on field conditions.

TtNUS will perform initial confirmatory sampling and analysis after preliminary field screening analysis by the RAC confirms that excavation of soil with gross contamination is complete. This preliminary screening will be by visual and/or other means. The following sections describe the sampling frequency for each site.

2.2.1 Site 4 – Chemical Burial Area

Non-bias confirmatory samples will be collected on a grid, using a random number generator to determine the sample location within the grid. The specific random number generator used will be determined prior to field work, based on what is available to the field personnel (i.e., electronic, pair of dice, charts).

A grid spacing of 30 feet by 30 feet (900 square feet) will be used across the bottom of the excavations. The estimated extent of waste material from Figure 1-3 is shown on Figure 2-1. The grid layout has been placed over the estimated extent of waste. Due to the irregular shape of the excavations, each grid section measures 900 square feet or less.

Each grid will be subdivided into 6-foot by 6-foot squares. A 900-square-foot grid would have 25 subdivisions. Grids measuring less than 900 square feet will have fewer than 25 subdivisions. Subdivision numbering will begin with 1 at the northwest corner and proceed across rows until every subdivision has a number. Figure 2-2 provides an enlargement of a portion of the grid shown on Figure 2-1 to illustrate how grids of varying sizes would be further subdivided and numbered for sample purposes. A random number generator will be used to select a number between 1 and 25 (or for the other grids shown on Figure 2-2, 1 and 9, 1 and 20). The sample will be collected from the corresponding 6-foot by 6-foot subdivision.

For the side walls, a grid measuring 50 feet long by the depth of the excavation will be used. Since the excavation depth is expected to be approximately 10 feet, these dimensions will result in an approximate 500-square-foot grid spacing. Each grid will be subdivided into 5-foot by 5-foot squares. A

TABLE 2-2

SUMMARY OF ANALYTICAL PROCEDURES
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Parameter	Preparation Method	Analytical Method
SOLID SAMPLES		
TCL Volatile Organics	OLM03.2	OLM03.2
TCL Semivolatile Organics	OLM03.2	OLM03.2
TAL Metals	ILM04.0	ILM04.0
TCL Pesticides/PCBs	OLM03.1	OLM03.1
Explosives	SW-8330	SW-8330
TCL Dioxins/Furans	EPA 8282A	-
Total Petroleum Hydrocarbons (TPH)	-	SW 846 418.1
AQUEOUS SAMPLES (TRIP BLANKS)		
TCL Volatile Organics	OLM03.2	OLM03.2

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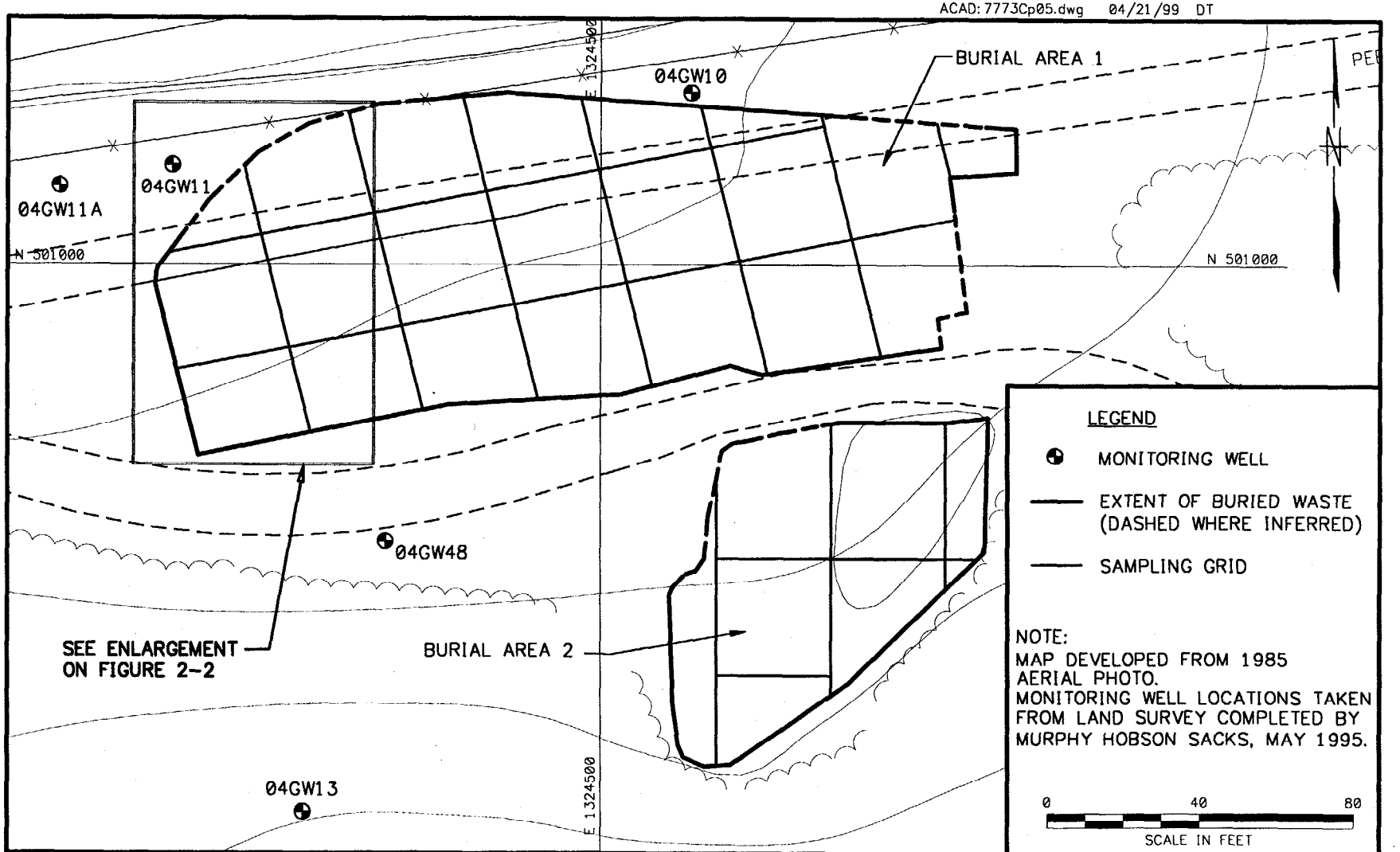
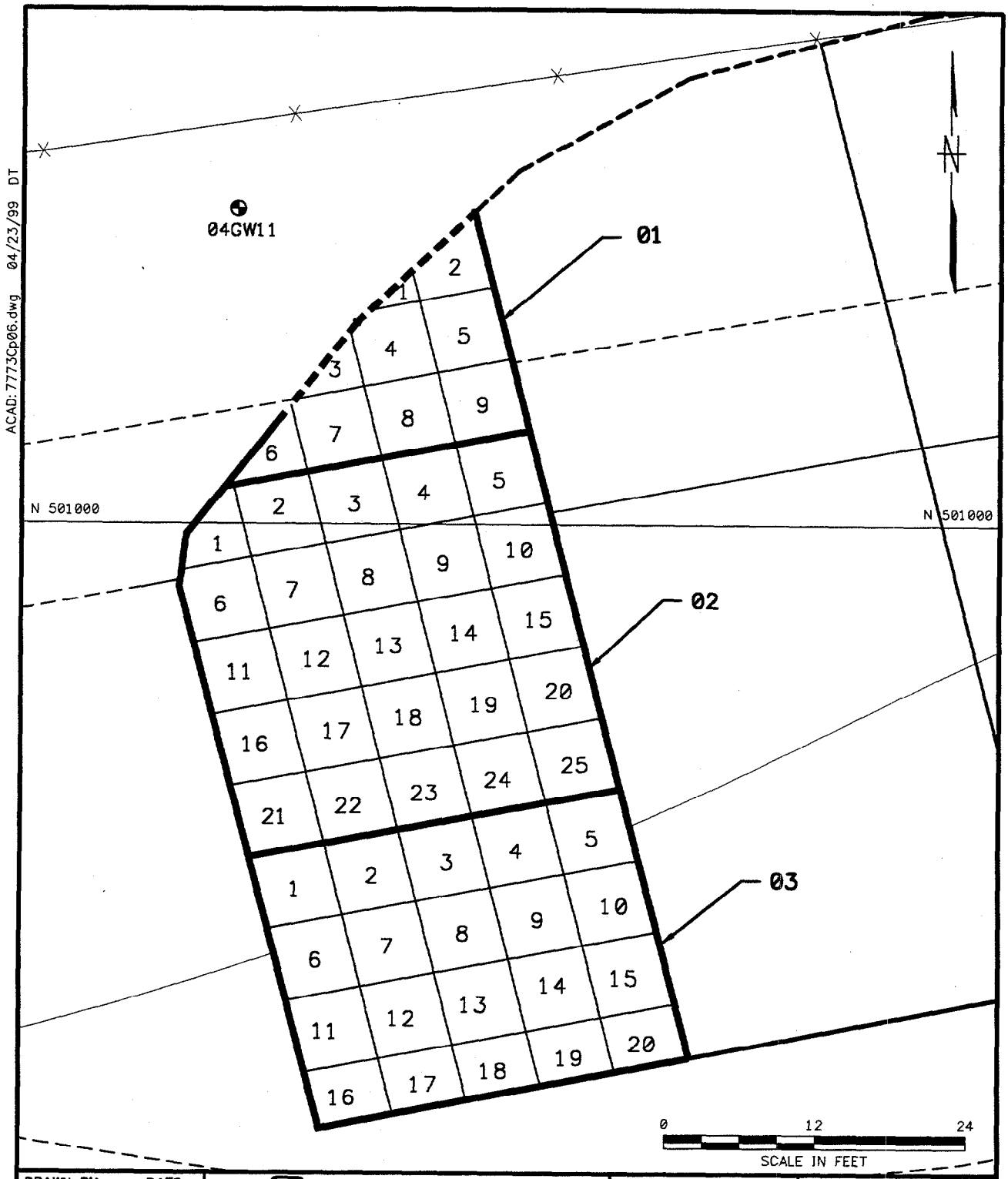


DRAWN BY DLT DATE 4/21/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY GMS DATE 4/22/99	SITE 4 CONFIRMATORY SAMPLING GRID LAYOUT SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY Darren Shipley DATE 4/22/99	
COST/SCHED-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 2-1	REV. 0

FORM CADD NO. T+NUS_AH.DWG - REV 0 - 1/22/98



DRAWN BY DLT DATE 4/22/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY DATE 4/28/99	SITE 4 GRID SUBDIVISION NUMBERING SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY DATE 4/28/99	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 2-2	REV. 0

FORM CADD NO. TtNUS_AV.DWG - REV 0 - 1/22/98

500-square-foot grid would have 20 subdivisions. Irregularity in excavation depth will result in varying grid dimensions. The grid length used will always be 50 feet but shallower or deeper excavation depths will result in grid spacings that are smaller or larger than 500 square feet, respectively. Regardless of the grid size, the subdivisions will always measure 5 feet by 5 feet. Consequently a grid on the side wall could have more or fewer than 20 subdivisions.

For a 500-square-foot grid, the subdivisions will be numbered from 1 to 20, starting in the upper left-hand corner on the side walls and proceeding across rows until every subdivision has a number. A random number generator will be used to select a number between 1 and 20 for each grid section. The sample will be collected from the corresponding 5-foot by 5-foot subdivision.

Based on the extent of waste, approximately 50 samples will be collected using the grid spacing proposed here.

2.2.2 Site 33 – Building 25, Plating Shop Equalization Tank

Three samples will be collected for the initial confirmatory sampling effort. One sample each will be collected from beneath the tank inlet and outlet pipes, and from beneath the centerline of the tank.

2.3 ADDITIONAL SAMPLING AND ANALYSIS

The following procedures will be used to collect additional confirmatory samples at each site.

2.3.1 Site 4 - The Chemical Burial Area

Analytical results from the initial round of sampling will be used to determine if there is a need for additional excavation and subsequent sampling and analysis. If the concentration of a contaminant exceeds its PRG, then the Navy will direct the RAC to perform additional excavation in that area. Regardless of where within the grid the sample was collected, the sample results will apply to the entire grid area (up to 900 square feet).

The additional excavation will be performed across the entire grid section. The excavation depth shall be 1 foot. Following excavation, TtNUS will collect an additional soil sample, following the same procedure presented in Section 2.2.1. These samples will only be analyzed for those specific parameters found in excess of PRGs from the previous sampling event, with the exception noted in the introduction to Section 2.0. Excavation, sampling, and analysis will continue in this manner until no contaminants are detected at concentrations in excess of PRGs. Figure 2-3 provides a decision tree for the confirmatory sampling process.

2.3.2 Site 33 - Building 25, Plating Shop Equalization Tank

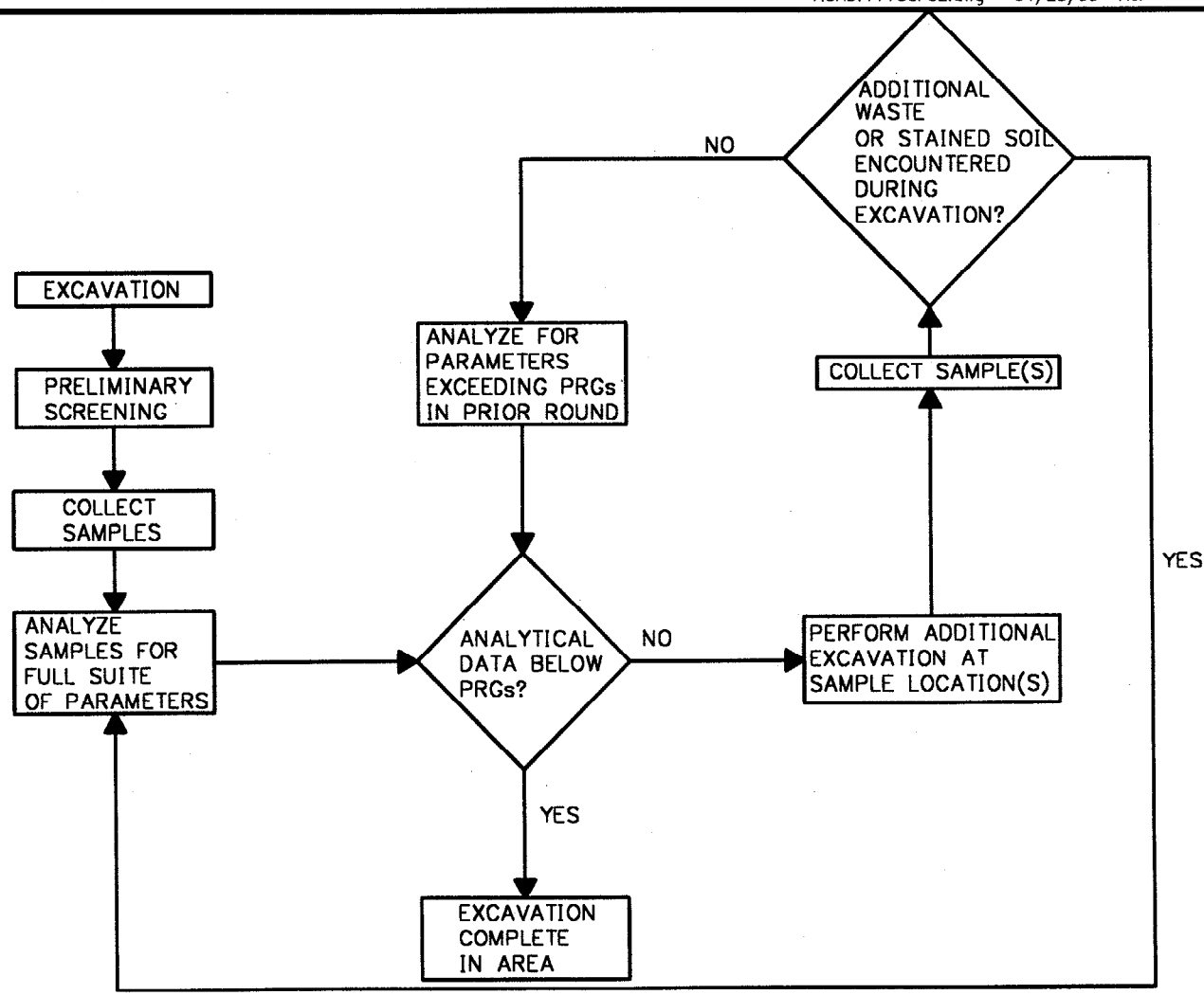
Analytical results from the initial round of sampling will be used to determine if there is a need for additional excavation and subsequent sampling and analysis. If the concentration of a contaminant exceeds its PRG, the Navy will direct the RAC to perform additional excavation in the vicinity of the sample location. Specific dimensions and depths of excavation will be determined in the field, based on the sample location, dimensions of the existing excavation, and proximity to surface features (i.e., buildings, roads).

Following excavation, TtNUS will collect an additional soil sample from the center of the newly excavated area. The sample will be analyzed for those specific parameters found in excess of PRGs from the previous sampling event. Excavation, sampling, and analysis will continue in this manner until no contaminants are detected at concentrations in excess of PRGs. Figure 2-3 provides a decision tree for the confirmatory sampling process.

2.4 HEALTH AND SAFETY

All field activities will be performed in accordance with the Master Health and Safety Plan (HASP), previously submitted and approved for White Oak (B&R Environmental, 1998a). In addition, the site-specific HASP developed for the Site 4 and Site 33 EE/CA field work will also be used (B&R Environmental, 1998b). A separate HASP will not be developed to support this field work.

ACAD: 7773CF02.dwg 04/28/99 HJP



DRAWN BY KW DATE 3/2/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY DMS DATE 4/28/99	CONFIRMATORY SAMPLING DECISION TREE SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY Lorraine Sipley DATE 4/28/99	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO. FIGURE 2-3	REV. 0

FORM CADD NO. TtNUS_AH.DWG - REV 0 - 1/22/98

3.0 SAMPLING PROCEDURES

All soil samples will be collected, handled, labeled, and shipped to the laboratory in accordance with the following procedures. Applicable field forms and Standard Operating Procedures (SOPs) can be found in the Master Work Plans for White Oak (B&R Environmental, 1998a).

3.1 CONFIRMATORY SOIL SAMPLING

At each sampling location, a volume of soil sufficient for the required analyses shall be obtained using a disposable polyethylene trowel. The sample will be placed in a jar and labeled. All samples will be submitted to a fixed-base laboratory for 7-day turn around analysis, except for TCL dioxins/furans, which will undergo 10-day turnaround analysis. This turnaround time for TCL dioxins/furans is the shortest technically feasible turnaround time. Seventy-two-hour rapid turnaround analysis may be required towards the end of the sampling activities. Turn-around times will be coordinated with the RAC, as needed. Standard method detection levels, identified in the Master Quality Assurance Project Plan (QAPP) for White Oak (B&R Environmental, 1998a), will be used during sample analysis.

Samples will be collected from the ground surface to a depth not exceeding 6 inches. Samples will be collected in accordance with procedures identified in Section 3.1.3 of the Master Field Sampling Plan (FSP) for White Oak (B&R Environmental, 1998a).

Labeled pin flags will mark the soil sample locations. These flags will not be disturbed until the analytical results confirm that an area is clean.

Due to the potential danger of entering the excavation to obtain soil samples, samples may be collected remotely by obtaining soil with the excavator bucket and then collecting the sample from the soil within the bucket. If adequate sloping of the sidewalls or other protection is provided (e.g., trench box or bracing), personnel will be permitted to enter the excavation to collect samples.

3.2 WASTE HANDLING

All disposable sampling equipment, disposable clothing, and other investigation-derived waste (IDW) will be collected by TtNUS and placed in plastic garbage bags. All bagged IDW will be disposed by the RAC.

3.3 RECORD KEEPING

All pertinent field data will be recorded on a Soil Sample Log Sheet and in the field logbook. Proper completion of sample log sheets is discussed in Section 2.0 of the Master FSP (B&R Environmental,

1998a). A sketch illustrating the approximate grid location will be included on the log sheet, as well as an indication of the total number of subdivisions in the grid and the subdivision that was sampled.

Figure 2-1 will also be used to keep track of the sample locations and their sequential numbering.

3.4 SAMPLE HANDLING

Sample handling includes procedures for sample identification, packaging, and shipping. Selecting sample containers and preservatives, and determining allowable holding times are also included. Sample handling and custody will be conducted in accordance with Sections 3.2 and 3.3 of the Master FSP for White Oak (B&R Environmental, 1998a).

Each sample collected will be assigned a unique tracking number. This 12-digit alphanumeric code will identify the sample location as follows.

NNNN	Site (0004 or 0033)
AA	Media (subsurface soil – SB)
NN	Sample Number (sequential ordering of samples collected, beginning with 01)
NN	Grid Subdivision (Site 4 only, 2-digit numeric indicator of the grid subdivision that was sampled)
NN	Sample Depth (2-digit numeric indicator of sample depth from grade)

For example, the first sample collected at Site 4 would have sample identification number 0004-SB-01. The number 15 would indicate that the sample was collected from the 15th subdivision. Assuming the sample is collected from the bottom of the excavation, which is 10 feet below grade, the depth indicator would be 10. The sample depth indicator may not be included for all samples. Therefore, the complete sample number would be 0004-SB-01-1510.

3.5 QUALITY CONTROL SAMPLES

Field Quality Control (QC) samples will be collected or generated during the sampling activities to assess the quality of the data resulting from field sampling and analytical programs. Trip blanks will be the only field QC samples collected during this sampling event. One trip blank will accompany each sample shipment potentially containing VOCs.

Disposable sampling equipment will be used for the sampling effort; therefore, rinsate and field blanks are not necessary. Since this is a confirmatory sampling event, field duplicate samples will not be collected.

Additional information regarding the field QC samples is provided in the Master QAPP for White Oak (B&R Environmental, 1998a).

REFERENCES

B&R Environmental (Brown & Root Environmental), 1998a. Master Work Plans for the Former Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. June.

B&R Environmental (Brown & Root Environmental), 1998b. Engineering Evaluation/Cost Analysis Work Plans for Site 4 and Site 33, Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. August.

TtNUS (Tetra Tech NUS, Inc.), 1998. Background Investigation Report for the Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. December.

TtNUS (Tetra Tech NUS, Inc.), 1999. Engineering Evaluation/Cost Analysis for Site 4 and Site 33 at the former Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. January.

U.S. EPA (United States Environmental Protection Agency), Region III, 1998. Risk-Based Concentration Table. Philadelphia, Pennsylvania. October.

APPENDIX B

SITE 4

B.1 CONFIRMATORY SAMPLING DATA SET

B.2 SOIL SAMPLE LOG SHEETS

B.3 TPH SOIL SCREENING LEVEL CALCULATION

B.4 B1-22 AND B2-16 DATA

B.5 SOIL GAS SAMPLE DATA

B.6 ANALYTICAL DATA - SAMPLE 0004-BLACK-99

B.1 CONFIRMATORY SAMPLING DATA SET

Data Qualifiers

The following analytical data include data qualifiers that were added by the laboratory following sample analysis. The qualifiers can be interpreted as follows:

- **U** – indicates that the chemical was not detected at the numerical detection limit (quantitation limit) noted.
- **UJ** – indicates that the chemical was not detected. However, the detection limit (quantitation limit) is considered estimated based on noncompliances encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.
- **J** – indicates that the chemical was detected. However, the associated numerical result is not a precise representation of the amount that is actually present in the sample. The laboratory result is considered to be an estimate.
- **B** – indicates that the chemical was detected but that the result is considered to be a false positive as a consequence of laboratory blank contamination.
- **JB** – indicates that the chemical was detected but the result is considered a false positive as a consequence of laboratory blank contamination. In addition, the detection limit is considered estimated based on noncompliances encountered during laboratory analysis.

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-01-1815 06/14/1999 UNVALIDATED	0004-SB-02-2012 06/14/1999 UNVALIDATED	0004-SB-03-1107 06/14/1999 UNVALIDATED	0004-SB-04-1015 06/16/1999 UNVALIDATED	0004-SB-05-0515 06/16/1999 UNVALIDATED	0004-SB-06-1712 06/16/1999 UNVALIDATED
VOLATILES (µg/kg)						
1,1,1-TRICHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
1,1,2,2-TETRACHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
1,1,2-TRICHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
1,1-DICHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
1,1-DICHLOROETHENE	11 U	10 U	11 U	11 U	11 U	12 U
1,2-DICHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
1,2-DICHLOROETHENE (TOTAL)	11 U	10 U	11 U	11 U	11 U	12 U
1,2-DICHLOROPROPANE	11 U	10 U	11 U	11 U	11 U	12 U
2-BUTANONE	11 U	10 U	11 U	11 U	11 U	12 U
2-HEXANONE	11 U	10 U	11 U	11 U	11 U	12 U
4-METHYL-2-PENTANONE	11 U	10 U	11 U	11 U	11 U	12 U
ACETONE	11 U	10 U	11 U	11 U	11 U	12 U
BENZENE	11 U	10 U	11 U	11 U	11 U	12 U
BROMODICHLOROMETHANE	11 U	10 U	11 U	11 U	11 U	12 U
BROMOFORM	11 U	10 U	11 U	11 U	11 U	12 U
BROMOMETHANE	1	10 U	1	11 U	11 U	12 U
CARBON DISULFIDE	11 U	10 U	11 U	11 U	11 U	12 U
CARBON TETRACHLORIDE	11 U	10 U	11 U	11 U	11 U	12 U
CHLOROBENZENE	11 U	10 U	11 U	11 U	11 U	12 U
CHLOROETHANE	11 U	10 U	11 U	11 U	11 U	12 U
CHLOROFORM	11 U	10 U	11 U	11 U	11 U	12 U
CHLOROMETHANE	11 U	10 U	11 U	11 U	11 U	12 U
CIS-1,3-DICHLOROPROPENE	11 U	10 U	11 U	11 U	11 U	12 U
DIBROMOCHLOROMETHANE	11 U	10 U	11 U	11 U	11 U	12 U
ETHYLBENZENE	11 U	10 U	11 U	11 U	11 U	12 U
METHYLENE CHLORIDE	11 U	10 U	2 J	11 U	11 U	12 U
STYRENE	11 U	10 U	11 U	11 U	11 U	12 U
TETRACHLOROETHENE	11 U	10 U	11 U	11 U	11 U	12 U
TOLUENE	11 U	10 U	11 U	11 U	11 U	12 U
TRANS-1,3-DICHLOROPROPENE	11 U	10 U	11 U	11 U	11 U	12 U
TRICHLOROETHENE	11 U	10 U	11 U	11 U	11 U	12 U
VINYL CHLORIDE	11 U	10 U	11 U	11 U	11 U	12 U
XYLENES, TOTAL	11 U	10 U	11 U	11 U	11 U	12 U
SEMIVOLATILES (µg/kg)						
1,2,4-TRICHLOROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
1,2-DICHLOROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
1,3-DICHLOROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
1,4-DICHLOROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	340 U	360 U	370 U	380 U	380 U
2,4,5-TRICHLOROPHENOL	860 U	830 U	860 U	900 U	910 U	920 U
2,4,6-TRICHLOROPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
2,4-DICHLOROPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
2,4-DIMETHYLPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
2,4-DINITROPHENOL	860 U	830 U	860 U	900 U	910 U	920 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-01-1815 06/14/1999 UNVALIDATED	0004-SB-02-2012 06/14/1999 UNVALIDATED	0004-SB-03-1107 06/14/1999 UNVALIDATED	0004-SB-04-1015 06/16/1999 UNVALIDATED	0004-SB-05-0515 06/16/1999 UNVALIDATED	0004-SB-06-1712 06/16/1999 UNVALIDATED
2,4-DINITROTOLUENE	360 U	340 U	360 U	370 U	380 U	380 U
2,6-DINITROTOLUENE	360 U	340 U	360 U	370 U	380 U	380 U
2-CHLORONAPHTHALENE	360 U	340 U	360 U	370 U	380 U	380 U
2-CHLOROPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
2-METHYLNAPHTHALENE	360 U	340 U	360 U	370 U	380 U	380 U
2-METHYLPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
2-NITROANILINE	860 U	830 U	860 U	900 U	910 U	920 U
2-NITROPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
3,3'-DICHLOROBENZIDINE	360 U	340 U	360 U	370 U	380 U	380 U
3-NITROANILINE	860 U	830 U	860 U	900 U	910 U	920 U
4,6-DINITRO-2-METHYLPHENOL	860 U	830 U	860 U	900 U	910 U	920 U
4-BROMOPHENYL PHENYL ETHER	360 U	340 U	360 U	370 U	380 U	380 U
4-CHLORO-3-METHYLPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
4-CHLOROANILINE	360 U	340 U	360 U	370 U	380 U	380 U
4-CHLOROPHENYL PHENYL ETHER	360 U	340 U	360 U	370 U	380 U	380 U
4-METHYLPHENOL	360 U	340 U	360 U	370 U	380 U	380 U
4-NITROANILINE	860 U	830 U	860 U	900 U	910 U	920 U
4-NITROPHENOL	860 U	830 U	860 U	900 U	910 U	920 U
ACENAPHTHENE	360 U	340 U	360 U	370 U	380 U	380 U
ACENAPHTHYLENE	360 U	340 U	360 U	370 U	380 U	380 U
ANTHRACENE	360 U	340 U	360 U	370 U	380 U	380 U
BENZO(A)ANTHRACENE	360 U	340 U	360 U	370 U	380 U	380 U
BENZO(A)PYRENE	360 U	340 U	360 U	370 U	380 U	380 U
BENZO(B)FLUORANTHENE	360 U	340 U	360 U	370 U	380 U	380 U
BENZO(G,H,I)PERYLENE	360 U	340 U	360 U	370 U	380 U	380 U
BENZO(K)FLUORANTHENE	360 U	340 U	360 U	370 U	380 U	380 U
BIS(2-CHLOROETHOXY)METHANE	360 U	340 U	360 U	370 U	380 U	380 U
BIS(2-CHLOROETHYL)ETHER	360 U	340 U	360 U	370 U	380 U	380 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
BUTYLBENZYL PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
CARBAZOLE	360 U	340 U	360 U	370 U	380 U	380 U
CHRYSENE	360 U	340 U	360 U	370 U	380 U	380 U
DI-N-BUTYL PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
DI-N-OCTYL PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
DIBENZO(A,H)ANTHRACENE	360 U	340 U	360 U	370 U	380 U	380 U
DIBENZOFURAN	360 U	340 U	360 U	370 U	380 U	380 U
DIETHYL PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
DIMETHYL PHTHALATE	360 U	340 U	360 U	370 U	380 U	380 U
FLUORANTHENE	360 U	340 U	45 J	370 U	380 U	380 U
FLUORENE	360 U	340 U	360 U	370 U	380 U	380 U
HEXACHLOROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
HEXACHLOROBUTADIENE	360 U	340 U	360 U	370 U	380 U	380 U
HEXACHLOROCYCLOPENTADIENE	360 U	340 U	360 U	370 U	380 U	380 U
HEXACHLOROETHANE	360 U	340 U	360 U	370 U	380 U	380 U
INDENO(1,2,3-CD)PYRENE	360 U	340 U	360 U	370 U	380 U	380 U

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-01-1815 06/14/1999 UNVALIDATED	0004-SB-02-2012 06/14/1999 UNVALIDATED	0004-SB-03-1107 06/14/1999 UNVALIDATED	0004-SB-04-1015 06/16/1999 UNVALIDATED	0004-SB-05-0515 06/16/1999 UNVALIDATED	0004-SB-06-1712 06/16/1999 UNVALIDATED
ISOPHORONE	360 U	340 U	360 U	370 U	380 U	380 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	340 U	360 U	370 U	380 U	380 U
N-NITROSODIPHENYLAMINE	360 U	340 U	360 U	370 U	380 U	380 U
NAPHTHALENE	360 U	340 U	360 U	370 U	380 U	380 U
NITROBENZENE	360 U	340 U	360 U	370 U	380 U	380 U
PENTACHLOROPHENOL	860 U	830 U	860 U	900 U	910 U	920 U
PHENANTHRENE	360 U	340 U	66 J	370 U	380 U	380 U
PHENOL	360 U	340 U	360 U	370 U	380 U	380 U
PYRENE	360 U	340 U	85 J	370 U	380 U	380 U
PESTICIDES/PCBs (µg/kg)						
4,4'-DDD	3.6 U	3.4 U	3.6 U	3.7 U	3.8 U	3.8 U
4,4'-DDE	3.6 U	3.4 U	2 J	3.7 U	3.8 U	3.8 U
4,4'-DDT	3.6 U	3.4 U	3.6 U	3.7 U	3.8 U	3.8 U
ALDRIN	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
ALPHA-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
ALPHA-CHLORDANE	1.8 U	1.5 J	1.3 J	1.9 U	1.4 J	1.1 J
AROCLOR-1016	36 U	34 U	36 U	37 U	38 U	38 U
AROCLOR-1221	73 U	70 U	72 U	76 U	76 U	77 U
AROCLOR-1232	36 U	34 U	36 U	37 U	38 U	38 U
AROCLOR-1242	36 U	34 U	36 U	37 U	38 U	38 U
AROCLOR-1248	36 U	34 U	36 U	37 U	38 U	38 U
AROCLOR-1254	36 U	34 U	36 U	37 U	38 U	38 U
AROCLOR-1260	30 J	330	92	37 U	38 U	38 U
BETA-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
DELTA-BHC	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
DIELDRIN	3.6 U	2.7 J	3.6 U	3.7 U	3.8 U	3.8 U
ENDOSULFAN I	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
ENDOSULFAN II	3.6 U	10	2.9 J	3.7 U	3.8 U	3.8 U
ENDOSULFAN SULFATE	3.6 U	3.4 U	3.6 U	3.7 U	3.8 U	3.8 U
ENDRIN	3.6 U	4.4	3.6	3.7 U	3.8 U	3.8 U
ENDRIN ALDEHYDE	3.6 U	15	2.9 J	3.7 U	3.8 U	3.8 U
ENDRIN KETONE	3.6 U	3.4 U	3.6 U	3.7 U	3.8 U	3.8 U
GAMMA-BHC (LINDANE)	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
GAMMA-CHLORDANE	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
HEPTACHLOR	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
HEPTACHLOR EPOXIDE	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	2 U
METHOXYCHLOR	18 U	18 U	18 U	19 U	19 U	20 U
TOXAPHENE	180 U	180 U	180 U	190 U	190 U	200 U
INORGANICS (mg/kg)						
ALUMINUM	4870	2840	11300	1280	8650	10400
ANTIMONY	0.45 U	0.60	0.47	1.1	1.5	0.87
ARSENIC	1.9	0.97	3.4	0.50 U	3.0	4.0
BARIUM	41.1	11.1	27.2	16.9	90.6	35.4
BERYLLIUM	0.06 U	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U
CADMIUM	0.22	0.04 U	0.04 U	0.05 U	0.77	0.05 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-01-1815	0004-SB-02-2012	0004-SB-03-1107	0004-SB-04-1015	0004-SB-05-0515	0004-SB-06-1712
SAMPLE DATE:	06/14/1999	06/14/1999	06/14/1999	06/16/1999	06/16/1999	06/16/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
CALCIUM	574	160	385	61.7	463	190
CHROMIUM	8.4	3.9	14.9	1.8	13.2	15.1
COBALT	1.9	0.76	2.1	0.16 U	4.7	2.8
COPPER	7.1	8.3	16.7	4.5	197	8.8
CYANIDE	0.16	0.12	0.17	0.07	2.3 U	0.33
IRON	6560	4030	13400	2310	17000	14900
LEAD	14.8	5.1	12.1	3.6	75.1	7.7
MAGNESIUM	306	182	466	49.1	353	603
MANGANESE	71.8	27.6	52.8	7.2	148	49.9
MERCURY	0.07	0.05 U	0.09	0.06 U	0.18	0.06 U
NICKEL	4.4	1.7	4.5	0.45	13.3	4.8
POTASSIUM	239	96.5	304	74.0	234	291
SELENIUM	0.52 U	0.50 U	2.3	0.54 U	1.0	1.1
SILVER	0.19 U	0.19 U	0.19 U	0.20 U	9.0	0.21 U
SODIUM	39.7	22.2 U	26.4	24.1 U	65.0	51.8
THALLIUM	1.3 U	1.2 U	1.3 U	1.3 U	1.3 U	1.4 U
VANADIUM	13.7	9.8	31.5	3.6	19.7	29.8
ZINC	73.8	10.5	18.0	24.2	495	24.6
EXPLOSIVES (mg/kg)						
1,3,5-TRINITROBENZENE	0.25 U	0.061 J	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.02 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.081 J
2,4-DINITROTOLUENE	0.096 J	0.17 J	0.25 U	0.25 U	0.041 J	0.061 J
2,6-DINITROTOLUENE	0.25 U	0.09 J	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.036 J	0.25 U	0.059 J	0.25 U	0.25 U
2-NITROTOLUENE	0.12 J	0.13 J	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.15 J	0.25 U	0.14 J	0.093 J	0.18 J
4-AMINO-2,6-DINITROTOLUENE	0.11 J	0.11 J	0.25 U	0.25 U	0.14 J	0.25 U
4-NITROTOLUENE	0.11 J	0.25 U	0.25 U	0.21 J	0.25 U	0.25 U
HMX	0.5 U	0.084 J	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.025 J	0.026 J
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS	19	8.7 B	19	12	65	17
DIOXINS (µg/kg)						
1,2,3,4,6,7,8,9-OCDD	4.6 J	7	3.3 J	0.22 J	12.9	6.1
1,2,3,4,6,7,8,9-OCDF	0.09 U	0.07 U	0.08 U	0.1 U	0.1 U	0.08 U
1,2,3,4,6,7,8-HPCDD	0.06 U	0.05 U	0.05 U	0.06 U	0.06 U	0.05 U
1,2,3,4,6,7,8-HPCDF	0.04 U	0.03 U	0.04 U	0.05 U	0.04 U	0.04 U
1,2,3,4,7,8,9-HPCDF	0.04 U	0.03 U	0.04 U	0.05 U	0.04 U	0.04 U
1,2,3,4,7,8-HXCDD	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U
1,2,3,4,7,8-HXCDF	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.03 U
1,2,3,6,7,8-HXCDD	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U
1,2,3,6,7,8-HXCDF	0.03 U	0.02 U	0.03 U	0.04 U	0.03 U	0.03 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-01-1815 06/14/1999 UNVALIDATED	0004-SB-02-2012 06/14/1999 UNVALIDATED	0004-SB-03-1107 06/14/1999 UNVALIDATED	0004-SB-04-1015 06/16/1999 UNVALIDATED	0004-SB-05-0515 06/16/1999 UNVALIDATED	0004-SB-06-1712 06/16/1999 UNVALIDATED
1,2,3,7,8,9-HXCDD	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U
1,2,3,7,8,9-HXCDF	0.03 U	0.02 U	0.03 U	0.04 U	0.03 U	0.03 U
1,2,3,7,8-PECDD	0.06 U	0.06 U	0.06 U	0.08 U	0.07 U	0.06 U
1,2,3,7,8-PECDF	0.04 U	0.04 U	0.04 U	0.06 U	0.05 U	0.04 U
2,3,4,6,7,8-HXCDF	0.03 U	0.02 U	0.03 U	0.04 U	0.03 U	0.03 U
2,3,4,7,8-PECDF	0.04 U	0.04 U	0.04 U	0.06 U	0.05 U	0.04 U
2,3,7,8-TCDD	0.04 U	0.04 U	0.03 U	0.05 U	0.04 U	0.04 U
2,3,7,8-TCDF	0.03 U	0.03 U	0.03 U	0.04 U	0.04 U	0.03 U
TOTAL HPCDD	0.06 U	0.05 U	0.05 U	0.06 U	0.06 U	0.05 U
TOTAL HPCDF	0.04 U	0.03 U	0.04 U	0.05 U	0.04 U	0.04 U
TOTAL HXCDD	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U
TOTAL HXCDF	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.03 U
TOTAL PECDD	0.06 U	0.06 U	0.06 U	0.08 U	0.07 U	0.06 U
TOTAL PECDF	0.2	0.04 U	0.04 U	0.06 U	0.05 U	0.04 U
TOTAL TCDD	2.3	2.3	2.4	2.2	2.7	2.4
TOTAL TCDF	0.1	0.09	0.03 U	0.04 U	0.04 U	0.03 U

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SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-07-0302 06/16/1999 UNVALIDATED	0004-SB-08-1207 06/16/1999 UNVALIDATED	0004-SB-09-2420 06/30/1999 UNVALIDATED	0004-SB-10-0116 06/30/1999 UNVALIDATED	0004-SB-11-1412 06/30/1999 UNVALIDATED	0004-SB-12-0202 06/30/1999 UNVALIDATED
VOLATILES (µg/kg)						
1,1,1-TRICHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
1,1,2-TRICHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
1,1-DICHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
1,1-DICHLOROETHENE	11 U	11 U	11 U	11 U	10 U	10 U
1,2-DICHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	11 U	11 U	11 U	11 U	10 U	10 U
1,2-DICHLOROPROPANE	11 U	11 U	11 U	11 U	10 U	10 U
2-BUTANONE	11 U	11 U	11 U	11 U	10 U	10 U
2-HEXANONE	11 U	11 U	11 U	11 U	10 U	10 U
4-METHYL-2-PENTANONE	11 U	11 U	11 U	11 U	10 U	10 U
ACETONE	11 U	11 U	11 U	11 U	10 U	10 U
BENZENE	11 U	11 U	11 U	11 U	10 U	10 U
BROMODICHLOROMETHANE	11 U	11 U	11 U	11 U	10 U	10 U
BROMOFORM	11 U	11 U	11 U	11 U	10 U	10 U
BROMOMETHANE	11 U	11 U	2	11 U	10 U	10 U
CARBON DISULFIDE	11 U	11 U	11 U	11 U	10 U	10 U
CARBON TETRACHLORIDE	11 U	11 U	11 U	11 U	10 U	10 U
CHLOROBENZENE	11 U	11 U	11 U	11 U	10 U	10 U
CHLOROETHANE	11 U	11 U	11 U	11 U	10 U	10 U
CHLOROFORM	11 U	11 U	11 U	11 U	10 U	10 U
CHLOROMETHANE	11 U	11 U	11 U	11 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	11 U	11 U	11 U	11 U	10 U	10 U
DIBROMOCHLOROMETHANE	11 U	11 U	11 U	11 U	10 U	10 U
ETHYLBENZENE	11 U	11 U	11 U	11 U	10 U	10 U
METHYLENE CHLORIDE	11 U	11 U	11 U	11 U	10 U	10 U
STYRENE	11 U	11 U	11 U	11 U	10 U	10 U
TETRACHLOROETHENE	11 U	1 J	11 U	11 U	10 U	10 U
TOLUENE	11 U	11 U	11 U	11 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	11 U	11 U	11 U	11 U	10 U	10 U
TRICHLOROETHENE	11 U	11 U	11 U	11 U	10 U	10 U
VINYL CHLORIDE	11 U	11 U	11 U	11 U	10 U	10 U
XYLENES, TOTAL	11 U	11 U	11 U	11 U	10 U	10 U
SEMIVOLATILES (µg/kg)						
1,2,4-TRICHLOROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
1,2-DICHLOROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
1,3-DICHLOROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
1,4-DICHLOROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	380 U	370 U	360 U	350 U	340 U
2,4,5-TRICHLOROPHENOL	900 U	910 U	900 U	880 U	840 U	840 U
2,4,6-TRICHLOROPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
2,4-DICHLOROPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
2,4-DIMETHYLPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
2,4-DINITROPHENOL	900 U	910 U	900 U	880 U	840 U	840 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-07-0302	0004-SB-08-1207	0004-SB-09-2420	0004-SB-10-0116	0004-SB-11-1412	0004-SB-12-0202
SAMPLE DATE:	06/16/1999	06/16/1999	06/30/1999	06/30/1999	06/30/1999	06/30/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
2,4-DINITROTOLUENE	370 U	380 U	370 U	360 U	350 U	340 U
2,6-DINITROTOLUENE	370 U	380 U	370 U	360 U	350 U	340 U
2-CHLORONAPHTHALENE	370 U	380 U	370 U	360 U	350 U	340 U
2-CHLOROPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
2-METHYLNAPHTHALENE	370 U	380 U	370 U	360 U	350 U	340 U
2-METHYLPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
2-NITROANILINE	900 U	910 U	900 U	880 U	840 U	840 U
2-NITROPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
3,3'-DICHLOROBENZIDINE	370 U	380 U	370 U	360 U	350 U	340 U
3-NITROANILINE	900 U	910 U	900 U	880 U	840 U	840 U
4,6-DINITRO-2-METHYLPHENOL	900 U	910 U	900 U	880 U	840 U	840 U
4-BROMOPHENYL PHENYL ETHER	370 U	380 U	370 U	360 U	350 U	340 U
4-CHLORO-3-METHYLPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
4-CHLOROANILINE	370 U	380 U	370 U	360 U	350 U	340 U
4-CHLOROPHENYL PHENYL ETHER	370 U	380 U	370 U	360 U	350 U	340 U
4-METHYLPHENOL	370 U	380 U	370 U	360 U	350 U	340 U
4-NITROANILINE	900 U	910 U	900 U	880 U	840 U	840 U
4-NITROPHENOL	900 U	910 U	900 U	880 U	840 U	840 U
ACENAPHTHENE	370 U	380 U	370 U	360 U	350 U	62 J
ACENAPHTHYLENE	370 U	57 J	370 U	360 U	40 J	340 U
ANTHRACENE	370 U	380 U	370 U	360 U	350 U	140 J
BENZO(A)ANTHRACENE	370 U	270 J	370 U	360 U	210 J	440
BENZO(A)PYRENE	370 U	390	370 U	360 U	370	370
BENZO(B)FLUORANTHENE	370 U	450	370 U	360 U	340 J	560
BENZO(G,H,I)PERYLENE	370 U	290 J	370 U	360 U	270 J	37 J
BENZO(K)FLUORANTHENE	370 U	66 J	370 U	360 U	110 J	180 J
BIS(2-CHLOROETHOXY)METHANE	370 U	380 U	370 U	360 U	350 U	340 U
BIS(2-CHLOROETHYL)ETHER	370 U	380 U	370 U	360 U	350 U	340 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	380 U	43	48	47	140
BUTYLBENZYL PHTHALATE	370 U	380 U	370 U	360 U	350 U	340 U
CARBAZOLE	370 U	380 U	370 U	360 U	350 U	50 J
CHRYSENE	370 U	300 J	370 U	360 U	250 J	380
DI-N-BUTYL PHTHALATE	4800	380 U	69	42	39	52
DI-N-OCTYL PHTHALATE	370 U	380 U	370 U	360 U	350 U	340 U
DIBENZO(A,H)ANTHRACENE	370 U	45 J	370 U	360 U	62 J	80 J
DIBENZOFURAN	370 U	380 U	370 U	360 U	350 U	48 J
DIETHYL PHTHALATE	370 U	380 U	370 U	360 U	350 U	340 U
DIMETHYL PHTHALATE	370 U	380 U	370 U	360 U	350 U	340 U
FLUORANTHENE	370 U	550	370 U	360 U	98 J	900
FLUORENE	370 U	380 U	370 U	360 U	350 U	70 J
HEXACHLOROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
HEXACHLOROBUTADIENE	370 U	380 U	370 U	360 U	350 U	340 U
HEXACHLOROCYCLOPENTADIENE	370 U	380 U	370 U	360 U	350 U	340 U
HEXACHLOROETHANE	370 U	380 U	370 U	360 U	350 U	340 U
INDENO(1,2,3-CD)PYRENE	370 U	180 J	370 U	360 U	220 J	270 J

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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ISOPHORONE	370 U	380 U	370 U	360 U	350 U	340 U
N-NITROSO-DI-N-PROPYLAMINE	370 U	380 U	370 U	360 U	350 U	340 U
N-NITROSODIPHENYLAMINE	370 U	380 U	370 U	360 U	350 U	340 U
NAPHTHALENE	370 U	380 U	370 U	360 U	350 U	340 U
NITROBENZENE	370 U	380 U	370 U	360 U	350 U	340 U
PENTACHLOROPHENOL	900 U	910 U	900 U	880 U	840 U	840 U
PHENANTHRENE	370 U	260 J	370 U	360 U	41 J	710
PHENOL	370 U	380 U	370 U	360 U	350 U	340 U
PYRENE	370 U	430	370 U	360 U	190 J	720
PESTICIDES/PCBs (µg/kg)						
4,4'-DDD	3.7 U	3.8 U	6.2	3.6 U	4.6	2.3 J
4,4'-DDE	3.7 U	3.8 U	3.7 U	3.6 U	1.9 J	13
4,4'-DDT	3.7 U	3.2 J	3.7 U	3.6 U	2.1 J	24
ALDRIN	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
ALPHA-BHC	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
ALPHA-CHLORDANE	1.9 U	1.9	1.6 J	1.9 U	2.2	1.8 U
AROCLOR-1016	37 U	38 U	37 U	36 U	35 U	35 U
AROCLOR-1221	76 U	77 U	75 U	73 U	71 U	70 U
AROCLOR-1232	37 U	38 U	37 U	36 U	35 U	35 U
AROCLOR-1242	37 U	38 U	37 U	36 U	35 U	35 U
AROCLOR-1248	37 U	38 U	37 U	36 U	35 U	35 U
AROCLOR-1254	37 U	38 U	35 J	36 U	100	35 U
AROCLOR-1260	42	54	83	36 U	200	82
BETA-BHC	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
DELTA-BHC	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
DIELDRIN	3.7 U	3.8 U	3.7 U	3.6 U	1.8 J	3.5 U
ENDOSULFAN I	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
ENDOSULFAN II	3.7 U	3.8 U	3.7 U	3.6 U	3.5 U	3.5 U
ENDOSULFAN SULFATE	3.7 U	3.8 U	3.7 U	3.6 U	3.5 U	3.5 U
ENDRIN	3.7 U	3.8 U	3.7 U	3.6 U	4.1	3.5 U
ENDRIN ALDEHYDE	3.7 U	3.8 U	2.9 J	3.6 U	6.5	3.4 J
ENDRIN KETONE	3.7 U	3.8 U	3.7 U	3.6 U	3.5 U	3.5 U
GAMMA-BHC (LINDANE)	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
GAMMA-CHLORDANE	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
HEPTACHLOR	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
HEPTACHLOR EPOXIDE	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.8 U
METHOXYCHLOR	19 U	19 U	28	19 U	18 U	18 U
TOXAPHENE	190 U	190 U	190 U	190 U	180 U	180 U
INORGANICS (mg/kg)						
ALUMINUM	5610	12400	2490	2980	3460	6750
ANTIMONY	0.50	1.4	0.47 U	0.53	0.55	2.1
ARSENIC	2.3	3.0	0.80	1.4	1.5	3.4
BARIUM	26.9	65.4	7.0	14.2	15.2	187
BERYLLIUM	0.07 U	0.22	0.07 U	0.07 U	0.06 U	0.06 U
CADMIUM	0.15	0.05 U	0.04 U	0.04 U	0.04 U	1.3

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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CALCIUM	439	2100	112	477	847	2480
CHROMIUM	11.5	16.0	4.5	154	5.1	40.7
COBALT	1.8	4.7	0.67	0.40	1.4	7.6
COPPER	40.2	29.0	12.9	7.0	10.0	816
CYANIDE	0.12	0.13	0.10	2.2 U	0.10	0.16
IRON	9790	14800	2770	4210	4560	12000
LEAD	27.3	17.2	5.8	3.4	8.5	403
MAGNESIUM	411	760	88.0	68.8	174	462
MANGANESE	69.2	74.2	13.0	8.6	36.8	553
MERCURY	0.06	0.11	0.07	0.05 U	0.05 U	0.28
NICKEL	5.6	9.0	1.6	1.3	2.1	30.7
POTASSIUM	193	476	63.8	116	96.9	263
SELENIUM	0.63	1.8	0.54 U	0.53 U	0.51 U	0.56
SILVER	0.30	0.21 U	0.35	0.20 U	0.19 U	25.2
SODIUM	36.9	60.6	24.0 U	24.3	22.6 U	77.7
THALLIUM	1.3 U	1.3 U	1.3 U	1.3 U	1.2 U	1.2 U
VANADIUM	20.2	28.2	6.6	9.0	9.4	16.9
ZINC	76.7	73.8	18.5	8.0	13.4	594
EXPLOSIVES (mg/kg)						
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.027 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.059 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.078 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.092 J	0.076 J	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.097 J	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.058 J	0.057 J	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS	290	130	16	16	36	73
DIOXINS (µg/kg)						
1,2,3,4,6,7,8,9-OCDD	2.1 J	5.6 J	0.7 U	0.6 U	2.9 J	4.5 J
1,2,3,4,6,7,8,9-OCDF	0.1 U	0.07 U	0.6 U	0.6 U	0.5 U	0.6 U
1,2,3,4,6,7,8-HPCDD	0.06 U	0.05 U	0.5 U	0.3 U	0.4 U	0.4 U
1,2,3,4,6,7,8-HPCDF	0.04 U	0.03 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3,4,7,8,9-HPCDF	0.04 U	0.03 U	0.3 U	0.2 U	0.2 U	0.2 U
1,2,3,4,7,8-HXCDD	0.04 U	0.03 U	0.3 U	0.2 U	0.3 U	0.3 U
1,2,3,4,7,8-HXCDF	0.03 U	0.02 U	0.2 U	0.1 U	0.1 U	0.2 U
1,2,3,6,7,8-HXCDD	0.05 U	0.04 U	0.3 U	0.2 U	0.3 U	0.3 U
1,2,3,6,7,8-HXCDF	0.03 U	0.02 U	0.2 U	0.2 U	0.2 U	0.2 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-07-0302 06/16/1999 UNVALIDATED	0004-SB-08-1207 06/16/1999 UNVALIDATED	0004-SB-09-2420 06/30/1999 UNVALIDATED	0004-SB-10-0116 06/30/1999 UNVALIDATED	0004-SB-11-1412 06/30/1999 UNVALIDATED	0004-SB-12-0202 06/30/1999 UNVALIDATED
1,2,3,7,8,9-HXCDD	0.04 U	0.03 U	0.3 U	0.2 U	0.3 U	0.3 U
1,2,3,7,8,9-HXCDF	0.03 U	0.02 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3,7,8-PECDD	0.06 U	0.05 U	0.5 U	0.4 U	0.5 U	0.5 U
1,2,3,7,8-PECDF	0.04 U	0.03 U	0.4 U	0.3 U	0.3 U	0.3 U
2,3,4,6,7,8-HXCDF	0.03 U	0.02 U	0.2 U	0.2 U	0.2 U	0.2 U
2,3,4,7,8-PECDF	0.04 U	0.03 U	0.4 U	0.3 U	0.3 U	0.3 U
2,3,7,8-TCDD	0.04 U	0.03 U	0.3 U	0.3 U	0.3 U	0.3 U
2,3,7,8-TCDF	0.03 U	0.02 U	0.3 U	0.3 U	0.2 U	0.3 U
TOTAL HPCDD	0.06 U	0.05 U	0.5 U	0.3 U	0.4 U	0.4 U
TOTAL HPCDF	0.04 U	0.03 U	0.2 U	0.2 U	0.2 U	0.2 U
TOTAL HXCDD	0.04 U	0.03 U	0.3 U	0.2 U	0.3 U	0.3 U
TOTAL HXCDF	0.03 U	0.02 U	0.2 U	0.1 U	0.1 U	0.2 U
TOTAL PECDD	0.06 U	0.05 U	0.5 U	0.4 U	0.5 U	0.5 U
TOTAL PECDF	0.04 U	0.03 U	0.4 U	0.3 U	0.3 U	0.3 U
TOTAL TCDD	2.3	2.6	0.3 U	2.4	2.2	0.3 U
TOTAL TCDF	0.03 U	0.02 U	0.3 U	0.3 U	0.2 U	0.3 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-13-2420 07/08/1999 UNVALIDATED	0004-SB-14-0820 07/08/1999 UNVALIDATED	0004-SB-15-0302 07/08/1999 UNVALIDATED	0004-SB-16-0202 07/08/1999 UNVALIDATED	0004-SB-17-1715 07/08/1999 UNVALIDATED	0004-SB-18-2315 07/26/1999 UNVALIDATED
VOLATILES (µg/kg)						
1,1,1-TRICHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	11 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	11 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	11 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	11 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	11 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	11 U	10 U	10 U	10 U	10 U
ACETONE	10 U	11 U	10 U	10 U	10 U	10 U
BENZENE	10 U	11 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	11 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	11 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	11 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	11 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	11 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	0.7 J	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	11 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	11 U	10 U	10 U	10 U	10 U
CHLOROMETHANE	10 U	11 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	11 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	11 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	11 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	11 U	10 U	10 U	10 U	10 U
STYRENE	10 U	11 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	11 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	11 U	10 U	10 U	10 U	2 J
TRANS-1,3-DICHLOROPROPENE	10 U	11 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	11 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	11 U	10 U	10 U	10 U	10 U
XYLENES, TOTAL	10 U	11 U	10 U	10 U	10 U	10 U
SEMIVOLATILES (µg/kg)						
1,2,4-TRICHLOROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
1,2-DICHLOROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
1,3-DICHLOROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
1,4-DICHLOROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	380 U	340 U	340 U	340 U	340 U
2,4,5-TRICHLOROPHENOL	820 U	910 U	820 U	830 U	830 U	810 U
2,4,6-TRICHLOROPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
2,4-DICHLOROPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
2,4-DIMETHYLPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
2,4-DINITROPHENOL	820 U	910 U	820 U	830 U	830 U	810 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-13-2420 07/08/1999 UNVALIDATED	0004-SB-14-0820 07/08/1999 UNVALIDATED	0004-SB-15-0302 07/08/1999 UNVALIDATED	0004-SB-16-0202 07/08/1999 UNVALIDATED	0004-SB-17-1715 07/08/1999 UNVALIDATED	0004-SB-18-2315 07/26/1999 UNVALIDATED
2,4-DINITROTOLUENE	340 U	380 U	340 U	340 U	340 U	340 U
2,6-DINITROTOLUENE	340 U	380 U	340 U	340 U	340 U	340 U
2-CHLORONAPHTHALENE	340 U	380 U	340 U	340 U	340 U	340 U
2-CHLOROPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
2-METHYLNAPHTHALENE	340 U	380 U	340 U	340 U	340 U	340 U
2-METHYLPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
2-NITROANILINE	820 U	910 U	820 U	830 U	830 U	810 U
2-NITROPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
3,3'-DICHLOROBENZIDINE	340 U	380 U	340 U	340 U	340 U	340 U
3-NITROANILINE	820 U	910 U	820 U	830 U	830 U	810 U
4,6-DINITRO-2-METHYLPHENOL	820 U	910 U	820 U	830 U	830 U	810 U
4-BROMOPHENYL PHENYL ETHER	340 U	380 U	340 U	340 U	340 U	340 U
4-CHLORO-3-METHYLPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
4-CHLOROANILINE	340 U	380 U	340 U	340 U	340 U	340 U
4-CHLOROPHENYL PHENYL ETHER	340 U	380 U	340 U	340 U	340 U	340 U
4-METHYLPHENOL	340 U	380 U	340 U	340 U	340 U	340 U
4-NITROANILINE	820 U	910 U	820 U	830 U	830 U	810 U
4-NITROPHENOL	820 U	910 U	820 U	830 U	830 U	810 U
ACENAPHTHENE	340 U	380 U	340 U	340 U	110 J	340 U
ACENAPHTHYLENE	340 U	380 U	340 U	340 U	340 U	340 U
ANTHRACENE	340 U	380 U	340 U	340 U	180 J	340 U
BENZO(A)ANTHRACENE	340 U	380 U	340 U	340 U	460	340 U
BENZO(A)PYRENE	340 U	380 U	340 U	340 U	490	340 U
BENZO(B)FLUORANTHENE	340 U	380 U	340 U	340 U	600	340 U
BENZO(G,H,I)PERYLENE	340 U	380 U	340 U	340 U	140 J	340 U
BENZO(K)FLUORANTHENE	340 U	380 U	340 U	340 U	210 J	340 U
BIS(2-CHLOROETHOXY)METHANE	340 U	380 U	340 U	340 U	340 U	340 U
BIS(2-CHLOROETHYL)ETHER	340 U	380 U	340 U	340 U	340 U	340 U
BIS(2-ETHYLHEXYL)PHTHALATE	60 J	380 U	34 J	39 J	340 U	330
BUTYLBENZYL PHTHALATE	340 U	380 U	340 U	340 U	340 U	340 U
CARBAZOLE	340 U	380 U	340 U	340 U	140 J	340 U
CHRYSENE	340 U	380 U	340 U	340 U	530	340 U
DI-N-BUTYL PHTHALATE	340 U	380 U	340 U	340 U	340 U	340 U
DI-N-OCTYL PHTHALATE	340 U	380 U	340 U	340 U	340 U	340 U
DIBENZO(A,H)ANTHRACENE	340 U	380 U	340 U	340 U	65 J	340 U
DIBENZOFURAN	340 U	380 U	340 U	340 U	47 J	340 U
DIETHYL PHTHALATE	340 U	380 U	340 U	340 U	340 U	340 U
DIMETHYL PHTHALATE	340 U	380 U	340 U	340 U	340 U	340 U
FLUORANTHENE	340 U	380 U	340 U	340 U	1600	340 U
FLUORENE	340 U	380 U	340 U	340 U	93 J	340 U
HEXACHLOROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
HEXACHLOROBUTADIENE	340 U	380 U	340 U	340 U	340 U	340 U
HEXACHLOROCYCLOPENTADIENE	340 U	380 U	340 U	340 U	340 U	340 U
HEXACHLOROETHANE	340 U	380 U	340 U	340 U	340 U	340 U
INDENO(1,2,3-CD)PYRENE	340 U	380 U	340 U	340 U	270 J	340 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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ISOPHORONE	340 U	380 U	340 U	340 U	340 U	340 U
N-NITROSO-DI-N-PROPYLAMINE	340 U	380 U	340 U	340 U	340 U	340 U
N-NITROSODIPHENYLAMINE	340 U	380 U	340 U	340 U	340 U	340 U
NAPHTHALENE	340 U	380 U	340 U	340 U	340 U	340 U
NITROBENZENE	340 U	380 U	340 U	340 U	340 U	340 U
PENTACHLOROPHENOL	820 U	910 U	820 U	830 U	830 U	810 U
PHENANTHRENE	36 J	380 U	340 U	340 U	1200	340 U
PHENOL	340 U	380 U	340 U	340 U	340 U	340 U
PYRENE	340 U	380 U	39 J	340 U	1100	340 U
PESTICIDES/PCBs (µg/kg)						
4,4'-DDD	17 U	3.8 U	3.4 U	3.4 U	3.4 U	3.4 U
4,4'-DDE	1.6	0.49	0.18	0.71 J	0.36	0.037
4,4'-DDT	17 U	14	2.7	3.4 U	8.1	3.4 U
ALDRIN	8.5 U	1.9 U	1.7 U	1.7 U	0.29 J	1.7 U
ALPHA-BHC	8.5 U	1.9 U	1.7 U	0.049	1.7 U	1.7 U
ALPHA-CHLORDANE	1.4	1.9 U	0.14	0.60	1.7 U	0.060
AROCLOR-1016	170 U	38 U	34 U	34 U	34 U	34 U
AROCLOR-1221	340 U	76 U	68 U	69 U	68 U	68 U
AROCLOR-1232	170 U	38 U	34 U	34 U	34 U	34 U
AROCLOR-1242	170 U	38 U	34 U	34 U	34 U	34 U
AROCLOR-1248	170 U	38 U	34 U	34 U	34 U	34 U
AROCLOR-1254	170 U	38 U	34 U	34 U	34 U	34 U
AROCLOR-1260	1300	95	16	35	90	4.9
BETA-BHC	8.5 U	1.9 U	1.7 U	1.7 U	1.7 U	0.16
DELTA-BHC	8.5 U	1.9 U	1.7 U	1.7 U	0.042	0.035
DIELDRIN	13	0.91	0.25	0.42	0.83	0.10
ENDOSULFAN I	0.51	0.14	0.16	1.7 U	0.28	0.12
ENDOSULFAN II	17 U	3.8 U	3.4 U	3.4 U	3.4 U	3.4 U
ENDOSULFAN SULFATE	17	1.2	3.4 U	2.0	2.0	3.4 U
ENDRIN	17 U	3.8 U	3.4 U	3.4 U	3.4 U	3.4 U
ENDRIN ALDEHYDE	4.8	3.8 U	3.4 U	3.4 U	3.4 U	3.4 U
ENDRIN KETONE	17 U	3.8 U	3.4 U	3.4 U	3.4 U	3.4 U
GAMMA-BHC (LINDANE)	8.5 U	1.9 U	1.7 U	1.7 U	1.7 U	0.053
GAMMA-CHLORDANE	4.8	0.36	0.56	0.38	1.1	0.079
HEPTACHLOR	0.33	0.37	0.53	0.40	1.7 U	0.41
HEPTACHLOR EPOXIDE	0.12	1.9 U	1.7 U	1.7 U	0.033	1.7 U
METHOXYCHLOR	85 U	19 U	17 U	17 U	17 U	17 U
TOXAPHENE	850 U	190 U	170 U	170 U	170 U	170 U
INORGANICS (mg/kg)						
ALUMINUM	3890	3290	2910	7870	8460	2940
ANTIMONY	0.43 U	0.48 U	0.43 U	0.43 U	0.43 U	0.43 U
ARSENIC	1.5	1.9	1.5	3.2	2.7	1.6
BARIUM	8.5	8.0	14.4	23.9	25.5	3.6
BERYLLIUM	0.06 U	0.07 U	0.06 U	0.06 U	0.06 U	0.06 U
CADMIUM	0.04 U	0.05 U	0.04 U	0.04 U	0.04 U	0.15

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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CALCIUM	161	341	251	722	937	72
CHROMIUM	7.7	11.3	5.3	12.2	11.2	6.9
COBALT	0.78	0.57	0.83	2.0	2.4	0.42
COPPER	6.4	2.5	11.3	14.8	7.0	3.9
CYANIDE	0.08	2.3 U	2.0 U	2.1 U	2.1 U	0.24
IRON	4770	4250	3940	8500	9530	4210
LEAD	4.7	2.2	5.9	10.4	5.5	2.8
MAGNESIUM	144	73.3	182	465	670	60.3
MANGANESE	15.9	9.3	43.8	54.8	50.2	4.9
MERCURY	0.06	0.06 U	0.08	0.05 U	0.05 U	0.05 U
NICKEL	1.9	5.8	2.9	6.4	5.8	0.74
POTASSIUM	123	104	111	274	346	54.5
SELENIUM	0.49 U	0.55 U	0.49 U	0.96	0.56	0.49 U
SILVER	0.24	0.21 U	0.39	0.19 U	0.19 U	0.18 U
SODIUM	22.0 U	32.3	36.1	33.0	29.3	21.8 U
THALLIUM	1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.2 U
VANADIUM	12.4	8.4	9.9	23.4	17.6	11.9
ZINC	10.4	3.7	32.6	27.2	17.1	3.6
EXPLOSIVES (mg/kg)						
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.023 J	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.035 J	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS	230	20	37	31	390	390
DIOXINS (µg/kg)						
1,2,3,4,6,7,8,9-OCDD	1.5 J	0.3 U	0.4 U	3.1 J	6.2	1.2 J
1,2,3,4,6,7,8,9-OCDF	0.3 U	0.2 U	0.4 U	0.2 U	0.3 U	0.03 U
1,2,3,4,6,7,8-HPCDD	0.2 U	0.1 U	0.2 U	0.2 U	0.1 U	0.02 U
1,2,3,4,6,7,8-HPCDF	0.1 U	0.1 U	0.2 U	0.09 U	0.09 U	0.02 U
1,2,3,4,7,8,9-HPCDF	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.02 U
1,2,3,4,7,8-HXCDD	0.1 U	0.09 U	0.1 U	0.09 U	0.08 U	0.02 U
1,2,3,4,7,8-HXCDF	0.08 U	0.07 U	0.1 U	0.07 U	0.06 U	0.01 U
1,2,3,6,7,8-HXCDD	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.02 U
1,2,3,6,7,8-HXCDF	0.08 U	0.08 U	0.1 U	0.07 U	0.07 U	0.01 U

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SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-13-2420 07/08/1999 UNVALIDATED	0004-SB-14-0820 07/08/1999 UNVALIDATED	0004-SB-15-0302 07/08/1999 UNVALIDATED	0004-SB-16-0202 07/08/1999 UNVALIDATED	0004-SB-17-1715 07/08/1999 UNVALIDATED	0004-SB-18-2315 07/26/1999 UNVALIDATED
1,2,3,7,8,9-HXCDD	0.1 U	0.09 U	0.1 U	0.09 U	0.09 U	0.02 U
1,2,3,7,8,9-HXCDF	0.09 U	0.08 U	0.1 U	0.08 U	0.07 U	0.01 U
1,2,3,7,8-PECDD	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.03 U
1,2,3,7,8-PECDF	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U
2,3,4,6,7,8-HXCDF	0.09 U	0.08 U	0.1 U	0.08 U	0.07 U	0.01 U
2,3,4,7,8-PECDF	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U
2,3,7,8-TCDD	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U
2,3,7,8-TCDF	0.09 U	0.1 U	0.1 U	0.1 U	0.09 U	0.01 U
TOTAL HPCDD	0.2 U	0.1 U	0.2 U	0.2 U	0.1 U	0.02 U
TOTAL HPCDF	0.1 U	0.1 U	0.2 U	0.09 U	0.09 U	0.02 U
TOTAL HXCDD	0.1 U	0.09 U	0.1 U	0.09 U	0.08 U	0.02 U
TOTAL HXCDF	0.08 U	0.07 U	0.1 U	0.07 U	0.06 U	0.01 U
TOTAL PECDD	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.03 U
TOTAL PECDF	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.02 U
TOTAL TCDD	2.1	2.1	2	2	2.2	2.1
TOTAL TCDF	0.09 U	0.1 U	0.1 U	0.1 U	0.09 U	0.08

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-19-0315	0004-SB-20-0202	0004-SB-21-1912	0004-SB-22-1007	0004-SB-23-1207	0004-SB-24-1407
SAMPLE DATE:	07/26/1999	07/26/1999	07/26/1999	07/26/1999	08/05/1999	08/05/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
VOLATILES (µg/kg)						
1,1,1-TRICHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	11 U	10 U	12 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	11 U	10 U	12 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	11 U	10 U	12 U	10 U
2-BUTANONE	10 U	10 U	11 U	10 U	12 U	10 U
2-HEXANONE	10 U	10 U	11 U	10 U	12 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	11 U	10 U	12 U	10 U
ACETONE	10 U	10 U	11 U	10 U	12 U	10 U
BENZENE	10 U	10 U	11 U	10 U	12 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	11 U	10 U	12 U	10 U
BROMOFORM	10 U	10 U	11 U	10 U	12 U	10 U
BROMOMETHANE	10 U	10 U	11 U	10 U	12 U	10 U
CARBON DISULFIDE	10 U	10 U	11 U	10 U	12 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	11 U	10 U	12 U	10 U
CHLOROBENZENE	10 U	10 U	11 U	10 U	12 U	10 U
CHLOROETHANE	10 U	10 U	11 U	10 U	12 U	10 U
CHLOROFORM	10 U	10 U	11 U	10 U	12 U	10 U
CHLOROMETHANE	10 U	10 U	11 U	10 U	12 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	11 U	10 U	12 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	11 U	10 U	12 U	10 U
ETHYLBENZENE	10 U	10 U	11 U	10 U	12 U	10 U
METHYLENE CHLORIDE	10 U	10 U	11 U	10 U	6 J	2 J
STYRENE	10 U	10 U	11 U	10 U	12 U	10 U
TETRACHLOROETHENE	10 U	10 U	11 U	10 U	12 U	10 U
TOLUENE	0.4 J	0.6 J	0.4 J	0.8 J	12 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	11 U	10 U	12 U	10 U
TRICHLOROETHENE	10 U	10 U	11 U	10 U	12 U	10 U
VINYL CHLORIDE	10 U	10 U	11 U	10 U	12 U	10 U
XYLENES, TOTAL	10 U	10 U	11 U	10 U	12 U	10 U
SEMIVOLATILES (µg/kg)						
1,2,4-TRICHLOROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
1,2-DICHLOROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
1,3-DICHLOROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
1,4-DICHLOROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	350 U	350 U	340 U	410 U	340 U
2,4,5-TRICHLOROPHENOL	820 U	840 U	860 U	820 U	990 U	840 U
2,4,6-TRICHLOROPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
2,4-DICHLOROPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
2,4-DIMETHYLPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
2,4-DINITROPHENOL	820 U	840 U	860 U	820 U	990 U	840 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-19-0315	0004-SB-20-0202	0004-SB-21-1912	0004-SB-22-1007	0004-SB-23-1207	0004-SB-24-1407
SAMPLE DATE:	07/26/1999	07/26/1999	07/26/1999	07/26/1999	08/05/1999	08/05/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
2,4-DINITROTOLUENE	340 U	350 U	350 U	340 U	410 U	340 U
2,6-DINITROTOLUENE	340 U	350 U	350 U	340 U	410 U	340 U
2-CHLORONAPHTHALENE	340 U	350 U	350 U	340 U	410 U	340 U
2-CHLOROPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
2-METHYLNAPHTHALENE	340 U	350 U	350 U	340 U	410 U	340 U
2-METHYLPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
2-NITROANILINE	820 U	840 U	860 U	820 U	990 U	840 U
2-NITROPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
3,3'-DICHLOROBENZIDINE	340 U	350 U	350 U	340 U	410 U	340 U
3-NITROANILINE	820 U	840 U	860 U	820 U	990 U	840 U
4,6-DINITRO-2-METHYLPHENOL	820 U	840 U	860 U	820 U	990 U	840 U
4-BROMOPHENYL PHENYL ETHER	340 U	350 U	350 U	340 U	410 U	340 U
4-CHLORO-3-METHYLPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
4-CHLOROANILINE	340 U	350 U	350 U	340 U	410 U	340 U
4-CHLOROPHENYL PHENYL ETHER	340 U	350 U	350 U	340 U	410 U	340 U
4-METHYLPHENOL	340 U	350 U	350 U	340 U	410 U	340 U
4-NITROANILINE	820 U	840 U	860 U	820 U	990 U	840 U
4-NITROPHENOL	820 U	840 U	860 U	820 U	990 U	840 U
ACENAPHTHENE	340 U	350 U	350 U	340 U	410 U	340 U
ACENAPHTHYLENE	340 U	350 U	350 U	340 U	410 U	340 U
ANTHRACENE	340 U	350 U	350 U	340 U	410 U	340 U
BENZO(A)ANTHRACENE	340 U	350 U	350 U	340 U	410 U	340 U
BENZO(A)PYRENE	340 U	350 U	350 U	340 U	410 U	340 U
BENZO(B)FLUORANTHENE	340 U	350 U	350 U	340 U	410 U	340 U
BENZO(G,H,I)PERYLENE	340 U	350 U	350 U	340 U	410 U	340 U
BENZO(K)FLUORANTHENE	340 U	350 U	350 U	340 U	410 U	340 U
BIS(2-CHLOROETHOXY)METHANE	340 U	350 U	350 U	340 U	410 U	340 U
BIS(2-CHLOROETHYL)ETHER	340 U	350 U	350 U	340 U	410 U	340 U
BIS(2-ETHYLHEXYL)PHTHALATE	200	990 B	56	340 U	410 U	340 U
BUTYLBENZYL PHTHALATE	340 U	350 U	350 U	340 U	410 U	340 U
CARBAZOLE	340 U	350 U	350 U	340 U	410 U	340 U
CHRYSENE	340 U	350 U	350 U	340 U	410 U	340 U
DI-N-BUTYL PHTHALATE	340 U	350 U	350 U	340 U	410 U	340 U
DI-N-OCTYL PHTHALATE	340 U	350 U	350 U	340 U	410 U	340 U
DIBENZO(A,H)ANTHRACENE	340 U	350 U	350 U	340 U	410 U	340 U
DIBENZOFURAN	340 U	350 U	350 U	340 U	410 U	340 U
DIETHYL PHTHALATE	340 U	350 U	350 U	340 U	410 U	340 U
DIMETHYL PHTHALATE	340 U	350 U	350 U	340 U	410 U	340 U
FLUORANTHENE	340 U	350 U	350 U	340 U	410 U	340 U
FLUORENE	340 U	350 U	350 U	340 U	410 U	340 U
HEXACHLOROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
HEXACHLOROBUTADIENE	340 U	350 U	350 U	340 U	410 U	340 U
HEXACHLOROCYCLOPENTADIENE	340 U	350 U	350 U	340 U	410 U	340 U
HEXACHLOROETHANE	340 U	350 U	350 U	340 U	410 U	340 U
INDENO(1,2,3-CD)PYRENE	340 U	350 U	350 U	340 U	410 U	340 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-19-0315 07/26/1999 UNVALIDATED	0004-SB-20-0202 07/26/1999 UNVALIDATED	0004-SB-21-1912 07/26/1999 UNVALIDATED	0004-SB-22-1007 07/26/1999 UNVALIDATED	0004-SB-23-1207 08/05/1999 UNVALIDATED	0004-SB-24-1407 08/05/1999 UNVALIDATED
ISOPHORONE	340 U	350 U	350 U	340 U	410 U	340 U
N-NITROSO-DI-N-PROPYLAMINE	340 U	350 U	350 U	340 U	410 U	340 U
N-NITROSODIPHENYLAMINE	340 U	350 U	350 U	340 U	410 U	340 U
NAPHTHALENE	340 U	350 U	350 U	340 U	72 J	340 U
NITROBENZENE	340 U	350 U	350 U	340 U	410 U	340 U
PENTACHLOROPHENOL	820 U	840 U	860 U	820 U	990 U	840 U
PHENANTHRENE	340 U	350 U	350 U	340 U	49 J	340 U
PHENOL	340 U	350 U	350 U	340 U	410 U	340 U
PYRENE	340 U	350 U	350 U	340 U	50 J	340 U
PESTICIDES/PCBs (µg/kg)						
4,4'-DDD	3.4 U	3.5 U	3.6 U	3.4 U	4.1 U	2.2
4,4'-DDE	3.4 U	3.5 U	3.6 U	0.71	4.1 U	3.5 U
4,4'-DDT	3.4 U	3.5 U	3.6 U	3.4 U	4.1 U	3.5 U
ALDRIN	1.7 U	1.7 U	1.8 U	1.7 U	2.0 U	1.7 U
ALPHA-BHC	1.7 U	0.078	1.8 U	0.17	2.0 U	1.7 U
ALPHA-CHLORDANE	1.7 U	0.16	0.072	1.8	2.0 U	1.7 U
AROCLOR-1016	34 U	35 U	36 U	34 U	41 U	35 U
AROCLOR-1221	68 U	70 U	71 U	68 U	82 U	69 U
AROCLOR-1232	34 U	35 U	36 U	34 U	41 U	35 U
AROCLOR-1242	34 U	35 U	36 U	34 U	41 U	35 U
AROCLOR-1248	14	35 U	36 U	34 U	41 U	35 U
AROCLOR-1254	34 U	35 U	36 U	34 U	41 U	35 U
AROCLOR-1260	140	18	36 U	160	22	46
BETA-BHC	0.069	0.086	1.8 U	0.10	2.0 U	1.7 U
DELTA-BHC	1.7 U	1.7 U	1.8 U	1.7 U	2.0 U	1.7 U
DIELDRIN	1.6	0.20	3.6 U	2.5	4.1 U	3.5 U
ENDOSULFAN I	0.45	0.11	0.15	0.60	2.0 U	1.7 U
ENDOSULFAN II	3.4 U	3.5 U	3.6 U	3.4 U	4.1 U	3.5 U
ENDOSULFAN SULFATE	2.1	3.5 U	3.6 U	3.6	4.1 U	3.5 U
ENDRIN	0.18	3.5 U	3.6 U	1.1	4.1 U	3.5 U
ENDRIN ALDEHYDE	0.089	3.5 U	3.6 U	3.4 U	4.1 U	3.5 U
ENDRIN KETONE	3.4 U	3.5 U	3.6 U	3.4 U	4.1 U	3.5 U
GAMMA-BHC (LINDANE)	0.77	0.060 J	1.8 U	1.7 U	2.0 U	1.7 U
GAMMA-CHLORDANE	0.73	0.26	1.8 U	2.3	3.2	1.7 U
HEPTACHLOR	0.49	1.0	0.21	0.66	2.0 U	1.7 U
HEPTACHLOR EPOXIDE	1.7 U	1.7 U	1.8 U	0.040	2.0 U	1.7 U
METHOXYCHLOR	17 U	17 U	18 U	0.87	20 U	17 U
TOXAPHENE	170 U	170 U	180 U	170 U	200 U	170 U
INORGANICS (mg/kg)						
ALUMINUM	696	5530	2820	5060	7250	5790
ANTIMONY	0.43 U	0.44 U	0.45 U	0.64	4.4 U	3.7 U
ARSENIC	0.45 U	2.6	1.4	2	2.2	2.1
BARIUM	2.1	16.3	4.4	13.2	27.5	24.2
BERYLLIUM	0.06 U	0.06 U	0.06 U	0.06 U	0.07 U	0.06 U
CADMIUM	0.19	0.04 U	0.04 U	0.04 U	0.13	0.06

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-19-0315 07/26/1999 UNVALIDATED	0004-SB-20-0202 07/26/1999 UNVALIDATED	0004-SB-21-1912 07/26/1999 UNVALIDATED	0004-SB-22-1007 07/26/1999 UNVALIDATED	0004-SB-23-1207 08/05/1999 UNVALIDATED	0004-SB-24-1407 08/05/1999 UNVALIDATED
CALCIUM	60.6	53	427	1180	489	408
CHROMIUM	21.8	14.7	8.3	17.2	11.2	11.2
COBALT	0.19	0.82	0.35	3.2	2.2	2.3
COPPER	1.7	4	2.4	14.4	9.3	46.5
CYANIDE	0.46	0.12	2.1 U	0.08	2.5 U	2.1 U
IRON	930	9340	4950	7370	6350	5970
LEAD	1.2	3.7	2.8	14.7	7.8	11.4
MAGNESIUM	122	163	68.2	2970	388	486
MANGANESE	1.8	21.7	5.3	55	21.5	40.6
MERCURY	0.05 U	0.06	0.05 U	1.5	0.06 U	0.05 U
NICKEL	1.4	1.6	0.7	51.4	4.0	4.9
POTASSIUM	16.9	114	55.1	295	162	179
SELENIUM	0.49 U	0.67	0.52 U	0.7	0.59 U	0.62
SILVER	0.18 U	0.19 U	0.19 U	0.18 U	0.22 U	0.36
SODIUM	40.5	22.5 U	23 U	24.1	26.5 U	22.4 U
THALLIUM	1.2 U	1.2 U	1.3 U	1.2 U	1.5 U	1.2 U
VANADIUM	3.3	20.5	15.4	75.5	17.8	13.9
ZINC	3.2	4.6	4.9	13	116	84.5
EXPLOSIVES (mg/kg)						
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS	93	53	34	520	13	87
DIOXINS (µg/kg)						
1,2,3,4,6,7,8,9-OCDD	0.21 J	6.3	2.1 J	0.45 J	11.8	2.5 J
1,2,3,4,6,7,8,9-OCDF	0.06 U	0.07 U	0.05 U	0.05 U	0.04 U	0.05 U
1,2,3,4,6,7,8-HPCDD	0.05 U	0.04 U	0.04 U	0.04 U	0.09 J	0.04 U
1,2,3,4,6,7,8-HPCDF	0.04 U	0.04 U	0.03 U	0.02 U	0.02 U	0.02 U
1,2,3,4,7,8,9-HPCDF	0.04 U	0.04 U	0.03 U	0.02 U	0.02 U	0.02 U
1,2,3,4,7,8-HXCDD	0.04 U	0.04 U	0.03 U	0.03 U	0.02 U	0.03 U
1,2,3,4,7,8-HXCDF	0.03 U	0.03 U	0.02 U	0.02 U	0.01 U	0.02 U
1,2,3,6,7,8-HXCDD	0.04 U	0.04 U	0.03 U	0.03 U	0.02 U	0.03 U
1,2,3,6,7,8-HXCDF	0.03 U	0.03 U	0.02 U	0.02 U	0.05 J	0.02 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-19-0315 07/26/1999 UNVALIDATED	0004-SB-20-0202 07/26/1999 UNVALIDATED	0004-SB-21-1912 07/26/1999 UNVALIDATED	0004-SB-22-1007 07/26/1999 UNVALIDATED	0004-SB-23-1207 08/05/1999 UNVALIDATED	0004-SB-24-1407 08/05/1999 UNVALIDATED
1,2,3,7,8,9-HXCDD	0.04 U	0.04 U	0.03 U	0.03 U	0.02 U	0.03 U
1,2,3,7,8,9-HXCDF	0.03 U	0.03 U	0.02 U	0.02 U	0.01 U	0.02 U
1,2,3,7,8-PECDD	0.08 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U
1,2,3,7,8-PECDF	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
2,3,4,6,7,8-HXCDF	0.03 U	0.03 U	0.02 U	0.02 U	0.13 J	0.02 U
2,3,4,7,8-PECDF	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U
2,3,7,8-TCDD	0.05 U	0.03 U	0.03 U	0.03 U	0.02 U	0.03 U
2,3,7,8-TCDF	0.04 U	0.02 U	0.03 U	0.02 U	0.02 U	0.02 U
TOTAL HPCDD	0.05 U	0.04 U	0.04 U	0.04 U	0.19	0.04 U
TOTAL HPCDF	0.04 U	0.04 U	0.03 U	0.02 U	0.02 U	0.02 U
TOTAL HXCDD	0.04 U	0.04 U	0.03 U	0.03 U	0.02 U	0.03 U
TOTAL HXCDF	0.03 U	0.03 U	0.02 U	0.02 U	1.4	0.02 U
TOTAL PECDD	0.08 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U
TOTAL PECDF	0.05 U	0.03 U	0.03 U	0.03 U	5.3	0.03 U
TOTAL TCDD	2.1	2.1	2.3	2.3	2.2	2.1
TOTAL TCDF	0.14	0.08	0.03 U	0.08	0.97	0.11

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-25-0202 08/05/1999 UNVALIDATED	0004-SB-26-2210 08/05/1999 UNVALIDATED	0004-SB-27-2210 08/05/1999 UNVALIDATED	0004-SB-28 08/20/1999 UNVALIDATED	0004-SB-29 08/20/1999 UNVALIDATED	0004-SB-30 08/20/1999 UNVALIDATED	0004-SB-31 08/20/1999 UNVALIDATED	0004-SB-32-0903 08/23/1999 UNVALIDATED
VOLATILES (µg/kg)								
1,1,1-TRICHLOROETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
1,1,2,2-TETRACHLOROETHANE	10 U	11 U	10 U	14 J	110 U	11 U	30	11 U
1,1,2-TRICHLOROETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
1,1-DICHLOROETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
1,1-DICHLOROETHENE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
1,2-DICHLOROETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
1,2-DICHLOROETHENE (TOTAL)	10 U	11 U	10 U	57 U	27 J	11 U	11 U	11 U
1,2-DICHLOROPROPANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
2-BUTANONE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
2-HEXANONE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
4-METHYL-2-PENTANONE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
ACETONE	10 U	11 U	10 U	18 J	21 J	2.6 J	3.2 J	3.6 J
BENZENE	10 U	11 U	10 U	57 U	12 J	11 U	11 U	11 U
BROMODICHLOROMETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
BROMOFORM	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
BROMOMETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CARBON DISULFIDE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CARBON TETRACHLORIDE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CHLOROBENZENE	10 U	11 U	10 U	5.8 J	110 U	11 U	11 U	11 U
CHLOROETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CHLOROFORM	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CHLOROMETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
CIS-1,3-DICHLOROPROPENE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
DIBROMOCHLOROMETHANE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
ETHYLBENZENE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
METHYLENE CHLORIDE	2 J	2 J	3 J	57 U	110 U	11 U	11 U	1.5 J
STYRENE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
TETRACHLOROETHENE	10 U	11 U	10 U	5.9 J	110 U	11 U	11 U	11 U
TOLUENE	10 U	11 U	10 U	57 U	43 J	11 U	11 U	11 U
TRANS-1,3-DICHLOROPROPENE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
TRICHLOROETHENE	10 U	11 U	10 U	520	7700	11 U	11 U	11 U
VINYL CHLORIDE	10 U	11 U	10 U	57 U	110 U	11 U	11 U	11 U
XYLENES, TOTAL	10 U	11 U	10 U	6 J	180	11 U	11 U	11 U
SEMIVOLATILES (µg/kg)								
1,2,4-TRICHLOROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
1,2-DICHLOROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
1,3-DICHLOROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
1,4-DICHLOROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,4,5-TRICHLOROPHENOL	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
2,4,6-TRICHLOROPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,4-DICHLOROPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,4-DIMETHYLPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,4-DINITROPHENOL	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-25-0202	0004-SB-26-2210	0004-SB-27-2210	0004-SB-28	0004-SB-29	0004-SB-30	0004-SB-31	0004-SB-32-0903
SAMPLE DATE:	08/05/1999	08/05/1999	08/05/1999	08/20/1999	08/20/1999	08/20/1999	08/20/1999	08/23/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
2,4-DINITROTOLUENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2,6-DINITROTOLUENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2-CHLORONAPHTHALENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2-CHLOROPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2-METHYLNAPHTHALENE	340 U	260 J	350 U	3800 U	1800 J	370 U	370 U	370 U
2-METHYLPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
2-NITROANILINE	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
2-NITROPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
3,3'-DICHLOROBENZIDINE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
3-NITROANILINE	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
4,6-DINITRO-2-METHYLPHENOL	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
4-BROMOPHENYL PHENYL ETHER	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
4-CHLORO-3-METHYLPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
4-CHLOROANILINE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
4-CHLOROPHENYL PHENYL ETHER	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
4-METHYLPHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
4-NITROANILINE	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
4-NITROPHENOL	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
ACENAPHTHENE	340 U	190 J	350 U	3800 U	3800 U	370 U	370 U	370 U
ACENAPHTHYLENE	340 U	370 J	350 U	3800 U	3800 U	370 U	370 U	370 U
ANTHRACENE	340 U	440 J	350 U	3800 U	3800 U	370 U	370 U	370 U
BENZO(A)ANTHRACENE	340 U	1100	92 J	3800 U	3800 U	370 U	370 U	370 U
BENZO(A)PYRENE	340 U	1300	110 J	3800 U	3800 U	370 U	370 U	370 U
BENZO(B)FLUORANTHENE	340 U	1100	110 J	3800 U	3800 U	370 U	370 U	370 U
BENZO(G,H,I)PERYLENE	340 U	730	100 J	3800 U	3800 U	370 U	370 U	370 U
BENZO(K)FLUORANTHENE	340 U	310 J	44 J	3800 U	3800 U	370 U	370 U	370 U
BIS(2-CHLOROETHOXY)METHANE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
BIS(2-CHLOROETHYL)ETHER	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	99 J	95 J	1400
BUTYLBENZYL PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
CARBAZOLE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
CHRYSENE	340 U	1200	110 J	3800 U	3800 U	370 U	370 U	40 J
DI-N-BUTYL PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
DI-N-OCTYL PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
DIBENZO(A,H)ANTHRACENE	340 U	160 J	350 U	3800 U	3800 U	370 U	370 U	370 U
DIBENZOFURAN	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
DIETHYL PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	370 U	47 J	370 U
DIMETHYL PHTHALATE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
FLUORANTHENE	340 U	2700	190 J	3800 U	3800 U	370 U	370 U	370 U
FLUORENE	340 U	450 J	350 U	3800 U	3800 U	370 U	370 U	370 U
HEXACHLOROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
HEXACHLOROBUTADIENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
HEXACHLOROCYCLOPENTADIENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
HEXACHLOROETHANE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
INDENO(1,2,3-CD)PYRENE	340 U	610 J	82 J	3800 U	3800 U	370 U	370 U	370 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-25-0202 08/05/1999 UNVALIDATED	0004-SB-26-2210 08/05/1999 UNVALIDATED	0004-SB-27-2210 08/05/1999 UNVALIDATED	0004-SB-28 08/20/1999 UNVALIDATED	0004-SB-29 08/20/1999 UNVALIDATED	0004-SB-30 08/20/1999 UNVALIDATED	0004-SB-31 08/20/1999 UNVALIDATED	0004-SB-32-0903 08/23/1999 UNVALIDATED
ISOPHORONE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
N-NITROSO-DI-N-PROPYLAMINE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
N-NITROSODIPHENYLAMINE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
NAPHTHALENE	340 U	140 J	350 U	3800 U	3800 U	370 U	370 U	370 U
NITROBENZENE	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
PENTACHLOROPHENOL	810 U	1700 U	840 U	9500 U	9500 U	940 U	930 U	940 U
PHENANTHRENE	340 U	2600	130 J	3800 U	1100 J	370 U	370 U	370 U
PHENOL	340 U	700 U	350 U	3800 U	3800 U	370 U	370 U	370 U
PYRENE	340 U	3900	160 J	3800 U	3800 U	370 U	370 U	57 J
PESTICIDES/PCBs (µg/kg)								
4,4'-DDD	3.4 U	3.5 U	3.5 U	19 U	3.8 U	3.7 U	3.7 U	3.7 U
4,4'-DDE	3.4 U	3.5 U	3.5 U	19 U	3.8 U	3.7 U	3.7 U	3.7 U
4,4'-DDT	3.4 U	3.5 U	3.5 U	19 U	3.8 U	3.7 U	3.7 U	3.2 J
ALDRIN	1.7 U	1.8 U	1.7 U	9.7 U	1.6 J	1.9 U	1.9 U	1.9 U
ALPHA-BHC	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
ALPHA-CHLORDANE	1.7 U	1.8 U	1.7 U	9.7 U	1.1 J	1.9 U	1.9 U	2.1
AROCLOR-1016	34 U	35 U	35 U	190 U	38 U	37 U	37 U	37 U
AROCLOR-1221	68 U	70 U	70 U	380 U	77 U	76 U	75 U	76 U
AROCLOR-1232	34 U	35 U	35 U	190 U	38 U	37 U	37 U	37 U
AROCLOR-1242	34 U	35 U	35 U	190 U	38 U	37 U	37 U	37 U
AROCLOR-1248	34 U	35 U	35 U	190 U	38 U	37 U	37 U	37 U
AROCLOR-1254	34 U	35 U	35 U	190 U	38 U	37 U	37 U	37 U
AROCLOR-1260	57	75	110	1600	71	37 U	37 U	770
BETA-BHC	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
DELTA-BHC	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
DIELDRIN	3.4 U	3.5 U	3.5 U	10 J	3.8 U	3.7 U	3.7 U	6.8
ENDOSULFAN I	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
ENDOSULFAN II	3.4 U	3.5 U	3.5 U	19 U	3.8 U	3.7 U	3.7 U	23
ENDOSULFAN SULFATE	3.4 U	3.5 U	2.0	19 U	3.8 U	3.7 U	3.7 U	3.7 U
ENDRIN	3.4 U	2.5	3.5 U	15 J	2.5 J	3.7 U	3.7 U	9.9
ENDRIN ALDEHYDE	3.4 U	3.5 U	3.5 U	48	3.8 U	3.7 U	3.7 U	21
ENDRIN KETONE	3.4 U	3.5 U	3.5 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
GAMMA-BHC (LINDANE)	1.7 U	1.1	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
GAMMA-CHLORDANE	1.7 U	14	1.8	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
HEPTACHLOR	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
HEPTACHLOR EPOXIDE	1.7 U	1.8 U	1.7 U	9.7 U	1.9 U	1.9 U	1.9 U	1.9 U
METHOXYCHLOR	17 U	18 U	17 U	97 U	19 U	19 U	19 U	19 U
TOXAPHENE	170 U	180 U	170 U	970 U	190 U	190 U	190 U	190 U
INORGANICS (mg/kg)								
ALUMINUM	5590	4100	7270	3760	2750	3720	6180	4470
ANTIMONY	3.6 U	3.8 U	3.8 U	0.39 U	0.39 U	1.8	0.38 U	0.38 U
ARSENIC	2.5	2.6	2.6	1.4	1.6	2.4	2.4	2.3
BARIUM	20.7	28.9	24.8	5.2	5	4.7	8.5	10.9
BERYLLIUM	0.06 U	0.06 U	0.06 U	0.06	0.03	0.04	0.08	0.09
CADMIUM	0.04 U	0.20	0.04 U	0.69 U	0.69 U	6.7	0.67 U	0.68 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.:	0004-SB-25-0202	0004-SB-26-2210	0004-SB-27-2210	0004-SB-28	0004-SB-29	0004-SB-30	0004-SB-31	0004-SB-32-0903
SAMPLE DATE:	08/05/1999	08/05/1999	08/05/1999	08/20/1999	08/20/1999	08/20/1999	08/20/1999	08/23/1999
VALIDATION STATUS:	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED	UNVALIDATED
CALCIUM	503	667	1950	41.8	38.6	61.7	194	582
CHROMIUM	9.9	10.0	13.6	9.3	16.7	7.7	9.3	10.6
COBALT	1.4	1.9	2.3	0.87 U	0.87 U	0.86 U	1.4	0.86 U
COPPER	16.2	41.4	17.0	9.6	2.9	3.7	9.5	8.1
CYANIDE	2.0 U	2.1 U	2.1 U	2.3	0.81	2.8 U	2.8 U	2.8 U
IRON	6800	5840	8580	3930	3780	5390	6690	6590
LEAD	11.6	25.7	12.6	3.2	3	2.8	3.5	6.8
MAGNESIUM	262	346	455	80.1	78.2	102	180	177
MANGANESE	39.7	236	59.3	5.6	5.5	6.5	13.1	16.6
MERCURY	0.24	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06	0.14
NICKEL	3.2	6.2	4.8	2 U	2 U	2 U	4.2	2 U
POTASSIUM	125	138	192	108 U	108 U	106 U	166	165
SELENIUM	0.60	0.51 U	0.51 U	0.62 U	0.62 U	0.61 U	0.6 U	0.61 U
SILVER	0.18 U	1.0	0.19 U	0.5 U	0.5 U	0.71	0.49 U	0.5 U
SODIUM	21.7 U	22.8 U	22.6 U	32.8	55.3	34.9	57.8	38.9
THALLIUM	1.2 U	1.3 U	1.2 U	0.85 U	0.85 U	0.84 U	0.83 U	0.84 U
VANADIUM	16.3	14.6	17.0	9.1	9.4	13.2	15.3	14.4
ZINC	30.5	125	55.4	15	2.6	42.8	8	18.2
EXPLOSIVES (mg/kg)								
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)								
TOTAL PETROLEUM HYDROCARBONS	7.7 B	270	170	3000	5900	110 U	36 B	410
DIOXINS (µg/kg)								
1,2,3,4,6,7,8,9-OCDD	3.6 J	2.9 J	2.8 J	0.41 J	0.2 J	0.2 J	0.14 J	1 J
1,2,3,4,6,7,8,9-OCDF	0.03 U	0.04 U	0.03 U	0.06 U	0.05 U	0.03 U	0.02 U	0.04 U
1,2,3,4,6,7,8-HPCDD	0.03 U	0.03 U	0.03 U	0.04 U	0.05 U	0.02 U	0.02 U	0.03 U
1,2,3,4,6,7,8-HPCDF	0.02 U	0.02 U	0.02 U	0.03 U	0.05 U	0.01 U	0.01 U	0.02 U
1,2,3,4,7,8,9-HPCDF	0.02 U	0.02 U	0.02 U	21	0.05 U	0.01 U	0.01 U	0.02 U
1,2,3,4,7,8-HXCDD	0.02 U	0.02 U	0.02 U	0.04 U	0.04 U	0.02 U	0.01 U	0.02 U
1,2,3,4,7,8-HXCDF	0.01 U	0.01 U	0.01 U	0.02 U	0.04 U	0.01 U	0.008 U	0.01 U
1,2,3,6,7,8-HXCDD	0.02 U	0.02 U	0.02 U	1.8	0.04 U	0.02 U	0.01 U	0.02 U
1,2,3,6,7,8-HXCDF	0.01 U	0.01 U	0.01 U	0.02 U	0.04 U	0.01 U	0.009 U	0.01 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-25-0202 08/05/1999 UNVALIDATED	0004-SB-26-2210 08/05/1999 UNVALIDATED	0004-SB-27-2210 08/05/1999 UNVALIDATED	0004-SB-28 08/20/1999 UNVALIDATED	0004-SB-29 08/20/1999 UNVALIDATED	0004-SB-30 08/20/1999 UNVALIDATED	0004-SB-31 08/20/1999 UNVALIDATED	0004-SB-32-0903 08/23/1999 UNVALIDATED
1,2,3,7,8,9-HXCDD	0.02 U	0.02 U	0.02 U	0.03 U	0.04 U	0.02 U	0.01 U	0.02 U
1,2,3,7,8,9-HXCDF	0.01 U	0.01 U	0.01 U	0.02 U	0.04 U	0.01 U	0.009 U	0.02 U
1,2,3,7,8-PECDD	0.04 U	0.03 U	0.04 U	0.05 U	0.03 U	0.02 U	0.02 U	0.04 U
1,2,3,7,8-PECDF	0.03 U	0.02 U	0.02 U	0.03 U	0.02 U	0.01 U	0.01 U	0.02 U
2,3,4,6,7,8-HXCDF	0.01 U	0.01 U	0.01 U	0.02 U	0.04 U	0.01 U	0.01 U	0.02 U
2,3,4,7,8-PECDF	0.03 U	0.02 U	0.02 U	0.03 U	0.02 U	0.01 U	0.01 U	0.02 U
2,3,7,8-TCDD	0.02 U	0.02 U	0.02 U	0.03 U	0.02 U	0.01 U	0.01 U	0.02 U
2,3,7,8-TCDF	0.02 U	0.01 U	0.02 U	0.02 U	0.01 U	0.01 U	0.008 U	0.02 U
TOTAL HPCDD	0.03 U	0.03 U	0.03 U	0.04 U	0.05 U	0.02 U	0.02 U	0.03 U
TOTAL HPCDF	0.02 U	0.02 U	0.02 U	152	0.05 U	0.01 U	0.01 U	0.02 U
TOTAL HXCDD	0.02 U	0.02 U	0.02 U	13.2	0.04 U	0.02 U	0.01 U	0.02 U
TOTAL HXCDF	0.01 U	0.01 U	0.01 U	0.02 U	0.04 U	0.01 U	0.008 U	0.01 U
TOTAL PECDD	0.04 U	0.03 U	0.04 U	0.05 U	0.29	0.02 U	0.02 U	0.04 U
TOTAL PECDF	0.03 U	0.02 U	0.02 U	0.03 U	0.04	0.01 U	0.01 U	0.02 U
TOTAL TCDD	2.2	2.3	2.2	2.4	2.6	2.4	2.3	2.6
TOTAL TCDF	0.08	0.06	0.08	0.02 U	0.1	0.06	0.06	0.08

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-33-1203 08/23/1999 UNVALIDATED	0004-SB-34-0702 08/23/1999 UNVALIDATED	0004-SB-35-1803 08/23/1999 UNVALIDATED	0004-SB-36-2002 08/23/1999 UNVALIDATED	0004-SB-37-0403 08/23/1999 UNVALIDATED	0004-SB-38-0403 08/23/1999 UNVALIDATED
VOLATILES (µg/kg)						
1,1,1-TRICHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
1,1,2,2-TETRACHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
1,1,2-TRICHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
1,1-DICHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
1,1-DICHLOROETHENE	12 U	11 U	10 U	11 U	11 U	11 U
1,2-DICHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
1,2-DICHLOROETHENE (TOTAL)	12 U	11 U	10 U	11 U	11 U	11 U
1,2-DICHLOROPROPANE	12 U	11 U	10 U	11 U	11 U	11 U
2-BUTANONE	12 U	11 U	10 U	11 U	11 U	1.5 J
2-HEXANONE	12 U	11 U	10 U	11 U	11 U	11 U
4-METHYL-2-PENTANONE	12 U	11 U	10 U	11 U	11 U	11 U
ACETONE	12 U	2.5 J	2 J	2.5 J	2.4 J	4.2 J
BENZENE	12 U	11 U	10 U	11 U	11 U	11 U
BROMODICHLOROMETHANE	12 U	11 U	10 U	11 U	11 U	11 U
BROMOFORM	12 U	11 U	10 U	11 U	11 U	11 U
BROMOMETHANE	12 U	11 U	10 U	11 U	11 U	11 U
CARBON DISULFIDE	12 U	11 U	10 U	11 U	11 U	11 U
CARBON TETRACHLORIDE	12 U	11 U	10 U	11 U	11 U	11 U
CHLOROBENZENE	12 U	11 U	10 U	11 U	11 U	11 U
CHLOROETHANE	12 U	11 U	10 U	11 U	11 U	11 U
CHLOROFORM	12 U	11 U	10 U	11 U	11 U	11 U
CHLOROMETHANE	12 U	11 U	10 U	11 U	11 U	11 U
CIS-1,3-DICHLOROPROPENE	12 U	11 U	10 U	11 U	11 U	11 U
DIBROMOCHLOROMETHANE	12 U	11 U	10 U	11 U	11 U	11 U
ETHYLBENZENE	12 U	11 U	10 U	11 U	11 U	11 U
METHYLENE CHLORIDE	12 U	11 U	10 U	1.9 J	11 U	3.1 J
STYRENE	12 U	11 U	10 U	11 U	11 U	11 U
TETRACHLOROETHENE	12 U	11 U	10 U	11 U	11 U	11 U
TOLUENE	12 U	11 U	10 U	11 U	11 U	11 U
TRANS-1,3-DICHLOROPROPENE	12 U	11 U	10 U	11 U	11 U	11 U
TRICHLOROETHENE	12 U	11 U	10 U	11 U	11 U	11 U
VINYL CHLORIDE	12 U	11 U	10 U	11 U	11 U	11 U
XYLENES, TOTAL	12 U	11 U	10 U	11 U	11 U	11 U
SEMIVOLATILES (µg/kg)						
1,2,4-TRICHLOROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
1,2-DICHLOROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
1,3-DICHLOROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
1,4-DICHLOROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	370 U	340 U	360 U	370 U	350 U
2,4,5-TRICHLOROPHENOL	990 U	920 U	860 U	910 U	940 U	880 U
2,4,6-TRICHLOROPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
2,4-DICHLOROPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
2,4-DIMETHYLPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
2,4-DINITROPHENOL	990 U	920 U	860 U	910 U	940 U	880 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-SB-33-1203 08/23/1999 UNVALIDATED	0004-SB-34-0702 08/23/1999 UNVALIDATED	0004-SB-35-1803 08/23/1999 UNVALIDATED	0004-SB-36-2002 08/23/1999 UNVALIDATED	0004-SB-37-0403 08/23/1999 UNVALIDATED	0004-SB-38-0403 08/23/1999 UNVALIDATED
2,4-DINITROTOLUENE	390 U	370 U	340 U	360 U	370 U	350 U
2,6-DINITROTOLUENE	390 U	370 U	340 U	360 U	370 U	350 U
2-CHLORONAPHTHALENE	390 U	370 U	340 U	360 U	370 U	350 U
2-CHLOROPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
2-METHYLNAPHTHALENE	390 U	370 U	340 U	360 U	370 U	350 U
2-METHYLPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
2-NITROANILINE	990 U	920 U	860 U	910 U	940 U	880 U
2-NITROPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
3,3'-DICHLOROBENZIDINE	390 U	370 U	340 U	360 U	370 U	350 U
3-NITROANILINE	990 U	920 U	860 U	910 U	940 U	880 U
4,6-DINITRO-2-METHYLPHENOL	990 U	920 U	860 U	910 U	940 U	880 U
4-BROMOPHENYL PHENYL ETHER	390 U	370 U	340 U	360 U	370 U	350 U
4-CHLORO-3-METHYLPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
4-CHLOROANILINE	390 U	370 U	340 U	360 U	370 U	350 U
4-CHLOROPHENYL PHENYL ETHER	390 U	370 U	340 U	360 U	370 U	350 U
4-METHYLPHENOL	390 U	370 U	340 U	360 U	370 U	350 U
4-NITROANILINE	990 U	920 U	860 U	910 U	940 U	880 U
4-NITROPHENOL	990 U	920 U	860 U	910 U	940 U	880 U
ACENAPHTHENE	390 U	370 U	340 U	360 U	370 U	350 U
ACENAPHTHYLENE	390 U	370 U	340 U	360 U	370 U	350 U
ANTHRACENE	390 U	370 U	340 U	360 U	370 U	350 U
BENZO(A)ANTHRACENE	390 U	370 U	340 U	360 U	370 U	350 U
BENZO(A)PYRENE	57 J	370 U	340 U	360 U	370 U	350 U
BENZO(B)FLUORANTHENE	43 J	370 U	340 U	360 U	370 U	350 U
BENZO(G,H,I)PERYLENE	58 J	370 U	340 U	360 U	370 U	350 U
BENZO(K)FLUORANTHENE	390 U	370 U	340 U	360 U	370 U	350 U
BIS(2-CHLOROETHOXY)METHANE	390 U	370 U	340 U	360 U	370 U	350 U
BIS(2-CHLOROETHYL)ETHER	390 U	370 U	340 U	360 U	370 U	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	120 J	70 J	52 J	85 J	470	83 J
BUTYLBENZYL PHTHALATE	390 U	370 U	340 U	360 U	370 U	350 U
CARBAZOLE	390 U	370 U	340 U	360 U	370 U	350 U
CHRYSENE	50 J	370 U	340 U	360 U	370 U	350 U
DI-N-BUTYL PHTHALATE	390 U	370 U	340 U	360 U	370 U	350 U
DI-N-OCTYL PHTHALATE	390 U	370 U	340 U	360 U	370 U	350 U
DIBENZO(A,H)ANTHRACENE	390 U	370 U	340 U	360 U	370 U	350 U
DIBENZOFURAN	390 U	370 U	340 U	360 U	370 U	350 U
DIETHYL PHTHALATE	390 U	370 U	340 U	360 U	370 U	350 U
DIMETHYL PHTHALATE	390 U	370 U	340 U	360 U	370 U	350 U
FLUORANTHENE	390 U	370 U	340 U	360 U	370 U	350 U
FLUORENE	390 U	370 U	340 U	360 U	370 U	350 U
HEXACHLOROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
HEXACHLOROBUTADIENE	390 U	370 U	340 U	360 U	370 U	350 U
HEXACHLOROCYCLOPENTADIENE	390 U	370 U	340 U	360 U	370 U	350 U
HEXACHLOROETHANE	390 U	370 U	340 U	360 U	370 U	350 U
INDENO(1,2,3-CD)PYRENE	57 J	370 U	340 U	360 U	370 U	350 U

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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ISOPHORONE	390 U	370 U	340 U	360 U	370 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	370 U	340 U	360 U	370 U	350 U
N-NITROSODIPHENYLAMINE	390 U	370 U	340 U	360 U	370 U	350 U
NAPHTHALENE	390 U	370 U	340 U	360 U	370 U	350 U
NITROBENZENE	390 U	370 U	340 U	360 U	370 U	350 U
PENTACHLOROPHENOL	990 U	920 U	860 U	910 U	940 U	880 U
PHENANTHRENE	390 U	370 U	340 U	360 U	370 U	350 U
PHENOL	390 U	370 U	340 U	360 U	370 U	350 U
PYRENE	100 J	370 U	340 U	360 U	51 J	350 U
PESTICIDES/PCBs (µg/kg)						
4,4'-DDD	3.9 U	3.7 U	3.4 U	3.6 U	3.7 U	3.5 U
4,4'-DDE	3.9 U	3.7 U	3.4 U	3.6 U	3.7 U	3.5 U
4,4'-DDT	3.9 U	3.7 U	3.4 U	3.6 U	3.7 U	3.5 U
ALDRIN	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
ALPHA-BHC	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
ALPHA-CHLORDANE	1.9 J	1.9 U	1.7 J	1.9 U	1.1 J	1.8 U
AROCLOR-1016	39 U	37 U	34 U	36 U	37 U	35 U
AROCLOR-1221	80 U	74 U	70 U	73 U	76 U	71 U
AROCLOR-1232	39 U	37 U	34 U	36 U	37 U	35 U
AROCLOR-1242	39 U	37 U	34 U	36 U	37 U	35 U
AROCLOR-1248	39 U	37 U	34 U	36 U	37 U	35 U
AROCLOR-1254	39 U	37 U	34 U	36 U	37 U	35 U
AROCLOR-1260	330	37	210	130	190	89
BETA-BHC	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
DELTA-BHC	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
DIELDRIN	3.5 J	3.7 U	1.9 J	3.6 U	1.9 J	3.5 U
ENDOSULFAN I	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
ENDOSULFAN II	9.4	3.7 U	5.7	3.6 U	5.1	3.5 U
ENDOSULFAN SULFATE	3.9 U	3.7 U	3.4 U	3.6 U	3.7 U	3.5 U
ENDRIN	7.5	3.7 U	4.4	3.4 J	4.7	2.9 J
ENDRIN ALDEHYDE	9.5	3.7 U	5.3	3.5 J	5.1	2.4 J
ENDRIN KETONE	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
GAMMA-BHC (LINDANE)	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
GAMMA-CHLORDANE	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
HEPTACHLOR	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
HEPTACHLOR EPOXIDE	2 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U
METHOXYCHLOR	20 U	19 U	18 U	19 U	19 U	18 U
TOXAPHENE	200 U	190 U	180 U	190 U	190 U	180 U
INORGANICS (mg/kg)						
ALUMINUM	7350	2510	4580	6050	10000	2200
ANTIMONY	0.64	0.44	0.44	0.37	0.42	0.36 U
ARSENIC	2.7	0.98	1.8	2.4	4.7	1.2
BARIUM	19.1	5	10.3	12.7	19.4	6.4
BERYLLIUM	0.15	0.05	0.09	0.09	0.14	0.07
CADMIUM	0.71 U	0.67 U	0.62 U	0.66 U	0.68 U	0.64 U

SITE 4 - THE CHEMICAL BURIAL AREA
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CALCIUM	777	202	81.4	585	1260	272
CHROMIUM	12.5	4.1	8.6	9.9	17.9	5.9
COBALT	1.8	0.84 U	1.7	1.1	1.7	1.7
COPPER	16.2	2.7	3.4	39.9	29.3	3.2
CYANIDE	3 U	2.8 U	2.6 U	2.7 U	2.8 U	2.6 U
IRON	9050	3070	5710	7830	13700	3160
LEAD	9.3	2	3.7	4.9	10.2	2.3
MAGNESIUM	509	107	199	175	400	896
MANGANESE	44	9.4	19.4	21.2	33.9	17.5
MERCURY	0.08	0.12	0.05 U	0.05 U	0.25	0.05 U
NICKEL	5.7	2 U	1.8 U	2.1	2.4	12.6
POTASSIUM	240	104 U	239	123	119	159
SELENIUM	0.64 U	0.6 U	0.56 U	0.74	0.67	0.57 U
SILVER	0.52 U	0.49 U	0.54	0.48 U	0.5 U	0.56
SODIUM	44.3	28.9	30	29.6	39.2	34.2
THALLIUM	0.88 U	0.82 U	0.77 U	0.86	0.84 U	0.78 U
VANADIUM	18.3	7.5	15.5	15.2	30	6.9
ZINC	38.1	2.5	5.9	10.9	40.9	8.1
EXPLOSIVES (mg/kg)						
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRYL	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PETROLEUM (mg/kg)						
TOTAL PETROLEUM HYDROCARBONS	250	110 U	100 U	110 U	160	110 U
DIOXINS (µg/kg)						
1,2,3,4,6,7,8,9-OCDD	1.6 J	0.45 J	3.2 J	0.74 J	1.7 J	0.36 J
1,2,3,4,6,7,8,9-OCDF	0.03 U	0.03 U	0.02 U	0.03 U	0.03 U	0.03 U
1,2,3,4,6,7,8-HPCDD	0.03 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2,3,4,6,7,8-HPCDF	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U
1,2,3,4,7,8,9-HPCDF	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U
1,2,3,4,7,8-HXCDD	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U
1,2,3,4,7,8-HXCDF	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
1,2,3,6,7,8-HXCDD	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2,3,6,7,8-HXCDF	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

SITE 4 - THE CHEMICAL BURIAL AREA
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THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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1,2,3,7,8,9-HXCDD	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2,3,7,8,9-HXCDF	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
1,2,3,7,8-PECDD	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2,3,7,8-PECDF	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2,3,4,6,7,8-HXCDF	0.02 U	0.01 U	0.01 U	0.01 U	0.02 U	0.01 U
2,3,4,7,8-PECDF	0.02 U	0.02 U	0.05	0.02 U	0.02 U	0.02 U
2,3,7,8-TCDD	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2,3,7,8-TCDF	0.02 U	0.01 U	0.01 U	0.02 U	0.02 U	0.01 U
TOTAL HPCDD	0.03 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
TOTAL HPCDF	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U
TOTAL HXCDD	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U
TOTAL HXCDF	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
TOTAL PECDD	0.04 U	0.03 U	0.53	0.03 U	0.03 U	0.03 U
TOTAL PECDF	0.02 U	0.02 U	0.05	0.02 U	0.02 U	0.02 U
TOTAL TCDD	2.7	2.4	2.4	2.2	2.3	2.2
TOTAL TCDF	0.08	0.07	0.07	0.08	0.1	0.06

B.2 SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

Sample ID No.: 0004-SB-01-1815
Sample Location: Site 4
Sampled By: DJS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 6-14-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1105	15 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

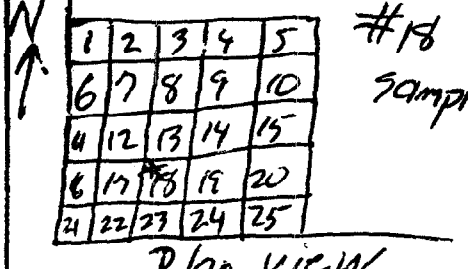
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

MAP:



Plan view

Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	✓

Signature(s): David Schwachsky

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-02-2012
Sample Location: Site 4
Sampled By: DSS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-14-99 Time: 1115 Method: disposable spoon Monitor Reading (ppm): —	12 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

South wall, westend

MAP:

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24

Sample

Circle if Applicable:

MS/MSD	Duplicate ID No.:
/	/

Signature(s): David Schmachtenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SR-03-1107
Sample Location: Site 4
Sampled By: DJS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-14-99 Time: 1130 Method: disposable spoon Monitor Reading (ppm): —	7'	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

West wall, South end cell #11 sampled.

MAP:

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schwachofer

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7687~~ 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-04-1015
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-16-99 Time: 1000 Method: disposable spoon Monitor Reading (ppm): —	15 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/OCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

MAP:

N ↑

1	2	3	4	5
6	7	8	9	10*
11	12	13	14	15
16	17	18	19	20

Plan view

#10 Sampled

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): David Schnacke

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7637~~ 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-05-0515
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 6-16-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1020	15 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

MAP:

↑N #5 sampled

1	2	3	4	5*	6	7	8	9	XX
10	11	12	13	14	15	16	17	18	XX

floor

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-06-1212
Sample Location: ST-04
Sampled By: DS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-16-99 Time: 1020 Method: disposable spoon Monitor Reading (ppm): —	12 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

West wall, northend.

MAP:

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21

Sample

Wall

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: —

Signature(s): David Schmechel

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-07-0302
Sample Location: Site 4
Sampled By: DS/HS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-16-99 Time: 1100 Method: disposable spoon Monitor Reading (ppm): —	2 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North wall, west end

MAP:

Sample

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21

Wall

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB08-1207
Sample Location: Site 4
Sampled By: DSKS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-16-99 Time: 1040 Method: disposable spoon Monitor Reading (ppm): —	7 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North wall, ~~east end~~, D.J.S. west end, east of 4GW11

MAP:

1	2	3	4	5	6	7
8	9	10	11	12*	13	14
15	16	17	18	19	20	21

Wall

#12 sampled

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB09-2420
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 6-30-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1300	20 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

Grid #24 sampled

MAP:

Grid #10

Grid #1

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

N

Plan view

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-SB10-0116
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-30-99 Time: 1300 Method: disposable spoon Monitor Reading (ppm): 0.0	16 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

Grid #1 sampled

MAP:

Grid #12

Grid #4

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Grid #9

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schwartz

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB11-1412
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-30-99 Time: 1330 Method: disposable spoon Monitor Reading (ppm): 0.0	12 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

South wall, by grid #9

Grid #14 sampled

MAP:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

#14 Sampled

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7687~~ 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB12-02
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-30-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1335	2 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

Debris present in wall (glass & metal)
Grid #2 sampled
North wall by grid #10 (floor)

MAP:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

#2 sampled

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schmachtenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB-13-2420
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 7-8-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0915	20 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

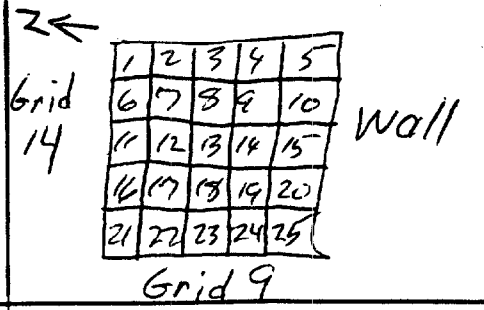
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

#24 sampled

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-14-08
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 7-8-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0920	20 feet	tan	sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

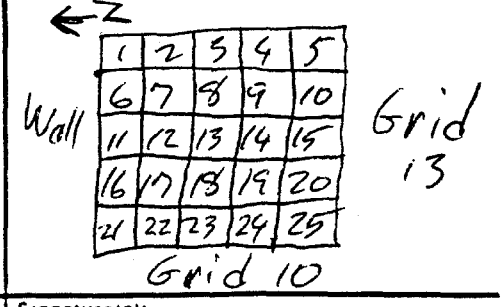
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

#8 sampled

MAP:



Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): David Schnacker

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-15-0302
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7-8-99 Time: 0925 Method: disposable spoon Monitor Reading (ppm): 0.0	2 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

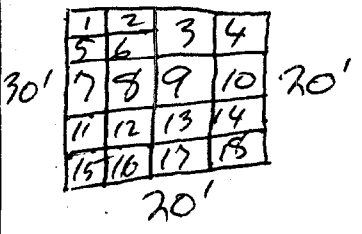
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

#3 sampled
South wall east of
Grid #11

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB-16-020
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 7-8-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0930	2 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

#2 collected, near well 4 GW11A (screen exposed). West end of excavation, rounds to northwall.

MAP:

1	2	3	4	5	6
7	8	9	10	11	12

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: —

Signature(s): David Schnacky

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-17-175
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-8-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0940	15 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

#17 sampled
North wall, east of grid
#12

MAP:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Daniel Schwachly

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-SB-18-23
Sample Location: SI70.4
Sampled By: DS/HS
C.O.C. No.:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7-26-99 Time: 1240 Method: disposable spoon Monitor Reading (ppm): 0.0	15 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

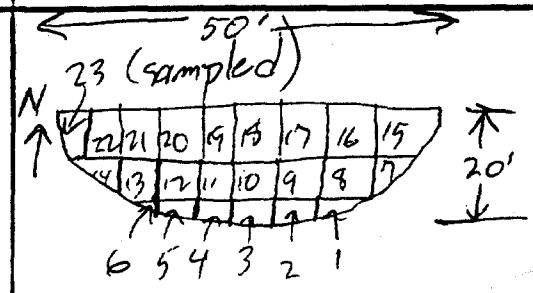
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

Floor Sample

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schnackenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7637~~ 304 7773

Sample ID No.: 0004-SB-19-0315
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-26-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1250	15 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

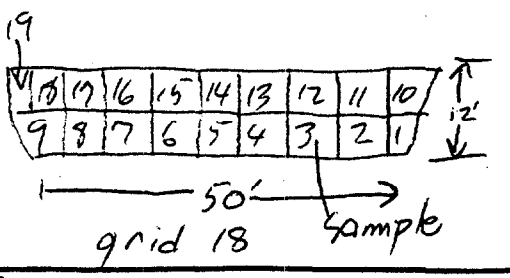
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

floor sample

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schuchonley

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-20-0203
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7-26-99 Time: 1400 Method: disposable spoon Monitor Reading (ppm): 0.0	2 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

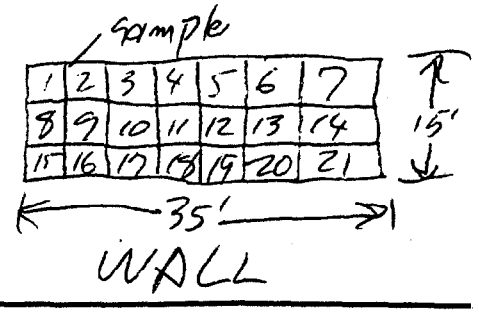
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

The backhoe was used to get soil from 2 feet bgs to the bottom of the excavation for us to sample

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schwartzley

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-21-1912
Sample Location: Site 4
Sampled By: DS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7-26-99 Time: 1315 Method: disposable spoon Monitor Reading (ppm): 0.0	12 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

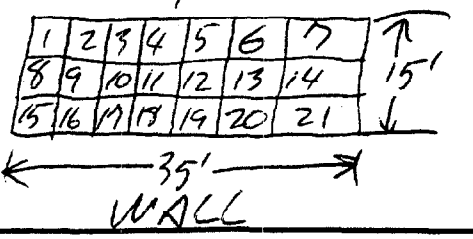
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

MAP:

#19 sampled



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schuckerly

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7637~~ 304 7773

Sample ID No.: 0004-SB-22-1007
Sample Location: S. TP4
Sampled By: DS/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7-26-99 Time: 1325 Method: disposable spoon Monitor Reading (ppm): 0.0	7	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

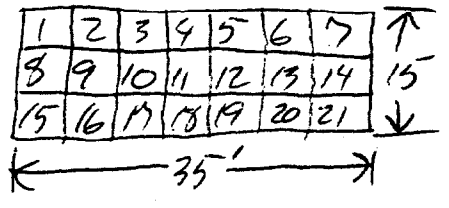
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

MAP:

#10 sampled



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB-23-12007
Sample Location: Site 4
Sampled By: DS/DF
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 8-5-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0915	7 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North wall, west end

MAP:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

sample

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schnacke

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB-24-140
Sample Location: Site 4
Sampled By: DS/DF
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8-5-99 Time: 0920 Method: disposable spoon Monitor Reading (ppm): 0.0	7 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/OCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North wall, east of grid 23, west of grid 25

MAP:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Sample

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Bahnsen

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 6004-SB-25-0202
Sample Location: Site 4
Sampled By: DS/DE
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 8-5-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0940	2 feet	Tan	Sand and gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North wall, east of grid 24

MAP:

Sample

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schnacker

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7687~~ 7773

Sample ID No.: 0004-SB-26-2210
Sample Location: Site 4
Sampled By: DS/DF
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8-5-99 Time: 0950 Method: disposable spoon Monitor Reading (ppm): 0.6	10 feet	Tan	Sand and gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

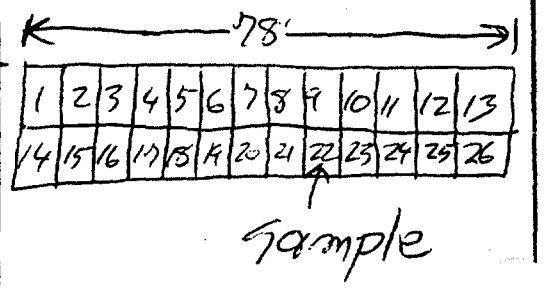
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

West end, additional excavation below fence, floor, north end

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): David Schnadonly

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-27-2210
Sample Location: 5 to 4
Sampled By: DS/DF
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 8-5-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1000	10 feet	Tan	Sandard gravel
Method: disposable spoon			
Monitor Reading (ppm): 0.7			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

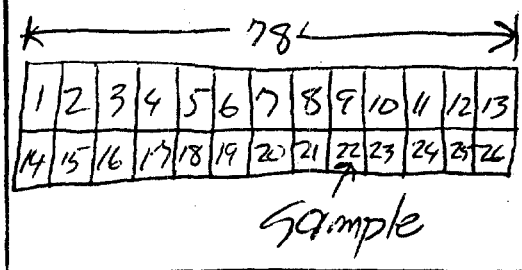
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

North central, by fenceline, east of sample 26

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schnacker

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[x] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-28
Sample Location:
Sampled By: J D Ferris
C.O.C. No.:

Type of Sample:
[x] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 062899	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0930	~ 30	Orange Tan	Gravelly Sand Wet
Method: Plastic Trowel			
Monitor Reading (ppm): 40			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

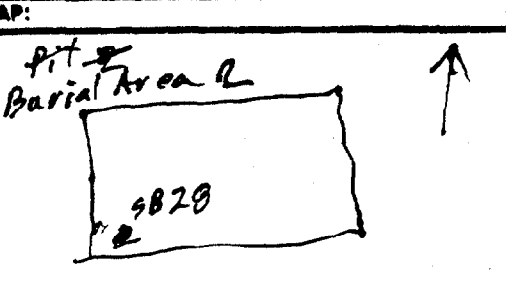
Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

Moderate chlorinated Hydrocarbon odor

Floor Sample

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): J. Ashe

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-29
Sample Location:
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/20/99 Time: 0940 Method: Grab/Plastic Trowel Monitor Reading (ppm): 80.0	25'	Orange Tan	Gravelly sand w/ clay & Large cobbles

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

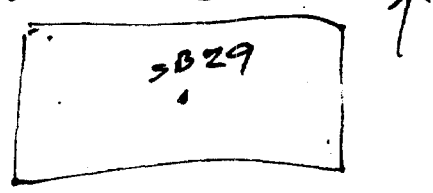
OBSERVATIONS / NOTES:

moderate chlorinated hydrocarbon odor

Floor (Center of Burial Pit 2)

MAP:

Burial Pit 2



Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~295~~ ~~2687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0004-SB-30
Sample Location:
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 08/20/97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 955	15'		SW - Silty Sand w/ Cobbles
Method: Plastic Trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

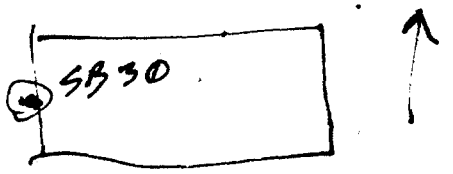
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS	✓	

OBSERVATIONS / NOTES:

West Wall Burial Pit 2
15' Deep
No Odor

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0004-SB-31
Sample Location:
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 8/20/99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1010	20'	Orange Tan Sand / White Clay	Mix Clayey Sand and some cobbles thick competent white Clay
Method: Plastic Trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

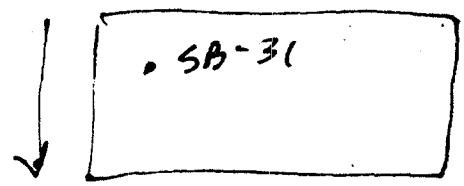
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	—	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	—	
TAL METALS + CYANIDE	1-4 oz GLASS	—	
EXPLOSIVES	1-4 oz GLASS	—	
Total Petroleum Hydrocarbons	1-4 oz GLASS	—	
TCL Dioxins/Furans	2-4 oz GLASS	—	

OBSERVATIONS / NOTES:

No odor
East Floor Burial Pit 2
20' below grade
Interface between sand and clay.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~295~~ ~~2687~~ 304 7773

Sample ID No.: 0004-SB-32-[redacted]
Sample Location: Site #4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/23/99 Time: 1015 Method: GRAB Monitor Reading (ppm): 0.0	0-6"	Yellowish ORANGE	Medium To coarse grained Sandy CLAY with some SILT & a lot of Quartz Gravels.

COMPOSITE SAMPLE DATA:

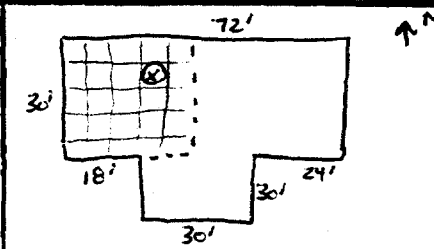
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	1	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	1	
TAL METALS + CYANIDE	1-4 oz GLASS	1	
EXPLOSIVES	1-4 oz GLASS	1	
Total Petroleum Hydrocarbons	1-4 oz GLASS	1	
TCL Dioxins/Furans	1-8 oz GLASS	1	

OBSERVATIONS / NOTES: NONE.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Charles L. Fry III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7637~~ 7773

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-SB-33-[redacted]
Sample Location: SITE #4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/23/99 Time: 1040 Method: GRAB Monitor Reading (ppm): Ø.Ø	0-6"	Yellowish orange	Silty SAND, coarse grained, wet with some CLAY & Quartz Gravels

COMPOSITE SAMPLE DATA:

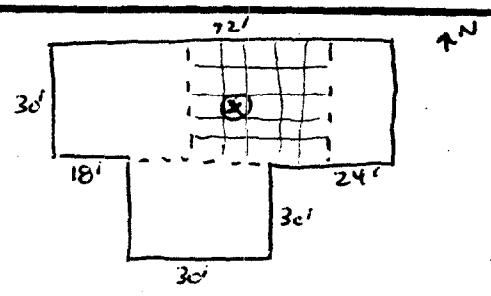
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	1	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	1	
TAL METALS + CYANIDE	1-4 oz GLASS	1	
EXPLOSIVES	1-4 oz GLASS	1	
Total Petroleum Hydrocarbons	1-4 oz GLASS	1	
TCL Dioxins/Furans	1-8 oz GLASS	1	

OBSERVATIONS / NOTES: NONE

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Charles C. Fry III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-SB-34-[redacted]
Sample Location: SITE #4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/23/99 Time: 1120 Method: GRAB Monitor Reading (ppm): Ø, Ø	0-6"	Yellowish ORANGE	Silty SAND, WET with some CLAY, coarse grained.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

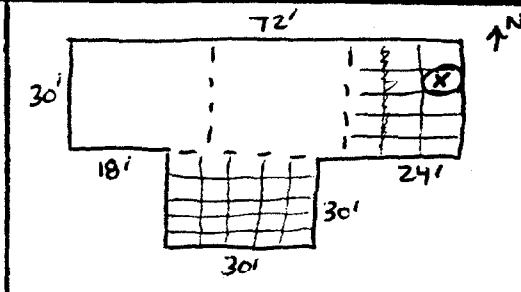
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	/	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	/	
TAL METALS + CYANIDE	1-4 oz GLASS	/	
EXPLOSIVES	1-4 oz GLASS	/	
Total Petroleum Hydrocarbons	1-4 oz GLASS	/	
TCL Dioxins/Furans	1-8 oz GLASS	/	

OBSERVATIONS / NOTES:

Sample was split with Gannett-Fleming.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Charles C. Fry III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 0004-SB-35-[redacted]
Sample Location: SITE#4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 8/23/99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1140	0-6"	Yellowish ORANGE	Medium TO COARSE Grained SAND with Numerous QUARTZ Gravels.
Method: GRAB			
Monitor Reading (ppm): Ø.Ø			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

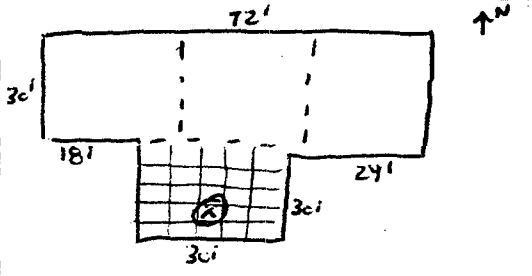
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	1	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	1	
TAL METALS + CYANIDE	1-4 oz GLASS	1	
EXPLOSIVES	1-4 oz GLASS	1	
Total Petroleum Hydrocarbons	1-4 oz GLASS	1	
TCL Dioxins/Furans	1-8 oz GLASS	1	

OBSERVATIONS / NOTES:

Sample Split with Garnett Fleming.

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Charles C. Ly III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

Sample ID No.: 8004-SB-36-2002
Sample Location: Site #4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/23/99 Time: 1320 Method: GRAB Monitor Reading (ppm): Ø.Ø	0-6"	Yellowish ORANGE	Medium To Coarse grained SILTY SAND with a lot of Quartz Gravels & Trace CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

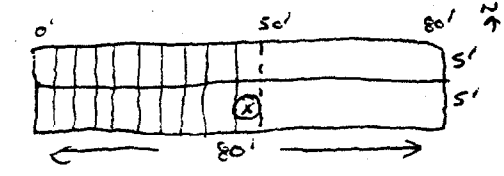
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	1	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	1	
TAL METALS + CYANIDE	1-4 oz GLASS	1	
EXPLOSIVES	1-4 oz GLASS	1	
Total Petroleum Hydrocarbons	1-4 oz GLASS	1	
TCL Dioxins/Furans	1-8 oz GLASS	1	

OBSERVATIONS / NOTES:

NORTH WALL SAMPLE.

MAP:



NORTH WALL

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Charles C. Ty III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

Sample ID No.: 0004-SB-37-0403
Sample Location: SITE#4
Sampled By: CCL/WP
C.O.C. No.: 12192, 12191

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 8/23/99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1330	0-6"	Yellowish ORANGE	Sandy CLAY, coarse grained with a lot of Quartz Gravels.
Method: GRAB			
Monitor Reading (ppm): Ø.Ø			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

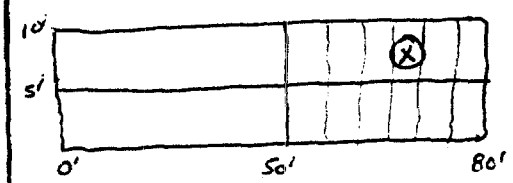
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	/	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	/	
TAL METALS + CYANIDE	1-4 oz GLASS	/	
EXPLOSIVES	1-4 oz GLASS	/	
Total Petroleum Hydrocarbons	1-4 oz GLASS	/	
TCL Dioxins/Furans	1-8 oz GLASS	/	

OBSERVATIONS / NOTES:

NORTH WALL SAMPLE.

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Charles L. Ty III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-SB-38-~~00~~ 0403
Sample Location: SITE #4
Sampled By: CCL/WP
C.O.C. No.:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 8/23/99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1335 Method: GRAB Monitor Reading (ppm): Ø.Ø	0-6"	Yellowish ORANGE	Course grained SAND, wet with a lot of Quartz gravels

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

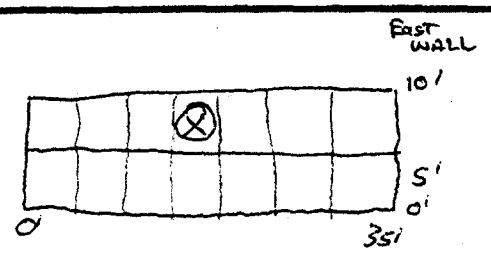
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	✓	
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	1-8 oz GLASS	✓	

OBSERVATIONS / NOTES:

East wall Sample.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Charles L. Ly III

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

Sample ID No.: 0004-black-99
Sample Location: Site 4
Sampled By:
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-16-99 Time: 1115 Method: disposable spoon Monitor Reading (ppm): —	6 feet	black	Sand stained by oily substance

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

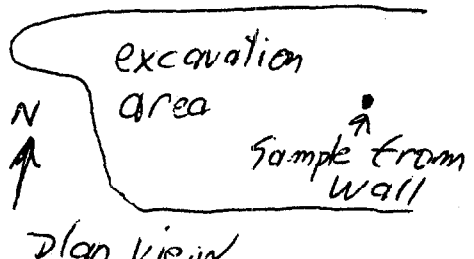
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS		
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓ pest/pcb only	
TAL METALS + CYANIDE	1-4 oz GLASS		
EXPLOSIVES	1-4 oz GLASS		
Total Petroleum Hydrocarbons	1-4 oz GLASS	✓	
TCL Dioxins/Furans	2-4 oz GLASS		
Diesel Range Organics		✓	

OBSERVATIONS / NOTES:

Sampled for pest/pcb (TCL), TPH, and DRO only. Excavation incomplete at sample location. Sample taken to determine origin of staining

MAP:



plan view

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schnackel

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~2687~~ 304 7773

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: 0004-B2-16
Sample Location: 0004
Sampled By: JOF/KS
C.O.C. No.:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/11/99 Time: 1550 Method: Grab Monitor Reading (ppm): 20	≅ 16'	Brown	Sand + gravel

COMPOSITE SAMPLE DATA:

Date: N/A	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	yes	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	yes	
TAL METALS + CYANIDE	1-4 oz GLASS	—	
EXPLOSIVES	1-4 oz GLASS	—	
Total Petroleum Hydrocarbons	1-4 oz GLASS	—	
TCL Dioxins/Furans	2-4 oz GLASS	—	

OBSERVATIONS / NOTES:

Collected to assess level of contam. at depth

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ 304 ~~7687~~ 7773

Sample ID No.: 0004-B1-22
Sample Location: 00041
Sampled By: JOF/KS
C.O.C. No.:

- [ ] Surface Soil
- [x] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/11/99 Time: ~~0824~~ 1545 Method: Grab Monitor Reading (ppm): 159	≅ 22'	Brown	Sand + gravel

COMPOSITE SAMPLE DATA:

Date: N/A	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	Yes	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	Yes	
TAL METALS + CYANIDE	1-4 oz GLASS	—	
EXPLOSIVES	1-4 oz GLASS	—	
Total Petroleum Hydrocarbons	1-4 oz GLASS	—	
TCL Dioxins/Furans	2-4 oz GLASS	—	

OBSERVATIONS / NOTES:

Confirmation Sample collected to assess level of Cont. at this depth.

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

B.3 TPH SOIL SCREENING LEVEL CALCULATION

CALCULATION OF A TPH CONCENTRATION THAT IS PROTECTIVE OF GROUNDWATER

Introduction

Total petroleum hydrocarbons (TPH) comprise a generic mixture of hydrocarbon material that cannot be differentiated into specific organic compounds. This usually occurs because the source material of the TPH has gone through changes in its composition as a result of weathering. Weathering involves a number of processes including volatilization, hydrolysis, photolysis, biodegradation, biotransformation, physical breakup and dissolution. The weathering results in material that no longer contains any identifiable volatile organic compounds (VOCs), semivolatile organic componds (SVOCs) or polynuclear aromatic hydrocarbons.

Because the materials are not identifiable, no chemical or toxicity specific characteristics can be applied to TPH. The Massachusetts Department of Environmental Protection (MADEP) recommends a surrogate approach for evaluating TPH. The most toxic surrogate compound recommended by MADEP is pyrene. Therefore, pyrene serves as the basis for deriving a soil concentration protective of groundwater.

Technical Approach

Conceptually, a compound in soil can leach into the groundwater and ultimately undergo dilution when the leachate enters the aquifer. Site-specific and chemical-specific information can be used to relate these two phases of transport.

The groundwater concentration (C_w) and the leachate concentration (C_l) are related to each other by a dilution factor (DF):

$$C_l = C_w \times DF$$

To derive the TPH concentration protective of groundwater, the groundwater concentration is set equal to the Region III risk-based tap water concentration for pyrene of 180 ug/L.

The dilution factor is determined through a simple mass balance as defined by the Summers Model and the EPA's Soil Screening Guidance Document (1996). The dilution factor is defined by the equation:

$$DF = (Q_p + Q_a) / Q_p$$

Q_p is the infiltration volumetric flow rate and Q_a is the aquifer volumetric flow rate. Q_p is defined by the equation:

$$Q_p = IA$$

where I is the infiltration rate and A is the source area. The infiltration rate is equal to 40 inches per year. For this derivation, A is defined as the approximate area of excavation at Site 4 using dimensions of 73.2 meters by 34.4 meters (2,520 m^2).

Q_a is defined by the equation:

$$Q_a = WdKi$$

W is the width of the source area perpendicular to the groundwater flow. Because groundwater flows to the south at Site 4, the width is 73.2 meters. The term, d, is the depth of the aquifer (6.36 meters). The hydraulic conductivity (K) is 5.96 ft/day (663 m/yr) and the hydraulic gradient (i) is 0.06.

Using this specific information, the infiltration volumetric flow rate is 2,570 m^3/year and aquifer volumetric flow rate is 18,520 m^3/yr. This results in a dilution factor of 8.2. Multiplying this dilution factor by the groundwater concentration results in a leachate concentration of 1,476 ug/L.

The leachate concentration can be related to the soil concentration through the equation:

$$C_s = C_l [K_{oc} f_{oc} + (\Theta_w + \Theta_a H') / \rho_b]$$

C_s is the soil concentration that is protective of the leachate concentration, C_l. The K_{oc} is the organic carbon partition coefficient. The value for pyrene (68,000 L/Kg) is used in this equation. The f_{oc} is the fraction of organic carbon in the soil. Site specific data indicates an average f_{oc} of 0.017. The terms Θ_w and Θ_a are the water-filled porosity and air-filled porosity, respectively. The default values of 0.3 and 0.13, as presented in the EPA's Soil Screening Guidance, are used for the water-filled porosity and the air-filled porosity, respectively. The default soil bulk density (p_b) of 1.5 kg/L, as defined in the Soil Screening Guidance, is also used in this equation. Finally, the unitless Henry's Law constant (H') for pyrene (4.5 x 10^{-4}) is used in this equation.

Incorporating these values into this equation results in soil level of 1,700 mg/kg. The calculations are provided on the following page. Data are provided in Table 2-3 in the text.

Assuming that the TPH data at Site 4 are lognormally distributed, the 95% upper confidence limit of the mean is 526 mg/kg. The geometric mean concentration is 67 mg/kg. The arithmetic mean concentration is 359 mg/kg. These values are all below the derived groundwater protection value of 1,700 mg/kg. This suggests that TPH is not present at concentrations that would significantly impact the groundwater.

Conclusion

By using site-specific information, using pyrene as a surrogate for TPH, and using the equations defined in the EPA's Soil Screening Guidance, it can be concluded that levels of TPH in the soil would not significantly impact groundwater. This is consistent with the results of the investigation conducted at Site 4. Analytical data for the complete range of VOCs and SVOCs indicated that no parameters were detected in excess of PRGs.

The approach used here is relatively conservative. Use of pyrene resulted in a lower groundwater concentration. Other recommended surrogates for TPH have risk-based tap water concentrations that may be orders-of-magnitude greater than pyrene's. Overall, the derived value is biased low.

CALCULATIONS

Q_p = IA = (1.02 m/yr) (2,520 m^2) = 2,570 m^3/yr

Q_a = WdKi = (73.2 m)(6.36 m)(663 m/yr)(0.06) = 18,520 m^3/yr

DF = (Q_p + Q_a) / Q_p = (2,570 m^3/yr + 18,520 m^3/yr) / (2,570 m^3/yr) = 8.2

C_l = C_w DF = (180 ug/L)(8.2) = 1,476 ug/L

C_s = C_l [K_{oc} f_{oc} + ($_w$ + $_a$H') / $_b$]

= (1,476 ug/L)[(68,000 L/kg)(0.017) + (0.3 + 0.13 · 4.5E-04) / 1.5]

= 1.71E06 ug/kg = 1706 mg/kg

Cs = 1,706 mg/kg

B.4 B1-22 AND B2-16 DATA

Data Qualifiers

The following analytical data include data qualifiers that were added by the laboratory following sample analysis. The qualifiers can be interpreted as follows:

- **U** – indicates that the chemical was not detected at the numerical detection limit (quantitation limit) noted.
- **UJ** – indicates that the chemical was not detected. However, the detection limit (quantitation limit) is considered estimated based on noncompliances encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.
- **J** – indicates that the chemical was detected. However, the associated numerical result is not a precise representation of the amount that is actually present in the sample. The laboratory result is considered to be an estimate.
- **B** – indicates that the chemical was detected but that the result is considered to be a false positive as a consequence of laboratory blank contamination.
- **JB** – indicates that the chemical was detected but the result is considered a false positive as a consequence of laboratory blank contamination. In addition, the detection limit is considered estimated based on noncompliances encountered during laboratory analysis.

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS - SAMPLES B1-22 AND B2-16
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-B1-22 08/11/99 UNVALIDATED	0004-B2-16 08/11/99 UNVALIDATED
VOLATILES (μg/kg)		
1,1,1-TRICHLOROETHANE	37 U	11 U
1,1,2,2-TETRACHLOROETHANE	48	11 U
1,1,2-TRICHLOROETHANE	37 U	11 U
1,1-DICHLOROETHANE	37 U	11 U
1,1-DICHLOROETHENE	37 U	11 U
1,2-DICHLOROETHANE	37 U	11 U
1,2-DICHLOROETHENE (TOTAL)	37 U	11 U
1,2-DICHLOROPROPANE	37 U	11 U
2-BUTANONE	37 U	11 U
2-HEXANONE	37 U	11 U
4-METHYL-2-PENTANONE	37 U	11 U
ACETONE	37 U	11 U
BENZENE	37 U	11 U
BROMODICHLOROMETHANE	37 U	11 U
BROMOFORM	37 U	11 U
BROMOMETHANE	37 U	11 U
CARBON DISULFIDE	37 U	11 U
CARBON TETRACHLORIDE	37 U	11 U
CHLOROBENZENE	37 U	11 U
CHLOROETHANE	37 U	11 U
CHLOROFORM	37 U	11 U
CHLOROMETHANE	37 U	11 U
CIS-1,3-DICHLOROPROPENE	37 U	11 U
DIBROMOCHLOROMETHANE	37 U	11 U
ETHYLBENZENE	37 U	11 U
METHYLENE CHLORIDE	37 U	11 U
STYRENE	37 U	11 U
TETRACHLOROETHENE	10 J	1 J
TOLUENE	2 J	4 J
TRANS-1,3-DICHLOROPROPENE	37 U	11 U
TRICHLOROETHENE	440	11 U
VINYL CHLORIDE	37 U	11 U
XYLENES, TOTAL	1 J	11 U
SEMIVOLATILES (μg/kg)		
1,2,4-TRICHLOROBENZENE	370 U	350 U
1,2-DICHLOROBENZENE	370 U	350 U
1,3-DICHLOROBENZENE	370 U	350 U
1,4-DICHLOROBENZENE	370 U	350 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	350 U
2,4,5-TRICHLOROPHENOL	890 U	860 U
2,4,6-TRICHLOROPHENOL	370 U	350 U
2,4-DICHLOROPHENOL	370 U	350 U
2,4-DIMETHYLPHENOL	370 U	350 U
2,4-DINITROPHENOL	890 U	860 U
2,4-DINITROTOLUENE	370 U	350 U
2,6-DINITROTOLUENE	370 U	350 U
2-CHLORONAPHTHALENE	370 U	350 U
2-CHLOROPHENOL	370 U	350 U
2-METHYLNAPHTHALENE	150 J	350 U
2-METHYLPHENOL	370 U	350 U
2-NITROANILINE	890 U	860 U
2-NITROPHENOL	370 U	350 U
3,3'-DICHLOROBENZIDINE	370 U	350 U
3-NITROANILINE	890 U	860 U
4,6-DINITRO-2-METHYLPHENOL	890 U	860 U
4-BROMOPHENYL PHENYL ETHER	370 U	350 U
4-CHLORO-3-METHYLPHENOL	370 U	350 U

SITE 4 - THE CHEMICAL BURIAL AREA
SUMMARY OF ANALYTICAL RESULTS - SAMPLES B1-22 AND B2-16
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0004-B1-22 08/11/99 UNVALIDATED	0004-B2-16 08/11/99 UNVALIDATED
4-CHLOROANILINE	370 U	350 U
4-CHLOROPHENYL PHENYL ETHER	370 U	350 U
4-METHYLPHENOL	370 U	350 U
4-NITROANILINE	890 U	860 U
4-NITROPHENOL	890 U	860 U
ACENAPHTHENE	370 U	350 U
ACENAPHTHYLENE	370 U	350 U
ANTHRACENE	370 U	350 U
BENZO(A)ANTHRACENE	370 U	350 U
BENZO(A)PYRENE	370 U	350 U
BENZO(B)FLUORANTHENE	370 U	350 U
BENZO(G,H,I)PERYLENE	370 U	350 U
BENZO(K)FLUORANTHENE	370 U	350 U
BIS(2-CHLOROETHOXY)METHANE	370 U	350 U
BIS(2-CHLOROETHYL)ETHER	370 U	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	84	350 U
BUTYLBENZYL PHTHALATE	370 U	350 U
CARBAZOLE	370 U	350 U
CHRYSENE	370 U	350 U
DI-N-BUTYL PHTHALATE	370 U	350 U
DI-N-OCTYL PHTHALATE	370 U	350 U
DIBENZO(A,H)ANTHRACENE	370 U	350 U
DIBENZOFURAN	370 U	350 U
DIETHYL PHTHALATE	370 U	350 U
DIMETHYL PHTHALATE	370 U	350 U
FLUORANTHENE	370 U	350 U
FLUORENE	370 U	350 U
HEXACHLOROBENZENE	370 U	350 U
HEXACHLOROBUTADIENE	370 U	350 U
HEXACHLOROCYCLOPENTADIENE	370 U	350 U
HEXACHLOROETHANE	370 U	350 U
INDENO(1,2,3-CD)PYRENE	370 U	350 U
ISOPHORONE	370 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	370 U	350 U
N-NITROSODIPHENYLAMINE	370 U	350 U
NAPHTHALENE	370 U	350 U
NITROBENZENE	370 U	350 U
PENTACHLOROPHENOL	890 U	860 U
PHENANTHRENE	370 U	350 U
PHENOL	370 U	350 U
PYRENE	370 U	350 U

B.5 SOIL GAS SAMPLE DATA

TETRA TECH NUS, INC.

Lab Name:QUANTERRA SDG Number:

Matrix: (soil/water) AIR Lab Sample ID:H9H240111 001
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL Date Received: 08/24/99
Work Order: D1NF3101 Date Extracted:08/30/99
Dilution factor: 49303 Date Analyzed: 08/30/99

QC Batch: 9242349

Client Sample Id: SER#12523

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
75-71-8	Dichlorodifluoromethane	9900	U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafl	9900	U
74-87-3	Chloromethane	25000	U
75-01-4	Vinyl chloride	9900	U
74-83-9	Bromomethane	9900	U
75-00-3	Chloroethane	9900	U
75-69-4	Trichlorofluoromethane	9900	U
75-35-4	1,1-Dichloroethene	9900	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	9900	U
75-09-2	Methylene chloride	9900	U
75-34-3	1,1-Dichloroethane	9900	U
156-59-2	cis-1,2-Dichloroethene	9900	U
67-66-3	Chloroform	9900	U
71-55-6	**1,1,1-Trichloroethane**	**20000**	
56-23-5	Carbon tetrachloride	9900	U
71-43-2	Benzene	9900	U
107-06-2	1,2-Dichloroethane	9900	U
79-01-6	**Trichloroethene**	**1300000**	
78-87-5	1,2-Dichloropropane	9900	U
10061-01-5	cis-1,3-Dichloropropene	9900	U
108-88-3	Toluene	9900	U
10061-02-6	trans-1,3-Dichloropropene	9900	U
79-00-5	1,1,2-Trichloroethane	9900	U
127-18-4	Tetrachloroethene	9900	U
106-93-4	1,2-Dibromoethane (EDB)	9900	U
108-90-7	Chlorobenzene	9900	U
100-41-4	Ethylbenzene	9900	U
136777-61-2	m-Xylene & p-Xylene	9900	U

TETRA TECH NUS, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) AIR

Lab Sample ID:H9H240111 001

Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level)-Air

Sample WT/Vol: / mL
Work Order: D1NF3101
Dilution factor: 49303

Date Received: 08/24/99
Date Extracted:08/30/99
Date Analyzed: 08/30/99

QC Batch: 9242349

Client Sample Id: SER#12523

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
95-47-6	o-Xylene	9900	U
100-42-5	Styrene	9900	U
79-34-5	1,1,2,2-Tetrachloroethane	9900	U
108-67-8	1,3,5-Trimethylbenzene	9900	U
95-63-6	1,2,4-Trimethylbenzene	9900	U
541-73-1	1,3-Dichlorobenzene	9900	U
106-46-7	1,4-Dichlorobenzene	9900	U
95-50-1	1,2-Dichlorobenzene	9900	U
100-44-7	Benzyl chloride	9900	U
120-82-1	1,2,4-Trichlorobenzene	9900	U
87-68-3	Hexachlorobutadiene	9900	U

B.6 ANALYTICAL DATA - SAMPLE 0004-BLACK-99

QUANTERRA INCORPORATED

PRELIMINARY DATA SUMMARY

Lot #: A9F170221

Tetra Tech NUS, Inc.
NSWC WHITE OAK
Project Number: CTO304

Date Reported: 6/23/99

Client Sample ID: 0004-BLACK-99
Sample #: 001 Date Sampled: 06/16/99 11:15 Date Received: 06/17/99 Matrix: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCBs				
PCB-1016	ND	380	ug/kg	SW846 8082
PCB-1221	ND	380	ug/kg	SW846 8082
PCB-1232	ND	380	ug/kg	SW846 8082
PCB-1242	ND	380	ug/kg	SW846 8082
PCB-1248	ND	380	ug/kg	SW846 8082
PCB-1254	ND	380	ug/kg	SW846 8082
PCB-1260	3100	380	ug/kg	SW846 8082

Results and reporting limits have been adjusted for dry weight.

Extractable Petroleum Hydrocarbons				
TPH (Extractables)	6900	340	mg/kg	SW846 8015B

Results and reporting limits have been adjusted for dry weight.

Inorganic Analysis				
Total Recoverable Petroleum Hydrocarbons	11000	950	mg/kg	MCAWW 418.1
Total Residue as Percent Solids	87.0	0.10	%	MCAWW 160.3 MOD

Results and reporting limits have been adjusted for dry weight.

APPENDIX C

SITE 33

C.1 CONFIRMATORY SAMPLING DATA SET

C.2 SOIL SAMPLE LOG SHEETS

C.1 CONFIRMATORY SAMPLING DATA SET

Data Qualifiers

The following analytical data include data qualifiers that were added by the laboratory following sample analysis. The qualifiers can be interpreted as follows:

- U – indicates that the chemical was not detected at the numerical detection limit (quantitation limit) noted.
- UJ – indicates that the chemical was not detected. However, the detection limit (quantitation limit) is considered estimated based on noncompliances encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.
- J – indicates that the chemical was detected. However, the associated numerical result is not a precise representation of the amount that is actually present in the sample. The laboratory result is considered to be an estimate.
- B – indicates that the chemical was detected but that the result is considered to be a false positive as a consequence of laboratory blank contamination.
- JB – indicates that the chemical was detected but the result is considered a false positive as a consequence of laboratory blank contamination. In addition, the detection limit is considered estimated based on noncompliances encountered during laboratory analysis.

SITE 33 - BUILDING 25, PLATING SHOP EQUALIZATION TANK
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0033-SB-01-20(BENEATH) 07/08/99 UNVALIDATED	0033-SB-02-08(OUTLET) 07/09/99 UNVALIDATED
VOLATILES (µg/kg)		
1,1,1-TRICHLOROETHANE	12 U	11 U
1,1,2,2-TETRACHLOROETHANE	12 U	11 U
1,1,2-TRICHLOROETHANE	12 U	11 U
1,1-DICHLOROETHANE	12 U	11 U
1,1-DICHLOROETHENE	12 U	11 U
1,2-DICHLOROETHANE	12 U	11 U
1,2-DICHLOROETHENE (TOTAL)	12 U	11 U
1,2-DICHLOROPROPANE	12 U	11 U
2-BUTANONE	12 U	11 U
2-HEXANONE	12 U	11 U
4-METHYL-2-PENTANONE	12 U	11 U
ACETONE	12 U	11 U
BENZENE	12 U	11 U
BROMODICHLOROMETHANE	12 U	11 U
BROMOFORM	12 U	11 U
BROMOMETHANE	12 U	11 U
CARBON DISULFIDE	12 U	11 U
CARBON TETRACHLORIDE	12 U	11 U
CHLOROBENZENE	12 U	11 U
CHLOROETHANE	12 U	11 U
CHLOROFORM	12 U	11 U
CHLOROMETHANE	12 U	11 U
CIS-1,3-DICHLOROPROPENE	12 U	11 U
DIBROMOCHLOROMETHANE	12 U	11 U
ETHYLBENZENE	12 U	11 U
METHYLENE CHLORIDE	12 U	11 U
STYRENE	12 U	11 U
TETRACHLOROETHENE	12 U	11 U
TOLUENE	12 U	11 U
TRANS-1,3-DICHLOROPROPENE	12 U	11 U
TRICHLOROETHENE	12 U	11 U
VINYL CHLORIDE	12 U	11 U
XYLENES, TOTAL	12 U	11 U
SEMIVOLATILES (µg/kg)		
1,2,4-TRICHLOROBENZENE	390 U	370 U
1,2-DICHLOROBENZENE	390 U	370 U
1,3-DICHLOROBENZENE	390 U	370 U
1,4-DICHLOROBENZENE	390 U	370 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	370 U
2,4,5-TRICHLOROPHENOL	950 U	900 U
2,4,6-TRICHLOROPHENOL	390 U	370 U
2,4-DICHLOROPHENOL	390 U	370 U
2,4-DIMETHYLPHENOL	390 U	370 U
2,4-DINITROPHENOL	950 U	900 U
2,4-DINITROTOLUENE	390 U	370 U
2,6-DINITROTOLUENE	390 U	370 U
2-CHLORONAPHTHALENE	390 U	370 U
2-CHLOROPHENOL	390 U	370 U
2-METHYLNAPHTHALENE	390 U	370 U
2-METHYLPHENOL	390 U	370 U
2-NITROANILINE	950 U	900 U
2-NITROPHENOL	390 U	370 U
3,3'-DICHLOROBENZIDINE	390 U	370 U
3-NITROANILINE	950 U	900 U
4,6-DINITRO-2-METHYLPHENOL	950 U	900 U
4-BROMOPHENYL PHENYL ETHER	390 U	370 U
4-CHLORO-3-METHYLPHENOL	390 U	370 U

SITE 33 - BUILDING 25, PLATING SHOP EQUALIZATION TANK
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0033-SB-01-20(BENEATH) 07/08/99 UNVALIDATED	0033-SB-02-08(OUTLET) 07/09/99 UNVALIDATED
4-CHLOROANILINE	390 U	370 U
4-CHLOROPHENYL PHENYL ETHER	390 U	370 U
4-METHYLPHENOL	390 U	370 U
4-NITROANILINE	950 U	900 U
4-NITROPHENOL	950 U	900 U
ACENAPHTHENE	390 U	370 U
ACENAPHTHYLENE	390 U	370 U
ANTHRACENE	390 U	370 U
BENZO(A)ANTHRACENE	390 U	370 U
BENZO(A)PYRENE	390 U	41 J
BENZO(B)FLUORANTHENE	390 U	370 U
BENZO(G,H,I)PERYLENE	390 U	370 U
BENZO(K)FLUORANTHENE	390 U	370 U
BIS(2-CHLOROETHOXY)METHANE	390 U	370 U
BIS(2-CHLOROETHYL)ETHER	390 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	46 J	370 U
BUTYLBENZYL PHTHALATE	390 U	370 U
CARBAZOLE	390 U	370 U
CHRYSENE	390 U	370 U
DI-N-BUTYL PHTHALATE	390 U	370 U
DI-N-OCTYL PHTHALATE	390 U	370 U
DIBENZO(A,H)ANTHRACENE	390 U	370 U
DIBENZOFURAN	390 U	370 U
DIETHYL PHTHALATE	390 U	370 U
DIMETHYL PHTHALATE	390 U	370 U
FLUORANTHENE	390 U	370 U
FLUORENE	390 U	370 U
HEXACHLOROBENZENE	390 U	370 U
HEXACHLOROBUTADIENE	390 U	370 U
HEXACHLOROCYCLOPENTADIENE	390 U	370 U
HEXACHLOROETHANE	390 U	370 U
INDENO(1,2,3-CD)PYRENE	390 U	370 U
ISOPHORONE	390 U	370 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	370 U
N-NITROSODIPHENYLAMINE	390 U	370 U
NAPHTHALENE	390 U	370 U
NITROBENZENE	390 U	370 U
PENTACHLOROPHENOL	950 U	900 U
PHENANTHRENE	390 U	370 U
PHENOL	390 U	370 U
PYRENE	390 U	41 J
PESTICIDES/PCBs (µg/kg)		
4,4'-DDD	0.47	0.17
4,4'-DDE	0.55 J	1.8
4,4'-DDT	13	9.0
ALDRIN	2.0 U	1.9 U
ALPHA-BHC	2.0 U	0.080
ALPHA-CHLORDANE	0.37	0.16
AROCLOR-1016	39 U	37 U
AROCLOR-1221	79 U	75 U
AROCLOR-1232	39 U	37 U
AROCLOR-1242	39 U	37 U
AROCLOR-1248	39 U	37 U
AROCLOR-1254	39 U	37 U
AROCLOR-1260	39 U	37 U
BETA-BHC	2.0 U	1.9 U
DELTA-BHC	2.0 U	1.9 U
DIELDRIN	0.12	0.19

SITE 33 - BUILDING 25, PLATING SHOP EQUALIZATION TANK
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
THE FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

SAMPLE I.D.: SAMPLE DATE: VALIDATION STATUS:	0033-SB-01-20(BENEATH) 07/08/99 UNVALIDATED	0033-SB-02-08(OUTLET) 07/09/99 UNVALIDATED
ENDOSULFAN I	2.0 U	1.9 U
ENDOSULFAN II	3.9 U	3.7 U
ENDOSULFAN SULFATE	3.9 U	3.7 U
ENDRIN	3.9 U	0.35
ENDRIN ALDEHYDE	3.9 U	3.7 U
ENDRIN KETONE	3.9 U	3.7 U
GAMMA-BHC (LINDANE)	2.0 U	1.9 U
GAMMA-CHLORDANE	2.0 U	0.74 J
HEPTACHLOR	0.65	0.40
HEPTACHLOR EPOXIDE	2.0 U	1.9 U
METHOXYCHLOR	20 U	19 U
TOXAPHENE	200 U	190 U
INORGANICS (mg/kg)		
ALUMINUM	8450	14500
ANTIMONY	0.50 U	0.47 U
ARSENIC	9.7	1.8
BARIUM	51.9	69.4
BERYLLIUM	0.22	0.07
CADMIUM	0.05 U	16.0
CALCIUM	780	1370
CHROMIUM	31.2	70.8
COBALT	4.0	15.0
COPPER	14.8	282
CYANIDE	2.4 U	0.39
IRON	16300	29200
LEAD	10.5	66.4
MAGNESIUM	494	5320
MANGANESE	123	552
MERCURY	0.06 U	0.06 U
NICKEL	2.6	61.1
POTASSIUM	388	3390
SELENIUM	0.91	0.54 U
SILVER	0.21 U	0.61
SODIUM	185	99.5
THALLIUM	1.4 U	1.6
VANADIUM	29.8	31.6
ZINC	9.1	111

C.2 SOIL SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7637~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0033-SB-01-20benzo
Sample Location: Site 33
Sampled By: PS/KS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 07-08-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1410	20 feet	Tan	Silty CLAY with mica fines
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

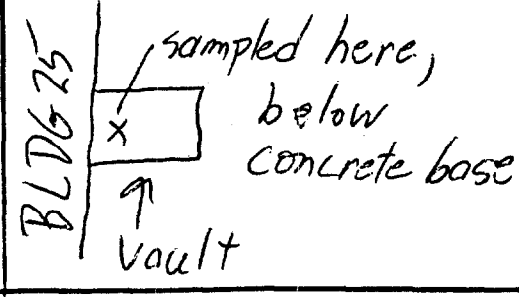
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	No	
Total Petroleum Hydrocarbons	1-4 oz GLASS	No	
TCL Dioxins/Furans	2-4 oz GLASS	No	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): David Schmachtenberg

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: WHITE OAK SITE
Project No.: CTO-~~298~~ ~~7687~~ 304 7773

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0033-SB-02-080
Sample Location: Site 33
Sampled By: DS
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-9-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1050	8 feet	Tan	silty CLAY with mica fines
Method: disposable spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

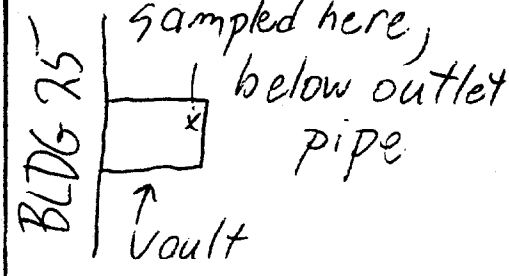
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL VOLATILES	1-2 oz GLASS	✓	
TCL SEMIVOLATILES; TCL PEST/PCBs	1-4 oz GLASS	✓	
TAL METALS + CYANIDE	1-4 oz GLASS	✓	
EXPLOSIVES	1-4 oz GLASS	No	
Total Petroleum Hydrocarbons	1-4 oz GLASS	No	
TCL Dioxins/Furans	2-4 oz GLASS	No	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): David Schnackenberg