N65928.AR.001281
NTC ORLANDO
5090.3a

FINAL SITE SCREENING REPORT FOR STUDY AREA 40 WITH TRANSMITTAL LETTER
NTC ORLANDO FL
6/3/2002
TETRA TECH

TETRA TECH NUS, INC.
800 Oak Ridge Turnpike, A-600 ▪ Oak Ridge, Tennessee 37830
(865) 483-9900 ▪ FAX: (865) 483-2014 ▪ www.tetratech.com

0602-A081

June 3, 2002

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Ms. Barbara Nwokike, Code ES333
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0024

Subject: Final Site Screening Report for Study Area 40
Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed are two copies of the final Site Screening Report for Study Area 40 in hardcopy and CD formats. The final report incorporates the revisions and additions discussed at the April 2002 meeting of the Orlando Partnering Team.

If you have any questions, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

SBM:ckf

Enclosure

c: Ms. Barbara Nwokike, Southern Division (Orlando Office) (hardcopy and CD)
Mr. David Grabka, FDEP (hardcopy and CD)
Mr. Gregory Fraley, USEPA Region 4 (hardcopy and CD)
Mr. Steve Tsangaris, CH2M Hill (CD)
Mr. Mark Salvetti, Harding ESE (CD)
Mr. Mike Campbell, Tetra Tech NUS (hardcopy)
Mr. J.E. Bentkowski, Gannett Fleming (hardcopy and CD)
Mr. Mark Perry, Tetra Tech NUS (unbound hardcopy)
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)
File/db

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

June 7, 2002

Mrs. Barbara Nwokike
Code ES333
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-0068

RE: Site Screening Report for Study Area 40, Orlando Naval Training Center, Orlando, Florida.

Dear Mrs. Nwokike:

I have completed my review of the Site Screening Report for Study Area 40, Orlando Naval Training Center, dated June 2002 (received June 5, 2002), prepared and submitted by Tetra Tech NUS, Inc. The report adequately describes the various investigations conducted at the site and the remedial responses to the contamination detected. Contaminated soil that has been excavated on three different occasions has apparently reduced the risks at the site so as be protective of a residential user. Therefore, I concur that no further action is warranted at this site and that the site may be transferred without land use restrictions.

FDEP's concurrence is predicated on the information provided by the SOUTHNAVFACENGCOM. Therefore, any new information contradicting the basis for this concurrence, may require further investigation or remedial actions.

If I can be of any further assistance with this matter, please contact me at (850)921-9991.

Sincerely,

David P. Grabka, P.G.
Remedial Project Manager

cc: Greg Fraley, USEPA, Region 4
Bill Bostwick, FDEP Central District
Steve McCoy, TetraTech NUS, Oak Ridge, TN
Steve Tsangaris, CH2M Hill, Tampa
Mark Salvetti, Harding ESE, Wakefield, MA

TJB TB JJC JJC ESN ESN

February 15, ~~2001~~ 2002
OFFICIAL CORRESPONDENCE

Commanding Officer
attn: Mrs. Barbara Nwokike, Code ES333
Southern Division
Naval Facilities Engineering Command
Post Office Box 190010
North Charleston, SC 29419-9010

Dear Mrs. Nwokike:

I have completed my review of the Draft Site Screening Report for Study Area 40, Main Base, Orlando Naval Training Center, dated December 2001 (received December 5, 2001), prepared and submitted by Tetra Tech NUS, Inc. The report is suitable for its intent and may be finalized.

This electronic message is being sent in lieu of regular mail. If you have any questions concerning this review, please contact me at (850)921-9991.

Sincerely,

David P. Grabka, P.G.
Remedial Project Manager
MS4535
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400
Office: 850.488.3935
Direct: 850.921.9991
FAX: 850.922.4939
david.grabka@dep.state.fl.us

SITE SCREENING REPORT
for
STUDY AREA 40

Naval Training Center
Orlando, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888
Contract Task Order 0024

June 2002

SITE SCREENING REPORT
FOR
STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:

Tetra Tech NUS
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NO. N62467-94-D-0888
CONTRACT TASK ORDER 0024

JUNE 2002

PREPARED UNDER THE SUPERVISION OF:

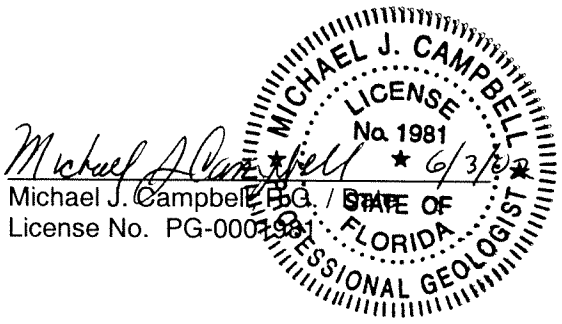
STEVEN B. McCOY
TASK ORDER MANAGER
TETRA TECH NUS, INC.
OAK RIDGE, TENNESSEE

APPROVED FOR SUBMITTAL BY:

DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that this document *Site Screening Report for Study Area 40, Naval Training Center, Orlando, Florida,* was prepared under my direct supervision in accordance with acceptable standards of geological practice.



Michael J. Campbell, P.G. / Date
License No. PG-0001981

TABLE OF CONTENTS

SECTION PAGE

PG CERTIFICATION iii

ACRONYMS ix

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1-1
1.1 BACKGROUND AND CONDITIONS 1-1
1.1.1 Facilities 21022 and 21023 1-1
1.1.2 Bottle Landfill 1-1
1.1.3 Geological Setting 1-4
1.2 ENVIRONMENTAL ACTIONS 1-5

2.0 FIELD PROGRAM 2-1
2.1 INITIAL SITE SCREENING 2-1
2.1.1 Geophysics 2-1
2.1.2 UXO Survey 2-1
2.1.3 Passive Soil Gas 2-3
2.1.4 Soil Sampling 2-3
2.1.5 Groundwater 2-5
2.2 SUPPLEMENTAL SITE SCREENING 2-6
2.2.1 Radiological Analysis of Surface and Subsurface Soils - August 1996 2-6
2.2.2 Immunoassay Testing for PAHs and Laboratory Analysis for Arsenic - December 1996 2-6
2.2.3 Focused Risk Assessment 2-7
2.2.4 Soil Sampling to Determine Vertical Distribution of Contaminants in Surface Soil - September 1997 2-7
2.2.5 Soil Sampling to Support an IRA - November 1998 2-7
2.3 IRA SOIL REMOVAL 2-8
2.4 POST-IRA SOIL SAMPLING 2-8
2.4.1 Soil Sampling - April 2000 2-8
2.4.2 Soil Sampling - June through August 2000 2-10
2.5 ADDITIONAL REMEDIATION ACTIVITIES 2-17
2.5.1 Tilling, Mixing, and Additional Sampling - September 2000 2-17
2.5.2 Excavation and Post-Remediation Confirmatory Sampling - July 2001 2-17

3.0 INVESTIGATION RESULTS 3-1
3.1 INITIAL SITE SCREENING 3-1
3.1.1 Geophysics 3-1
3.1.2 UXO Survey 3-1
3.1.3 Passive Soil Gas 3-1
3.1.4 Soil Sampling 3-2
3.1.5 Focused Risk Assessment 3-4
3.1.6 Groundwater 3-5
3.2 SUPPLEMENTAL SITE SCREENING 3-6
3.2.1 Radiological Analysis of Surface and Subsurface Soil - August 1996 3-6
3.2.2 Immunoassay Testing for PAHs and Laboratory Analysis for Arsenic - December 1996 3-6
3.2.3 Soil Sampling to Determine Vertical Distribution of Contaminants in Surface Soil - September 1997 3-7
3.2.4 Soil Sampling to Support an IRA - November 1998 3-7

TABLE OF CONTENTS (Continued)

SECTION PAGE

3.3 IRA SOIL REMOVAL 3-8
3.4 POST-IRA SOIL SAMPLING 3-8
3.4.1 Soil Sampling – April, June, and July 2000 3-8
3.4.2 Soil Sampling - August 2000 3-16
3.5 ADDITIONAL REMEDIATION ACTIVITIES 3-16
3.5.1 Soil Tilling and Mixing 3-16
3.5.2 Soil Excavation - July 2001 3-20

4.0 CONCLUSIONS AND RECOMMENDATIONS 4-1
4.1 CONCLUSIONS 4-1
4.1.1 Surface Soil 4-1
4.1.2 Subsurface Soil 4-1
4.1.3 Groundwater 4-1
4.2 RECOMMENDATIONS 4-2
4.3 OPT CONCURRENCE 4-3

REFERENCES R-1

APPENDICES

A PHOTOS OF PRE-SITE SCREENING UNF-6 EXCAVATION A-1

B SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS, SOIL BORING LOGS, INDIVIDUAL WELL CONSTRUCTION DETAILS, WELL DEVELOPMENT RECORDS, AND GROUND-WATER SAMPLE FIELD DATA SHEETS B-1

C TECHNICAL MEMORANDUM GEOPHYSICAL SURVEY RESULTS STUDY AREAS 39 AND 40 ..... C-1

D UXO SURVEY RESULTS D-1

E PASSIVE SOIL GAS SURVEY RESULTS E-1

F SUMMARY OF DETECTIONS TABLES - INITIAL INVESTIGATION F-1

G SUMMARY OF ANALYTICAL RESULTS - INITIAL INVESTIGATION G-1

H EVALUATION OF PAHs AND ARSENIC IN SURFACE SOIL BY IMMUNOASSAY TESTING AND LABORATORY CONFIRMATION H-1

I COMPLETION REPORT OF INTERIM REMEDIAL ACTION BY ENVIRONMENTAL DETACHMENT CHARLESTON I-1

J FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION LETTERS J-1

K SUMMARY OF ANALYTICAL RESULTS-CURRENT INVESTIGATION K-1

L COMPLETION REPORT OF SOIL REMEDIATION ACTIVITIES BY NODARSE & ASSOCIATES L-1

TABLE OF CONTENTS (Continued)

SECTION **PAGE**

TABLES

NUMBER **PAGE**

1-1 Chronological Summary of Environmental Activities 1-6

FIGURES

NUMBER **PAGE**

1-1 Location of Study Area 40 1-2
1-2 Study Area 40 and Location of 1989 ATEC Test Borings 1-3
2-1 Area of Geophysical and Passive Soil Gas Surveys 2-2
2-2 Sample Locations, Initial and Supplemental Site Screening 2-4
2-3 Soil Excavation Area by Environmental Detachment Charleston 2-9
2-4 Initial IRA of Large Excavation Area, April and May 1999 and Post-IRA Soil Sample Locations, April 2000 2-11
2-5 Soil Sample Locations Near Northeastern Excavated Area June and July 2000 2-13
2-6 Surface Soil Sample Locations on August 9, 10, and 23, 2000, Collected Before Soil Tilling on September 2, 2000 2-15
2-7 Soil Excavation Area and Confirmation Soil Sample Locations, July 2001 2-19
3-1 Exceedances of Screening Criteria in Soil and Groundwater, Initial Screening 1996 3-3
3-2 Post-IRA Confirmation Soil Sample Results at Large Excavation Area 3-9
3-3 Post-IRA Confirmation Soil Sample Results at Small Excavation Area 3-11
3-4 Arsenic Concentrations in Soil at Large Excavated Area – April 2000 3-13
3-5 Arsenic Concentrations in Soil Near Small Excavated Area, June and July 2000 3-15
3-6 Arsenic Concentrations in Surface Soil on August 9, 10, and 23, 2000 before Soil Tilling on September 2, 2000 3-17
3-7 Arsenic Concentrations in Surface Soil on September 7, 2000 after Soil Tilling on September 2, 2000 3-19

ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CFR	*Code of Federal Regulations*
CLP	Contract Laboratory Program
DQO	data quality objective
DET	Environmental Detachment Charleston
EOD	explosive ordnance disposal
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FRA	Focused Risk Assessment
GCTL	Groundwater Cleanup Target Level
GPR	ground penetrating radar
HLA	Harding Lawson Associates
IA	immunoassay
IRA	interim remedial action
MCL	Maximum Contaminant Level
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
N&A	Nodarse & Associates, Inc.
NTC	Naval Training Center
NTU	nephelometric turbidity unit
OPT	Orlando Partnering Team
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pCi/L	picocuries per liter
PQL	practical quantitation limit
RBC	risk-based concentration
RGO	remedial goal option
RME	reasonable maximum exposure
SA	Study Area

SCTL	Soil Cleanup Target Level
SOUTHDIV	Southern Division, Naval Facilities Engineering Command
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TPH	total petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
UCL	upper confidence limit
UNF	Unnumbered Facility
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UXO	unexploded ordnance
VOC	volatile organic compound

EXECUTIVE SUMMARY

A site screening investigation was performed at Study Area (SA) 40, located at the Main Base of the former Naval Training Center (NTC), Orlando. The objective of the investigation was to determine the nature and extent of chemical contaminants that may have been released due to past activities at the Study Area. This report presents the results of the site screening investigation and interim remedial activities at SA 40, and the conclusions and recommendations based on those results.

Study Area Description

SA 40 is located in the southwest corner of the Main Base of the former NTC, Orlando. The Study Area encompasses approximately 7.6 acres of land that includes a pair of softball fields, referred to as Facilities 21022 and 21023, and Unnumbered Facility (UNF)-6, a disposal site also known as the Bottle Landfill. The disposal operation is suspected to have occurred in the early 1940s when the Army Air Corps occupied the base. The softball fields were constructed sometime after 1945 and underwent renovations in 1972. The use of pesticides in groundskeeping activities may have impacted the area. A large portion of the Bottle Landfill was excavated and removed between 1989 and March 1994. When the investigation began in January 1996, UNF-6 was a relatively flat grass-covered lot, littered with fragments of glass, paper, metal, and other debris.

Initial Site Screening

Several phases of study were required to complete the investigation. During the initial phase of screening, which began in January 1996, the surface soils at the site were found to have concentrations of polynuclear aromatic hydrocarbons (PAHs) and arsenic in excess of screening criteria. The investigation also identified groundwater in the surficial aquifer with antimony and gross beta radiological activity in excess of screening levels.

The Orlando Partnering Team (OPT) requested supplemental screening investigations to evaluate and characterize the PAHs and arsenic in surface soils and to confirm the gross beta activity levels in groundwater. Confirmation sampling for antimony in groundwater was not requested because the OPT determined that the antimony exceedance was caused by high turbidity in the original sample. In addition, surface and subsurface soil samples were collected for radiological analysis in order to determine if the soil was acting as a source of radiological activity.

The supplemental surface soil field program that began in August 1996 involved the collection of surface soil samples from a sampling grid over the entire site. The samples were analyzed on-site using immunoassay testing techniques with a percentage of the samples submitted to an off-site laboratory for confirmation of the PAH compounds and concentrations present. The samples submitted to the laboratory were also analyzed for arsenic. The results of the supplemental surface soil investigation provided delineation of the total PAH concentrations in surface soils across the site. These data were then used in a Focused Risk Assessment (FRA) to determine whether or not PAHs and arsenic in surface soil pose a potential risk to future users of the site. The FRA concluded that the cancer risk target level established by the State of Florida was exceeded with a calculated risk of $1x10^{-5}$ under a residential reuse scenario, assuming that no soil remediation would take place.

Resampling of groundwater due to the exceedances of screening values for gross beta radionuclide activity resulted in a finding that the gross beta activity had decreased by a factor of two and was only slightly above the screening value. Because sample turbidity was lower in the second sample, high turbidity was identified as the cause of the elevated gross beta activity in the original sample.

Three additional surface soil samples were collected in November 1998 to further characterize the PAHs and arsenic in the Study Area. The combined results of all surface soil samples indicated that approximately 1.5 acres of surface soil exceeded the Florida Soil Cleanup Target Levels for either PAH compounds or arsenic.

Soil Excavation

Harding Lawson Associates (HLA) submitted a work plan to the Navy (HLA, 1999a) which summarized the results of previous site screening activities at SA 40. The document was used by the Environmental Detachment Charleston (DET) to conduct an Interim Remedial Action (IRA) soil removal at SA 40. The IRA was completed in April and May 1999, and is documented in their report, relevant portions of which are included in this document as an appendix (DET, 1999). Approximately 7,916 tons of soil (6,100 cubic yards) were excavated from two areas within the Study Area, an irregularly shaped area approximately 250 x 300 feet and an area 10 x 10 feet. Both areas were excavated to a depth of 2 feet. The excavation continued until debris was no longer visible in the sidewalls, indicating that the extent of the debris area was delineated. Upon completion of the initial IRA soil removal, confirmation samples were collected from the sidewalls around the edges of the excavated area by DET. The sampling results indicated that soils remained in the Study Area with concentrations of arsenic and dibenz(a,h)anthracene exceeding residential screening levels. Several options were proposed by the Navy to avoid further investigation or remediation work at the site, including calculating the 95% upper confidence limit of the arsenic

concentration at the site. This option, however, was not accepted by the Florida Department of Environmental Protection because the area (8-10 acres) used in the calculation exceeded the residential exposure scenario which limits the area to not greater than 0.5 acre. It was then determined by the OPT that further site investigation and remediation were necessary.

Additional Soil Sampling

In April 2000, Tetra Tech NUS, Inc., was contracted to conduct soil sampling at SA 40. Soil samples were collected in a step-out scheme from the excavated areas to determine the extent of arsenic and PAH concentrations exceeding the screening criteria. Sampling included five collection phases from April 2000 to September 2000 to completely delineate the contaminated area. The results indicated that levels of arsenic throughout the two former softball field areas exceeded the screening criterion.

Soil Tilling and Additional Excavation

In an attempt to lower the overall concentration of arsenic in the contaminated soil area, the Navy tilled and mixed the soil in the Fall of 2000. The mixing effort was not successful. Post-tilling sampling revealed increased levels of arsenic at some of the sample points previously analyzed. The Navy then chose to excavate the contaminated area and removed approximately 5,500 cubic yards of soil in July 2001. Soil was excavated to a depth of 2 feet below ground surface and transported to the North Grinder Landfill for disposal.

Conclusions and Recommendations

Following the two IRAs, the soils at SA 40 meet the State of Florida criteria for residential use. However, certain portions of the Study Area may still be underlain by inert debris (bottles, wire, scrap metal, etc.) that should pose no chemical risk to human health or the environment. Therefore, future property owners should be advised that inert debris may exist in the subsurface soil. One groundwater sample contained antimony at a concentration exceeding the Florida Groundwater Cleanup Target Level; this exceedance is attributed to high sample turbidity and not to groundwater contamination.

Based on the findings of the site screening investigation and the remedial actions taken, SA 40 is considered suitable for residential reuse without further investigation or remediation. It is recommended that the Base Realignment and Closure Color Code be changed to 4/Dark Green to signify "an area where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

1.0 INTRODUCTION

An environmental site screening investigation was conducted at Study Area (SA) 40, located at the Main Base of the former Naval Training Center (NTC), Orlando, Florida. The initial purpose of the investigation was to evaluate the potential impact to environmental media from debris disposal operations in the vicinity of the former Bottle Landfill. The technical approach to the investigation was developed in conjunction with the Orlando Partnering Team (OPT), which includes representatives from the Florida Department of Environmental Protection (FDEP), the U.S. Environmental Protection Agency (USEPA) Region 4, and Southern Division, Naval Facilities Engineering Command (SOUTHDIV) and their contractors. This report presents the results of the site screening investigation and interim remedial activities at SA 40, and conclusions and recommendations based on those results.

1.1 BACKGROUND AND CONDITIONS

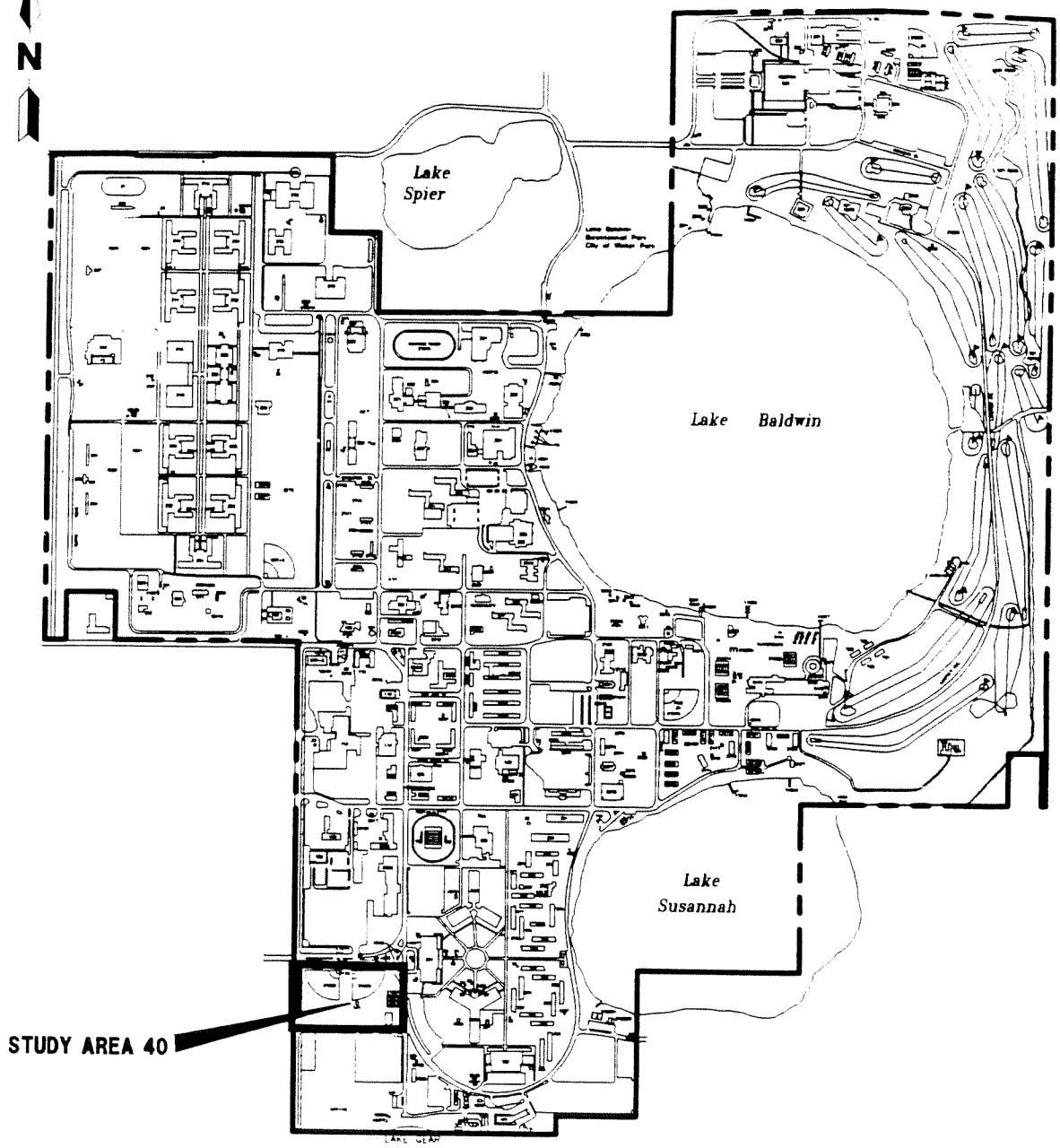
SA 40 is located in the southwest corner of the Main Base of the former NTC, Orlando (Figure 1-1). The Study Area encompasses approximately 7.6 acres of land. Prior to redevelopment activities, the site was bounded on the south by Nautilus Street, on the west by the Main Base's western property line, on the north by Maguire Boulevard, and on the east by Grace Hopper Avenue (Figure 1-2). All of the site features and NTC roads and streets on which the site was located have been demolished and removed by the site developer for the City of Orlando.

1.1.1 Facilities 21022 and 21023

Facilities 21022 and 21023 were a pair of softball fields located along Maguire Boulevard and Bennett Road, south of the Maguire Road Base entrance (Figure 1-2). The softball fields were constructed sometime after 1945 on previously undeveloped land, and underwent major renovations in 1972 when spectator stands, player's dugouts, fencing, and a scorekeeping building were added. The use of pesticides in groundskeeping activities may have impacted the area.

1.1.2 Bottle Landfill

The "Bottle Landfill," designated as Unnumbered Facility (UNF)-6, is an undeveloped, relatively flat grass-covered lot at the southwest corner of the Study Area (Figure 1-2). UNF-6 was discovered southwest of the ballfields when excavation was begun for Building 144, a proposed cold storage facility (the facility was never constructed). The exact size and location of the disposal site are unknown, although visual evidence of landfilling activities had been noted in the area extending south from the fences surrounding the outfields to portions of SA 39 located immediately to the south. Aerial photographs from



LEGEND
Property line

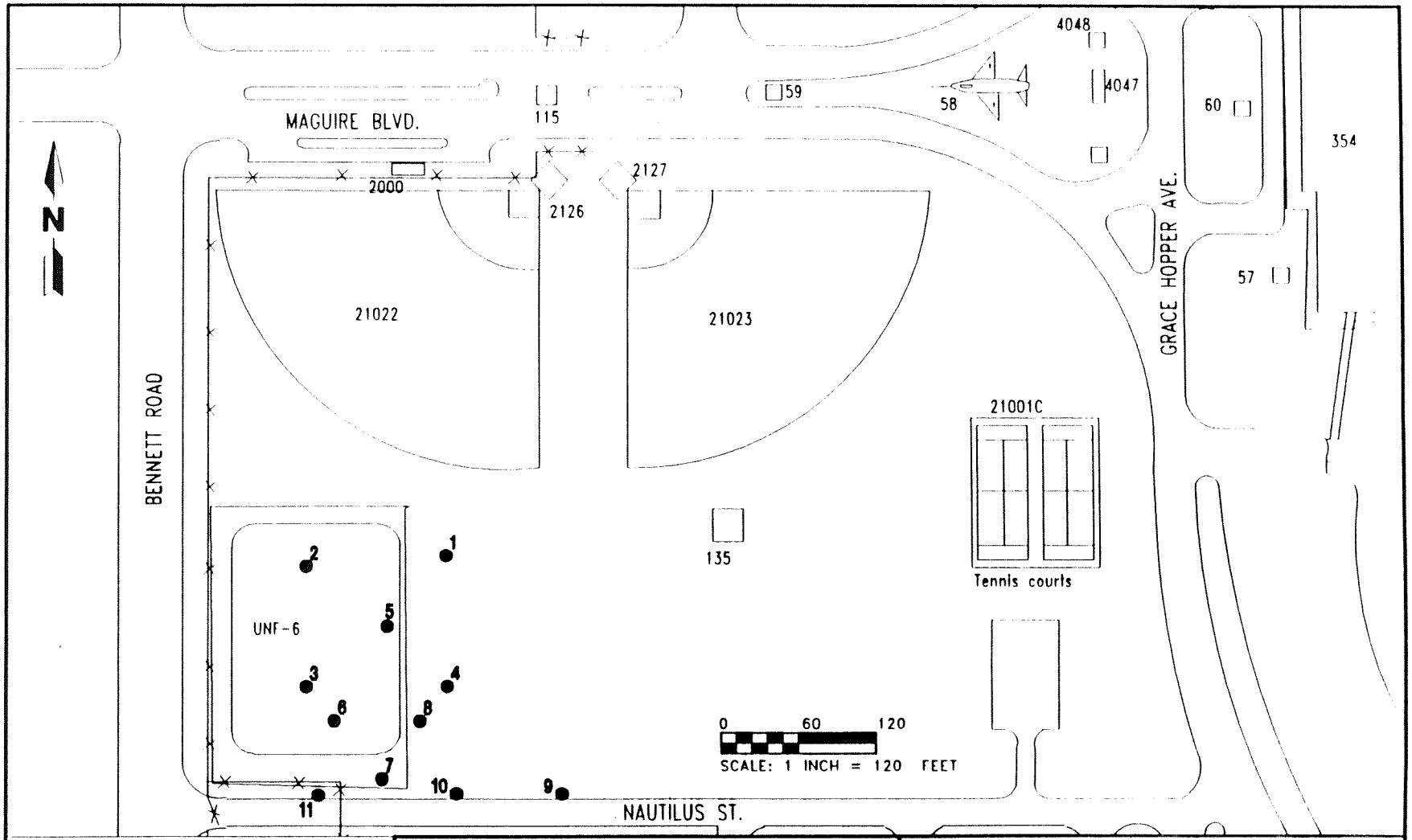
0 700 1400
SCALE: 1 INCH = 1400 FEET

FIGURE 1-1
LOCATION OF STUDY AREA 40

K:\02530\02530-09\SSP\02530884.DWG, BB-VC 10/22/99 16:25:39, ACAD14

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT, STUDY AREA 40

NAVAL TRAINING CENTER ORLANDO, FLORIDA



LEGEND

1 ATEC boring locations (approximate)

UNF Unnumbered facility

R:\02530\02530-09\SSR\02530887.DWG, -VC 10/26/99 10:30:39, ACAD14

FIGURE 1-2

STUDY AREA 40 MAP AND
LOCATION OF 1989 ATEC TEST BORINGS

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT, STUDY AREA 40

NAVAL TRAINING CENTER ORLANDO, FLORIDA

1945 indicate at that time the site was undeveloped, but may have been occupied by a sinkhole or other type of depression. Reportedly, this area was used as the disposal site for household wastes beginning in the late 1940s (ABB-ES, 1995b). The period of operation, along with the extent of the disposal site, is unknown. It is unclear if and how landfilling operations in this area (i.e., north of Nautilus Street) are related to suspected landfilling operations south of the road (UNF-10).

A geotechnical investigation was initiated in January 1989 by ATEC Associates, Inc., in preparation for construction of a cold storage facility in the area. Eleven test borings were completed, with five of the borings extending to 60 feet below ground surface (bgs). Locations are shown on Figure 1-2. Landfilled materials were encountered in three of the borings at depths of up to 8 feet bgs. A 1-foot-thick layer of a tar-like substance was detected in one boring (No. 4) at a depth of approximately 8 feet bgs. Subsequent excavation of portions of the area revealed debris to a depth of 8 to 10 feet bgs. The material appears to have been deposited as layers of similar materials (such as glass or paper) which alternated with layers of ash, suggesting that the debris was routinely burned. Approximately 4,725 cubic yards of debris were excavated and removed from the Bottle Landfill between 1989 and March 1994, before site screening activities were started. Photos of the excavation prior to site screening are included in Appendix A. At the time of the initial screening activities, the excavation had been backfilled and the land surface was littered with fragments of glass, paper, metal, coal, ash, wood, porcelain, and film negatives. The extent of the excavation is not precisely known; however, the area identified by the DET in 1999 (see Figure 2-4, Section 2) as the "Debris Area" is believed to be the remaining area with buried debris.

Measurements of the depth to water in these borings ranged from 9 to 14 feet bgs. Groundwater flow is expected to follow surface flow patterns, which would be to the south, toward Lake Gear (HLA, 1999b).

1.1.3 Geological Setting

The general soil map published by the U.S. Department of Agriculture, Soil Conservation Service (USDA, 1989) shows that the location of the NTC main base lies across an area dominated by the Urban land-Smyrna soil mapping units. This soil unit is part of a group of units (Smyrna-Bassinger-St. Johns and the Urban land-Smyrna-Pomello) that occur predominantly on the flatwoods, low ridges, and knolls within Orange County. They are most extensive in the eastern half of the county, but are also scattered across the county where topography dictates their occurrence. This group of soils consists of "nearly level to gently sloping, poorly drained, moderately well drained, and very poorly drained soils" (USDA, 1989). All of the soils associated with these groups consist predominantly of fine sand in both the surface and subsurface layers. The soils formed in sandy marine sediments.

According to the *Soil Survey of Orange County, Florida*, SA 40 is located within the poorly drained Urban land-Smyrna soil unit (USDA, 1989). Soils observed at SA 40 during the initial Interim Remedial Action (IRA) by the Environmental Detachment Charleston (DET) were described as white sugar sand from ground surface to the bottom of the excavation (2 feet bgs) (DET, 1999). This description is more indicative of the moderately well-drained Pomello-Urban land complex that is typically comprised of a surface layer of dark gray fine sand to about 5 inches and a subsurface layer of white fine sand to a depth of about 42 inches. The depth to groundwater is expected to average from 12 to 16 feet bgs according to field measurements collected in September 1999 and March 2000 at SA 39, which is directly south of SA 40.

1.2 ENVIRONMENTAL ACTIONS

The environmental activities at SA 40 are summarized in Table 1-1. Approximately 4,725 cubic yards of debris were excavated and removed from the bottle landfill between 1989 and March 1994, before site screening activities were started. The initial phase of screening fieldwork was conducted by Harding Lawson Associates (HLA), formerly ABB Environmental Services, Inc. (ABB-ES) in January, February, and March 1996. Because of exceedances of screening criteria for both the soil and groundwater, additional site screening was performed to determine the nature and extent of the impact and a Focused Risk Assessment (FRA) was performed to determine the potential risk that polynuclear aromatic hydrocarbons (PAHs) and arsenic posed to future users of the site. Four additional phases of site screening fieldwork were completed in August 1996, December 1996, September 1997, and November 1998.

An IRA soil removal was completed during April and May 1999. However, the criteria used to complete the delineation were rejected by the FDEP because soils were left on-site that exceeded residential Soil Cleanup Target Levels (SCTLs) (FDEP, 1999) for arsenic and dibenz(a,h)anthracene. As a result, additional soil sampling was conducted by Tetra Tech NUS, Inc. (TtNUS) in April, June, July, and August 2000.

After the extent of contamination was delineated, the Navy tilled and mixed the soils. Post-tilling samples collected in September 2000 indicated that the tilling was not successful at lowering the concentrations of arsenic within the surface soils and confirmed that arsenic concentrations remained above residential SCTLs. The remaining contaminated soil was excavated in July 2001.

TABLE 1-1

CHRONOLOGICAL SUMMARY OF ENVIRONMENTAL ACTIVITIES
STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Prior to Initial Site Screening	
1989 to March 1994 (precise date unknown)	Portion of the Bottle Landfill was excavated
Initial Site Screening	
January 1996	Geophysical and UXO surveys
February 1996	Passive soil gas survey
March and April 1996	Surface and subsurface soil samples collected and analyzed Two permanent shallow monitoring wells installed at OLD-40-01 and OLD-40-02; groundwater samples collected and analyzed
Supplemental Site Screening	
August 1996	Surface and subsurface soil samples collected for radiological analysis
December 1996	Supplemental immunoassay soil testing for PAHs; samples collected and analyzed for arsenic
February through August 1997	Focused Risk Assessment for PAHs and arsenic
September 1997	Soil samples collected to evaluate vertical distribution of contaminants
November 1998	Soil samples collected to further characterize soil to plan IRA soil removal
IRA Soil Removal	
April and May 1999	IRA soil removal
August 1999	Post-IRA confirmation samples collected; levels of arsenic exceed screening criterion in edge samples
February 2000	FDEP indicated additional work necessary to complete remediation
Post-IRA Soil Sampling	
April 2000	Soil samples collected to determine extent of arsenic remaining in soil at site
June through August 2000	Additional soil samples collected at small 10- x 10-foot excavation area and area of former softball fields
Additional Remediation Activities	
September 2000	Tilling and mixing of soils; post-tilling samples collected
July 2001	Soil excavation; confirmatory samples collected; remediation complete

2.0 FIELD PROGRAM

The objective of the site screening investigation was to determine whether or not environmental media have been impacted from current or historical land uses. Initial screening investigations at SAs 39 and 40 were performed concurrently because of their proximity, but were later separated to conduct a more thorough investigation of each Study Area. The work plan for initial site screening is detailed in *the Site Screening Plan, Former Air Force Sites* (ABB-ES, 1995c). The initial phase of screening was performed by HLA during the period from January through April 1996 and was reported in a technical memorandum in June 1996 (ABB-ES, 1996).

2.1 INITIAL SITE SCREENING

The field program for the initial screening investigation at SA 40 began with a geophysical survey in January 1996. The geophysical survey was followed by an unexploded ordnance (UXO) survey, a passive soil gas survey, and the collection of soil and groundwater samples for laboratory analysis and immunoassay testing.

2.1.1 Geophysics

The geophysical survey, completed concurrently at SAs 39 and 40 in January 1996, was designed to locate buried objects that could pose a threat to the environment (e.g., buried drums and UXO). The survey involved the use of a magnetometer and time domain metal detector to locate metallic objects and was followed by a confirmatory ground penetrating radar (GPR) survey. The area of the geophysical survey is shown in Figure 2-1.

Prior to performing the survey, a grid coordinate system was established across the area to determine the relative locations of any target anomalies to be cleared during the subsequent UXO survey. Following the survey, the grid coordinates at the location of each anomaly were recorded in a logbook, and the grid outline was marked on the ground surface by paint and/or pin flags for future reference.

2.1.2 UXO Survey

Because of the potential for UXO in the subsurface, the locations of all of the geophysical anomalies were marked in the field for the UXO survey, conducted in January 1996, by the U.S. Navy's Explosive Ordnance Disposal (EOD), Mobile Unit Six, Detachment Mayport, Mayport, Florida. The detachment utilized Mk 26 Ferrous Metal and Mk 29 All-Metals detectors to confirm the location of these anomalies and to survey SAs 39 and 40. The outline of each detected anomaly was flagged at the

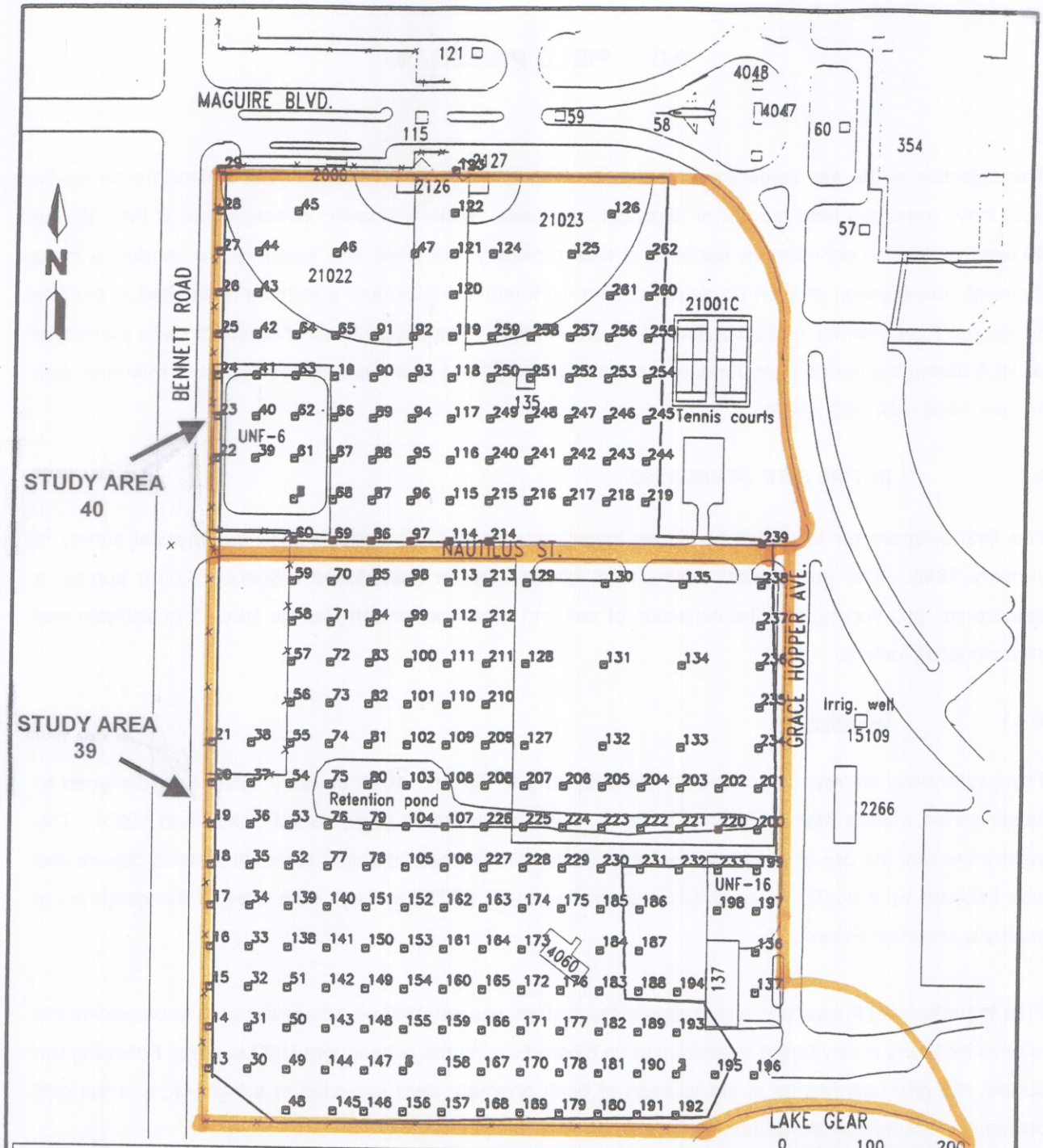


FIGURE 2-1
AREA OF GEOPHYSICAL AND PASSIVE SOIL GAS SURVEYS

K:\02530\02530-09\SSR\02530886.DWG, -VC 10/28/99 11:11:45, ACAD14

BASE REALIGNMENT AND CLOSURE SITE SCREENING REPORT STUDY AREAS 39 AND 40

NAVAL TRAINING CENTER ORLANDO, FLORIDA

surface, and any object located within 4 feet of the surface was excavated for a visual inspection. A description of all the excavated material was recorded by the detachment.

2.1.3 Passive Soil Gas

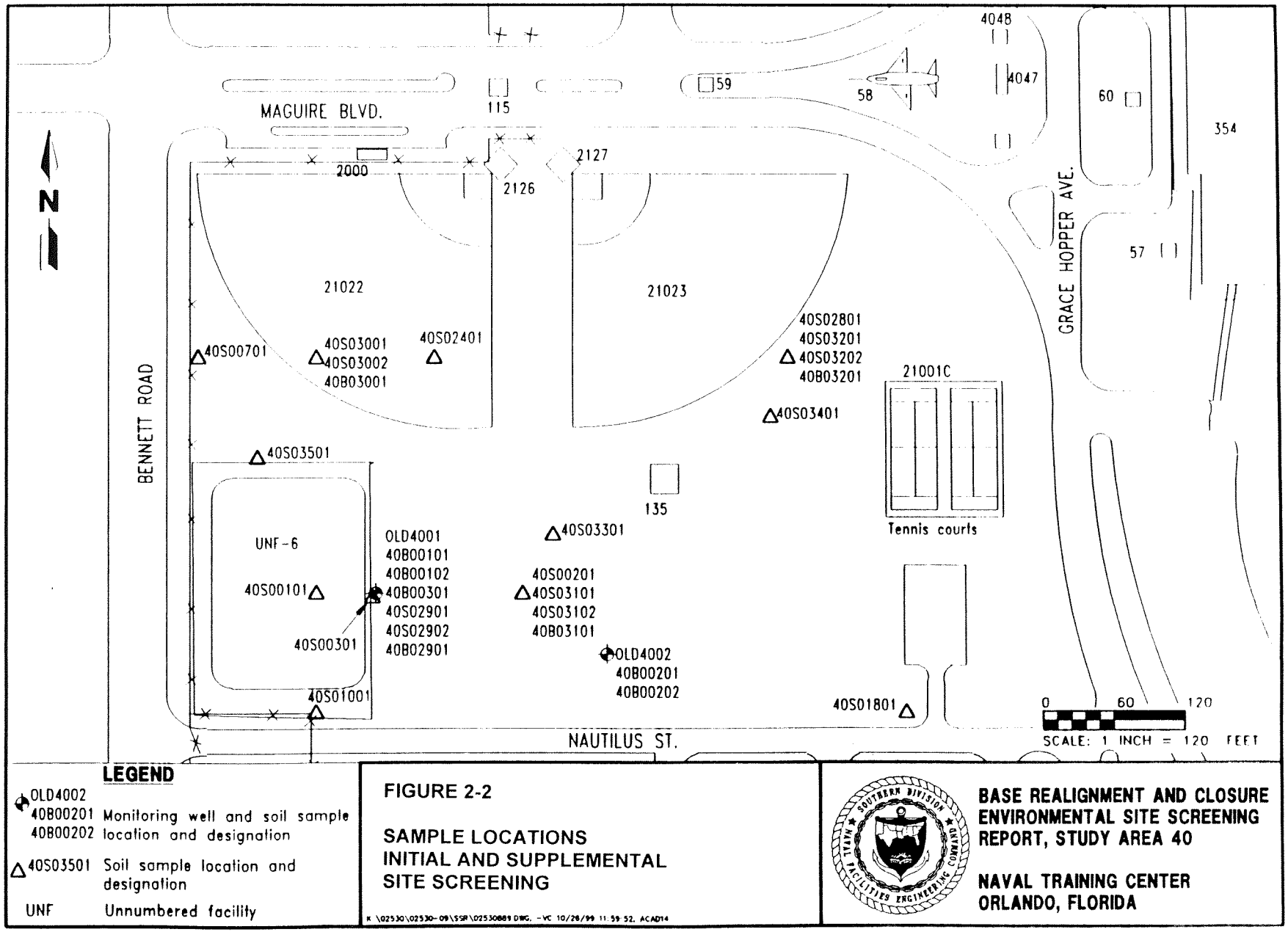
A passive soil gas survey was performed in February 1996 to locate areas with volatile organic compounds (VOCs) or semivolatile organic compounds (SVOCs) present in the subsurface. Areas with detections then became the focus of subsequent soil and groundwater sampling.

Passive soil gas samplers were installed at approximately 71 locations across SA 40 using the grid established for the geophysical survey (Figure 2-1). In open areas, sample points were established every 50 feet; in paved areas and over the two softball fields, the spacing was increased to 100 feet. Each sampler was equipped with two activated charcoal adsorption elements housed in a glass tube. The glass tube was placed upside down in a narrow borehole (approximately 1-1/2 inches in diameter) to a depth of 1 foot bgs. Following installation, the detectors were covered with a thin layer of soil or, in paved areas, with a thin layer of cement. Several time-calibration samplers were installed at locations within the survey area to measure the rate at which "loading" by volatile gases was occurring. These samplers were retrieved after 2 days and analyzed to determine the optimal period of time the other samplers should remain in place based on the relative ion count intensities detected. The time-calibration results indicated the samplers should remain deployed for 7 days before retrieval.

During analysis, one of the charcoal elements was analyzed by thermal desorption mass spectrometry to measure the ion count of substances detected. If compounds were detected, the second element was analyzed by thermal desorption gas chromatography/mass spectrometry to identify the compounds causing the response. All sampling and analysis were performed in accordance with USEPA Level II data quality objectives (DQOs) (ABB-ES, 1997c).

2.1.4 Soil Sampling

Surface Soil. Four surface soil samples (40B00101, 40B00201, 40S00101, and 40S00201, Figure 2-2) were collected at SA 40 in March 1996 in accordance with the Site Screening Plan (ABB-ES, 1995c). Samples with an "S" designation are surface soil samples. Any sample collected from a soil boring regardless of whether or not it was a surface or subsurface soil sample was given a "B" designation. Factors used to select the initial sample locations were geophysical anomalies, soil gas "hot spots," and areas of stained soil.


MAGUIRE BLVD.
115
2000
2126
2127
59
58
4048
4047
60
354
57
GRACE HOPPER AVE.
BENNETT ROAD
21022
21023
40S00701
40S03001
40S03002
40B03001
40S02401
40S02801
40S03201
40S03202
40B03201
40S03401
21001C
Tennis courts
40S03501
135
UNF-6
40S00101
40S00301
OLD4001
40B00101
40B00102
40B00301
40S02901
40S02902
40B02901
40S03301
40S00201
40S03101
40S03102
40B03101
OLD4002
40B00201
40B00202
40S01001
40S01801
NAUTILUS ST.
0
60
120
SCALE: 1 INCH = 120 FEET
LEGEND
OLD4002
40B00201
40B00202
Monitoring well and soil sample location and designation
40S03501
Soil sample location and designation
UNF
Unnumbered facility
FIGURE 2-2
SAMPLE LOCATIONS
INITIAL AND SUPPLEMENTAL
SITE SCREENING
K:\02530\02530-09\SSR\02530889.DWG, -VC 10/26/99 11:59:52, ACAD14
SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING
REPORT, STUDY AREA 40
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Samples 40S00101 and 40B00101 were collected from the immediate vicinity of the Bottle Landfill; sample 40S00201 was collected in the south-central part of the Study Area; and sample 40B00201 was collected in a soil gas hot spot near Nautilus Street in the south-central portion of the Study Area. These four soil samples were submitted to an approved laboratory for full suite Contract Laboratory Program (CLP) Target Analyte List (TAL) and Target Compound List (TCL) laboratory analyses plus pesticides and polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and explosives analyses, in accordance with USEPA Level IV DQOs.

Subsurface Soil. Two subsurface soil samples were collected from soil borings completed as permanent shallow monitoring wells (OLD-40-01 and OLD-40-02, Figure 2-2). Sample 40B00102 was collected in the immediate vicinity of the Bottle Landfill in an area thought to have been excavated and near the ATEC boring where a tar-like substance was found (ABB-ES, 1995b). Sample 40B00202 (monitoring well OLD-40-02) was collected in a soil gas hot spot in the south-central part of the Study Area.

Subsurface soil samples were collected continuously from the surface to the water table (located approximately 8 to 10 feet bgs) from each of the soil borings. As there was no evidence of staining or the presence of VOCs from the flame ionization detector (FID), subsurface samples collected from the 2-foot interval immediately above the water table were submitted to an approved laboratory for full suite CLP, TAL, and TCL laboratory analyses, including pesticides and PCBs, along with TPH and explosives analyses, in accordance with USEPA Level IV DQOs.

2.1.5 Groundwater

As stated in Section 2.1.4, two soil borings were completed as permanent shallow monitoring wells (OLD-40-01 and OLD-40-02) during the initial portion of the investigation (Figure 2-2). Following monitoring well installation and development, each of the newly installed wells was purged using the low-flow technique. A groundwater sample was then collected from each well and submitted for laboratory analysis of TPH, and full suite CLP, TAL, and TCL compounds, including pesticides and PCBs, in accordance with USEPA Level IV DQOs. Groundwater samples were also analyzed for gross alpha, gross beta, and total suspended solids to aid in evaluation of inorganic data. Water levels were measured several times to evaluate groundwater flow direction and gradient at SA 40. The field data for the monitoring well installation and sampling program, including the soil boring logs, well construction diagrams, and groundwater sampling forms, are presented in Appendix B.

2.2 SUPPLEMENTAL SITE SCREENING

2.2.1 Radiological Analysis of Surface and Subsurface Soils - August 1996

Initial groundwater analytical results indicated gross beta radiological levels in excess of screening values at SA 40. Accordingly, in August 1996, the OPT directed HLA to collect two additional soil samples, one surface sample (40S00301) and one subsurface sample (40B00301), for gross alpha and gross beta radiological analysis (Figure 2-2).

2.2.2 Immunoassay Testing for PAHs and Laboratory Analysis for Arsenic - December 1996

Initial soil analytical results indicated that PAHs and arsenic were present at concentrations exceeding screening criteria, prompting the OPT to direct HLA to collect additional surface soil samples to determine the extent of contamination in surface soils. HLA established a 100-foot grid and collected 25 samples in December 1996 on 100-foot centers for immunoassay (IA) testing of total PAHs. Samples were composited from a depth interval of 0 to 1 foot bgs.

IA testing is accomplished by first performing an extraction of the collected sample, then mixing the extracted fluid with an enzyme. The enzyme reacts with the PAHs present and, when the mixture is exposed to light, displays an optical signature that varies inversely with the total PAH concentration. Through comparison of the optical density of standard samples with known PAH concentration to that of the test samples, a curve can be generated that correlates optical density to PAH concentration.

IA analysis allows for a rapid, semiquantitative measurement of the total PAH concentration but cannot distinguish between PAH compounds present. Accordingly, five of the samples (20 percent) were selected from a wide range of PAH concentrations and submitted to an approved laboratory for analysis of PAHs using USEPA Method 3510/8270M, in accordance with USEPA Level IV DQOs. These results were to provide confirmation of the accuracy and precision of the IA procedure and quantify the various PAH compounds present. The five samples were collected from locations 40S007, 40S010, 40S018, 40S024, and 40S028 (Figure 2-2).

The five samples were also analyzed for concentrations of arsenic using the graphite furnace method (USEPA Method 3050-6010) in accordance with USEPA Level IV DQOs.

2.2.3 Focused Risk Assessment

The soil analytical data were used to develop an FRA for SAs 39 and 40 combined (ABB-ES, 1997b). The FRA was performed to assess whether or not the exceedances of SCTLs for benzo(a)pyrene and arsenic posed health risks to individuals under the proposed reuse scenario (i.e., residential). The FRA was conducted in phases where, if the future residential scenario resulted in unacceptable risk, then recreational and industrial land-use scenarios would be evaluated.

The FRA consisted of five tasks: (1) evaluation of the data, (2) identification of the chemicals of potential concern, (3) exposure assessment, (4) toxicity assessment, and (5) risk characterization. Collectively, these components were used to estimate the potential magnitude of exposure and the risks resulting from the estimated exposure conditions.

The FRA also evaluated the reduction of the risk for exposure to arsenic- or PAH-contaminated soil via remedial action and its effect on lowering the overall surface soil pathway cancer risk estimate. First, remedial goal options (RGOs) were identified. The RGOs established for surface soil at SAs 39 and 40 were the Florida residential SCTLs for the two PAHs, benzo(a)pyrene and dibenz(a,h)anthracene, and the NTC, Orlando background screening concentration for arsenic.

2.2.4 Soil Sampling to Determine Vertical Distribution of Contaminants in Surface Soil - September 1997

After a review of initial site screening results and the supplemental IA testing, concerns regarding the presence of PAHs and arsenic in surface soils prompted the OPT to request that HLA further evaluate the vertical distribution of PAH compounds and arsenic in surface soil. Accordingly, in September 1997, HLA collected 12 samples from four locations (40S029, 40S030, 40S031, and 40S032) at depths of 0.25, 0.75, and 1.5 feet bgs, respectively (Figure 2-2). The samples were submitted to an approved laboratory for analysis of PAH compounds by USEPA Method 3510/8270M and arsenic by USEPA Method 3050/6010, in accordance with USEPA Level IV DQOs.

2.2.5 Soil Sampling to Support an IRA - November 1998

After consideration of the alternatives available to manage the risk posed by surface soils at SA 40, the Navy determined that a soil removal by the DET was the most cost-effective alternative. In the fall of 1998, HLA prepared a draft IRA work plan for a soil removal at SA 40. HLA concluded during data evaluation and work plan preparation that three additional samples were necessary to further characterize the soil in SA 40. Thus, in November 1998, three surface soil samples were collected (40S033, 40S034, and 40S035, Figure 2-2) to further characterize portions of the Study Area that had not yet been

adequately sampled. The samples were submitted to an approved laboratory for analysis of PAHs using USEPA Method 3510/8270M, in accordance with USEPA Level IV DQOs. The samples were also analyzed for concentrations of arsenic using the graphite furnace method (USEPA Method 3050/6010) in accordance with USEPA Level IV DQOs. HLA then finalized the work plan (HLA, 1999a), incorporating the results of the three additional samples. The work plan was used by the DET for planning their soil removal.

2.3 IRA SOIL REMOVAL

The DET conducted an IRA soil removal at SA 40 in April and May 1999. They removed approximately 6,122 cubic yards of soil from an irregularly shaped area roughly 300 feet long by 250 feet wide to a depth of 2 feet in the southwestern portion of SA 40. The DET also excavated one 10- by 10-foot area to a depth of 2 feet in the vicinity of sample location 40S028. The excavated areas are presented on Figure 2-3. The excavations were backfilled with Florida-certified clean fill, graded, and hydroseeded.

Upon completion of the initial IRA soil removal, 31 confirmatory samples were collected from the sidewalls of the excavated areas by the DET. Twenty-seven samples were collected at the large excavation area and four samples were collected from the small 10- x 10-foot excavation area in the eastern portion of the Study Area. The samples were analyzed for PAHs using USEPA Method 8310 and arsenic using USEPA Method 6010. The results of these samples indicated that some soils remaining in the Study Area still exceeded screening levels for arsenic and dibenz(a,h)anthracene. To determine whether or not additional soil needed to be excavated, the 95% upper confidence limit (UCL) was calculated for the arsenic concentration at the site. This option, however, was not accepted by FDEP because the area (8-10 acres) used in the calculation exceeded the residential exposure scenario which limits the area to not greater than 0.5 acre. It was then determined that further site investigation and remediation were necessary.

2.4 POST-IRA SOIL SAMPLING

2.4.1 Soil Sampling - April 2000

In April 2000, soil samples were collected to determine the extent of arsenic concentrations in the remaining soils at SA 40 exceeding the residential screening criterion of 1.0 milligram per kilogram (mg/kg). All work was performed in accordance with the *Work Plan for Soil Sampling* (TtNUS, 2000a). The samples were analyzed for arsenic by the approved laboratory using USEPA Method SW846 6010B. Prior to sample collection, measures were taken (i.e., digging) to identify the limits of the previously excavated areas. The limits of the excavations were determined by referring to DET excavation drawings for approximate locations and comparing the color of the fill with that of the

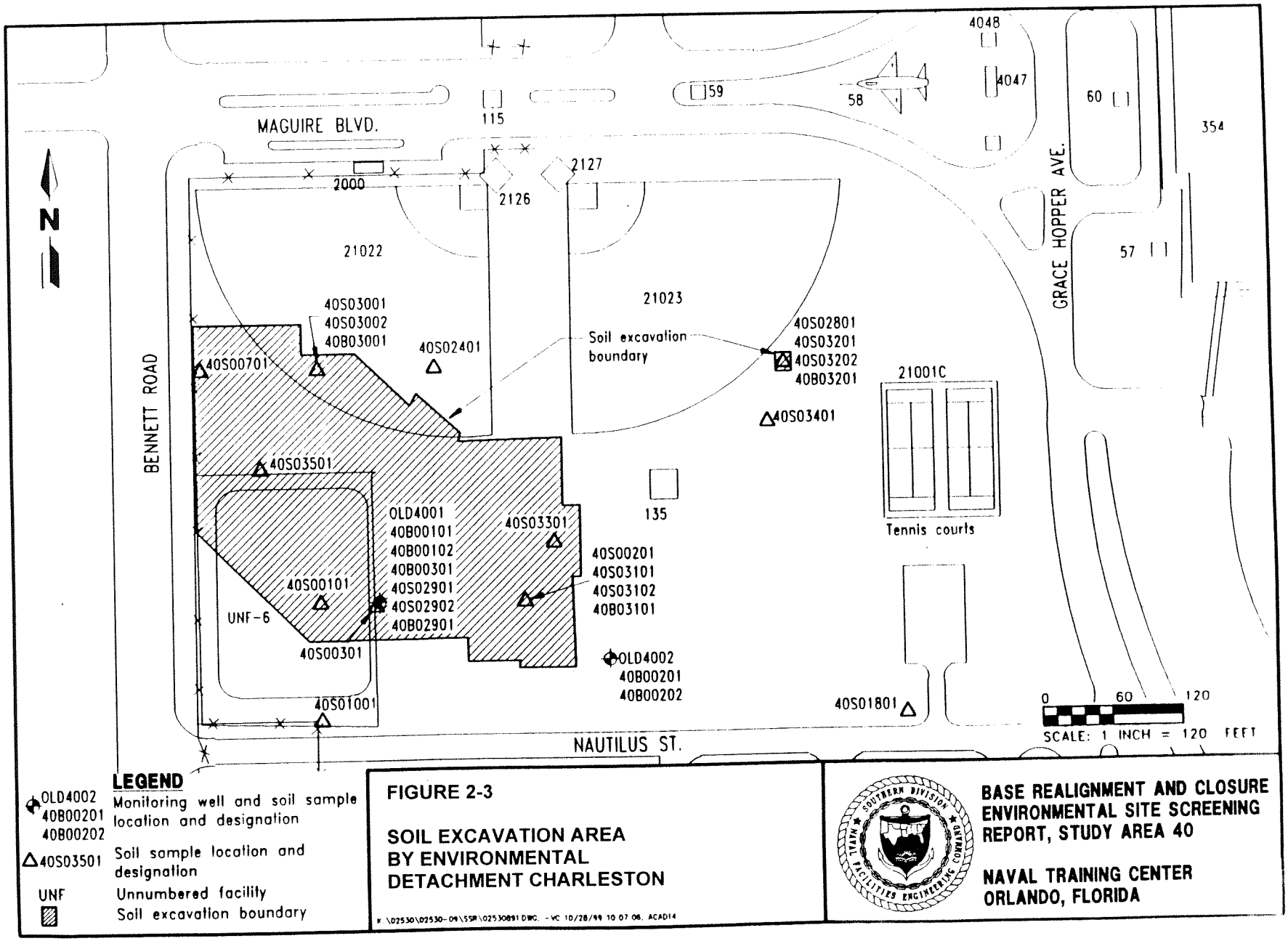


FIGURE 2-3

SOIL EXCAVATION AREA BY ENVIRONMENTAL DETACHMENT CHARLESTON

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT, STUDY AREA 40

NAVAL TRAINING CENTER ORLANDO, FLORIDA

undisturbed soil (DET, 1999). Five soil samples from the large excavation area (Figure 2-4) and one sample from the small excavation area, labeled "A," were collected 5 feet from the undisturbed side walls, from approximately 0-1 foot bgs at the locations where arsenic concentrations exceeded the screening criterion in May 1999. Additional samples were collected at 5-foot horizontal increments from each of the "A" sample locations (10 feet, 15 feet, and 20 feet from the side walls), also at approximately 0 to 1 foot bgs. These samples were labeled "B," "C," and "D," respectively. Arsenic analysis was performed on the "A" soil samples. If concentrations exceeded 1 mg/kg in any of the "A" samples, an analysis was performed on the corresponding "B" soil sample. Similarly, if the concentration in any samples exceeded 1 mg/kg, an analysis was performed on the next incremented soil sample. At the large excavation area, only two samples exceeded the criterion ("A" and "B" samples at the same location). All four samples ("A," "B," "C," and "D") at the small excavation area exceeded the residential screening criterion.

2.4.2 Soil Sampling - June through August 2000

Results of the April 2000 sampling indicated that additional step-out sampling was necessary in the vicinity of the small 10- by 10-foot excavation in the eastern portion of the Study Area. Additional samples were collected to the south (41E, 41F, 41G, 41H), west (42E, 42F, 42G, 42H) and east (43E, 43F, 43G, 43H) (Figure 2-5) in June 2000 to define the extent of contamination in that area. All work was performed in accordance with *Surface Soil Sampling at SA 40* (TtNUS, 2000b). The samples were submitted to an approved laboratory and analyzed for arsenic using USEPA Method 6010. In July 2000, four additional samples were collected, extending west of sample point 42H (42I, 42J, 42K, and 42L) (Figure 2-5).

The additional step-out sampling did not locate the boundaries of the contaminated area so a grid sampling approach was used to survey the entire area of the former softball fields (Facilities 21022 and 21023) encompassing the small excavated area. Surface soil samples were collected on August 9, 10, and 23, 2000 (Figure 2-6). Samples were spaced 50 feet apart in a given row and rows were also 50 feet apart. Sample locations were offset 25 feet from one row to the next. The grid was measured from the northwest corner of the fence with the first grid point 39 feet east and 32 feet south of the corner. Sample numbering began with 40S05001. A total of 40 samples (50-89) were collected within or adjacent to the softball fields. In addition, 22 samples (90-111) were collected east and southeast of the large excavated area.

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.

Rev. 1
06/03/02

LEGEND

- CONFIRMATION SOIL SAMPLE (APRIL 1999)
- SURFACE SOIL SAMPLE (APRIL 2000 - NOT ANALYZED)
- SURFACE SOIL SAMPLE (APRIL 2000 - ANALYZED)
- DEBRIS AREA EXCAVATED 1' DEPTH (APRIL 1999)
- DEBRIS AREA OF PAH & ARSENIC EXCAVATED 2' DEPTH (APRIL 1999)
- NON-DEBRIS AREA OF PAH & ARSENIC EXCAVATED 2' DEPTH (APRIL 1999)

NOTE:
LIMIT OF EXCAVATION AND SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

99SPORT0180-1
99SPORT0172-11
40S005
40S004
40S003
40S002
40S001
40S023
NTC40S040A01
40S022
40S021
40S020
40S019
40S018
40S017
99SPORT0172-8
99SPORT0181-2
99SPORT0186-1
40S007
40S008
NTC40S036A01
40S009
99SPORT0172-12
NTC40S037A01
NTC40S038C01
NTC40S038B01
NTC40S038A01
40S011
40S012
40S013
40S014
99SPORT0180-2
99SPORT0172-14
NTC40S039A01
SOFTBALL FIELD
SOFTBALL FIELD
BLDG. 135
BENNETT ROAD
NAUTILUS STREET
FENCE (TYP.)
LIMIT OF EXCAVATION
5'
10'
15'
20'
-N-
40 0 40
SCALE IN FEET

FIGURE 2-4
INITIAL IRA LARGE EXCAVATION AREA
APRIL AND MAY 1999 AND
POST IRA SOIL SAMPLE LOCATIONS APRIL 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CTO 0024

n11x17h.dgn

n8_5x11h.dgn

471001002

2-13

CTO 0024

SOURCE: HLA, 1999

LEGEND

EXCAVATED 2' DEPTH (APRIL 1999)

CONFIRMATION SOIL SAMPLE (APRIL 1999)

SURFACE SOIL SAMPLE (APRIL 2000)

SURFACE SOIL SAMPLE (JUNE 2000)

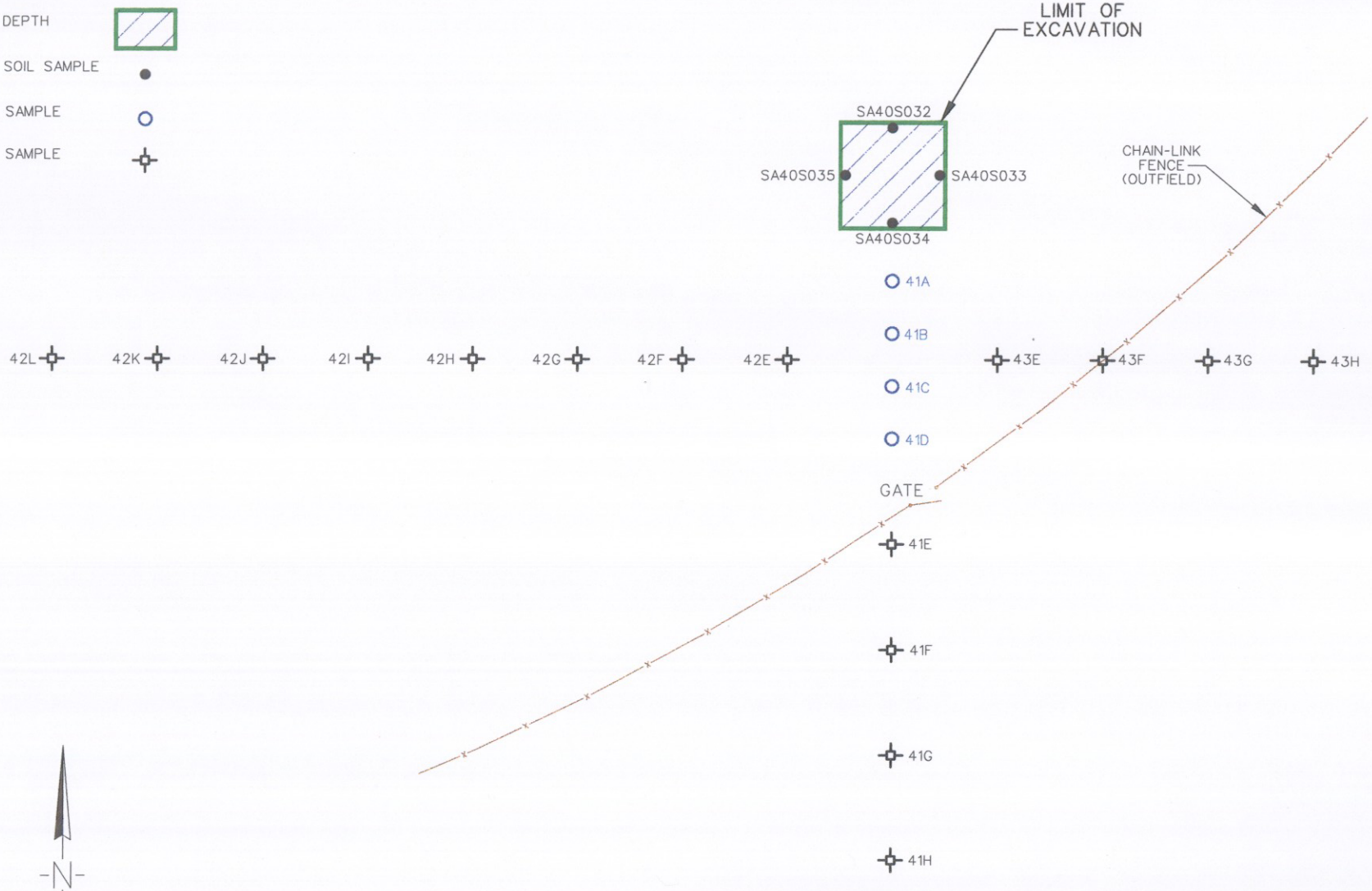


FIGURE 2-5
SOIL SAMPLE LOCATIONS NEAR NORTHEASTERN EXCAVATED AREA JUNE AND JULY 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Rev. 1
06/03/02

CAD FILE NO./DATE: k:\dgn\navy\orlando\sites\sa40\sa40-004.dgn/12-3-01 ENVIRONMENTAL SITE SCREENING REPORT

Rev. 1
06/03/02

LEGEND

SURFACE SOIL SAMPLE
(AUG. 9, 10, & 23, 2000)

2000

2126

2127

SOFTBALL FIELD

SOFTBALL FIELD

LIMIT OF EXCAVATION

BENNETT ROAD

MAGUIRE BOULEVARD

BLDG. 135

TENNIS COURT

PARKING LOT

DITCH (TYP.)

FENCE (TYP.)

LIMIT OF EXCAVATION

NAUTILUS STREET

N

60 0 60

SCALE IN FEET

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.
LOCATION OF LARGE EXCAVATION AREA IS APPROXIMATE.

FIGURE 2-6
SURFACE SOIL SAMPLE LOCATIONS COLLECTED ON AUGUST 9, 10, AND 23, 2000 BEFORE SOIL TILLING ON SEPTEMBER 2, 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17h.dgn

2.5 ADDITIONAL REMEDIATION ACTIVITIES

2.5.1 Tilling, Mixing, and Additional Sampling - September 2000

As an interim action to remediate the contaminated soils at SA 40, soil tilling and mixing to a depth of 15 inches was performed on September 2, 2000. On September 7, 2000, TtNUS re-sampled 27 locations (Nos. 41A, 52-57, 61, 63, 64, 66-71, 73-75, 77-80, 85, and 87-89) that contained arsenic levels above the screening criterion prior to tilling (Figure 2-6).

2.5.2 Excavation and Post-Remediation Confirmatory Sampling - July 2001

From the results of the post-tilling samples, the OPT concluded that excavation of the surface soils at the former softball field location was necessary to complete the remediation of SA 40. Nodarse & Associates (N&A) was contracted with Orlando NTC Partners to complete the remediation of contaminated soils located within SA 40. The remediation included a pre-excavation survey, post-remediation soil testing, and a post-remediation survey at the North Grinder Landfill (where the contaminated soils were disposed). Prior to the initiation of the excavation, the area slated for soil excavation and removal to a depth of 2 feet bgs was staked out in the field by a Florida licensed Professional Land Surveyor (N&A, 2001). In addition, the area of the former North Grinder Landfill was also surveyed and staked to identify the area where excavated soils were to be deposited. Only areas where actual landfilled material existed were identified for deposition of excavated soils. Silt fencing was also placed within the areas where excavation and capping took place in the Study Area. Approximately 5,500 cubic yards of soil were removed from SA 40 during July 2001. The soils were spread to a thickness of approximately 6 to 8 inches uniformly throughout the area designated within the former North Grinder Landfill. The contaminated landfill material was then capped with a minimum of 24 inches of clean soil material that was generated during construction of storm water disposal facilities located on-site.

Upon completion of the initial soil excavation activities, confirmation soil samples were collected. The purpose of the post-remediation testing was to verify that the remediation process achieved the cleanup goals specified in the approved work plan (N&A, 2001). Upon completion of the removal of soils for disposal at the former North Grinder Landfill, grab soil samples were removed from the side walls of the excavated area. A total of 23 samples were collected from SA 40 (Figure 2-7). One sample (40-CS-10) exceeded the residential criterion for arsenic. Additional soil was excavated in that area and another sample was collected. Analytical results indicated that all parameters were below residential criteria. The area was backfilled with clean soil and cleared for regrading, and soil excavation activities were terminated.

Rev. 1
06/03/02

LEGEND

POST REMEDIATION COMPOSITE SOIL SAMPLE 6" TO 2' DEPTH (JULY 2001) ▲

NOTE:
SOIL REMOVAL BOUNDARIES AND COMPOSITE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

McGUIRE BOULEVARD

2000

CENTER AREA WAS NOT SEPARATED BY FIELD SURVEY AND WAS ALSO EXCAVATED

2126

2127

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

SOFTBALL FIELD

SOIL REMOVAL BOUNDARY

SOFTBALL FIELD

BENNETT ROAD

MAGUIRE BOULEVARD

TENNIS COURT

BLDG. 135

SOIL REMOVAL BOUNDARY

STUDY AREA 40 BOUNDARY

PARKING LOT

-N-

60 0 60
SCALE IN FEET

FENCE (TYP.)

DITCH (TYP.)

NAUTILUS STREET

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.

FIGURE 2-7
SOIL EXCAVATION AREA AND CONFIRMATION SOIL SAMPLE LOCATIONS
JULY 2001
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17h.dgn

3.0 INVESTIGATION RESULTS

3.1 INITIAL SITE SCREENING

Results of the initial site screening phase, beginning in January 1996 and ending in March 1996, at SA 40 are summarized below.

3.1.1 Geophysics

The geophysical survey identified seven magnetic and electromagnetic anomalies at SA 40. The anomalies were further investigated with GPR and were interpreted to be located within 4 feet of the surface. The geophysical anomalies were later studied during the UXO survey completed by the Navy's EOD team. A detailed report of the results of the geophysical survey, including the locations of the geophysical anomalies, is provided in Appendix C.

3.1.2 UXO Survey

The EOD team excavated all of the geophysical anomalies at SA 40 that were mapped by HLA personnel. The EOD team found no evidence of buried UXO at SA 40, as would have been indicated by fragmental metal, or ordnance components such as fuses, fins, containers, and spent shell casings. The buried material appeared to be related to the past activities at the site. Excavated debris included survey flags, metal cans, nuts and bolts, and various bits of scrap metal. Based on these findings, the EOD team concluded that further excavation activities to remove any objects greater than 4 feet bgs would be unnecessary. The letter report submitted by the Navy's EOD team is provided in Appendix D.

3.1.3 Passive Soil Gas

The results of the passive soil gas survey indicated only a single occurrence of benzene, toluene, ethylbenzene, and xylene (BTEX) at SA 40. The BTEX detection was located on the eastern softball field (Facility 21023) and was not believed to represent significant soil or groundwater contamination. There were limited occurrences of gasoline range organics in the area between the two ball fields and in the south-central portion of the Study Area near Nautilus Street. The soil gas report is provided in Appendix E.

All soil gas results within approximately 200 feet of the Bottle Landfill were identified as levels that "...would not represent detectable subsurface concentration levels under normal site conditions." These

results indicate that VOCs are not associated with either the excavated area or any remaining buried debris.

3.1.4 Soil Sampling

The analytical results of the surface and subsurface soil samples collected during the initial phase of site screening were evaluated by comparing the concentrations of the various compounds detected to base wide soil background screening levels for inorganics, State of Florida SCTLs, and USEPA Region III Risk-Based Concentrations (RBCs). USEPA Region III RBCs were used for comparison purposes only. The State of Florida SCTLs were considered the screening criteria, unless the basewide soil background levels for inorganics (ABB-ES, 1995a) exceeded the SCTLs. If the background level exceeded the SCTL, as it did for arsenic (background level 1.0 mg/kg; SCTL 0.8 mg/kg), the background level was used as the screening criterion. The nature and location of the exceedances of screening criteria are presented on Figure 3-1 and are discussed below. Summaries of the detections and analytical results from the initial soil investigation are presented in Appendices F and G, respectively.

3.1.4.1 Surface Soil

A variety of organic and inorganic compounds were detected in the four surface soil samples collected during initial site screening activities, but only two chemicals were detected at concentrations in excess of screening criteria. Benzo(a)pyrene was detected in sample 40B00101 at a concentration of 200 micrograms per kilogram (µg/kg) compared to a Florida residential SCTL of 100 µg/kg (Figure 3-1). Arsenic was detected in sample 40S00201 at a concentration of 1.1 mg/kg, slightly above the screening value of 1.0 mg/kg.

3.1.4.2 Subsurface Soil

Various inorganic chemicals, including several metals, were detected in subsurface soil samples, but none were detected at concentrations in excess of screening values. Organic detections included one VOC (a trace of xylene in one sample) and one SVOC (a low concentration of bis(2-ethylhexyl)phthalate in another sample). No pesticides, PCBs, explosives, or TPH were detected.

The analytical results of sample 40B00102 (collected in the area of the Bottle Landfill and below the deepest encountered debris) indicate that the buried material (whether previously excavated or remaining in place) has not impacted the soil beneath. These results are consistent with the soil gas results, and characterization of the buried material as inert debris.

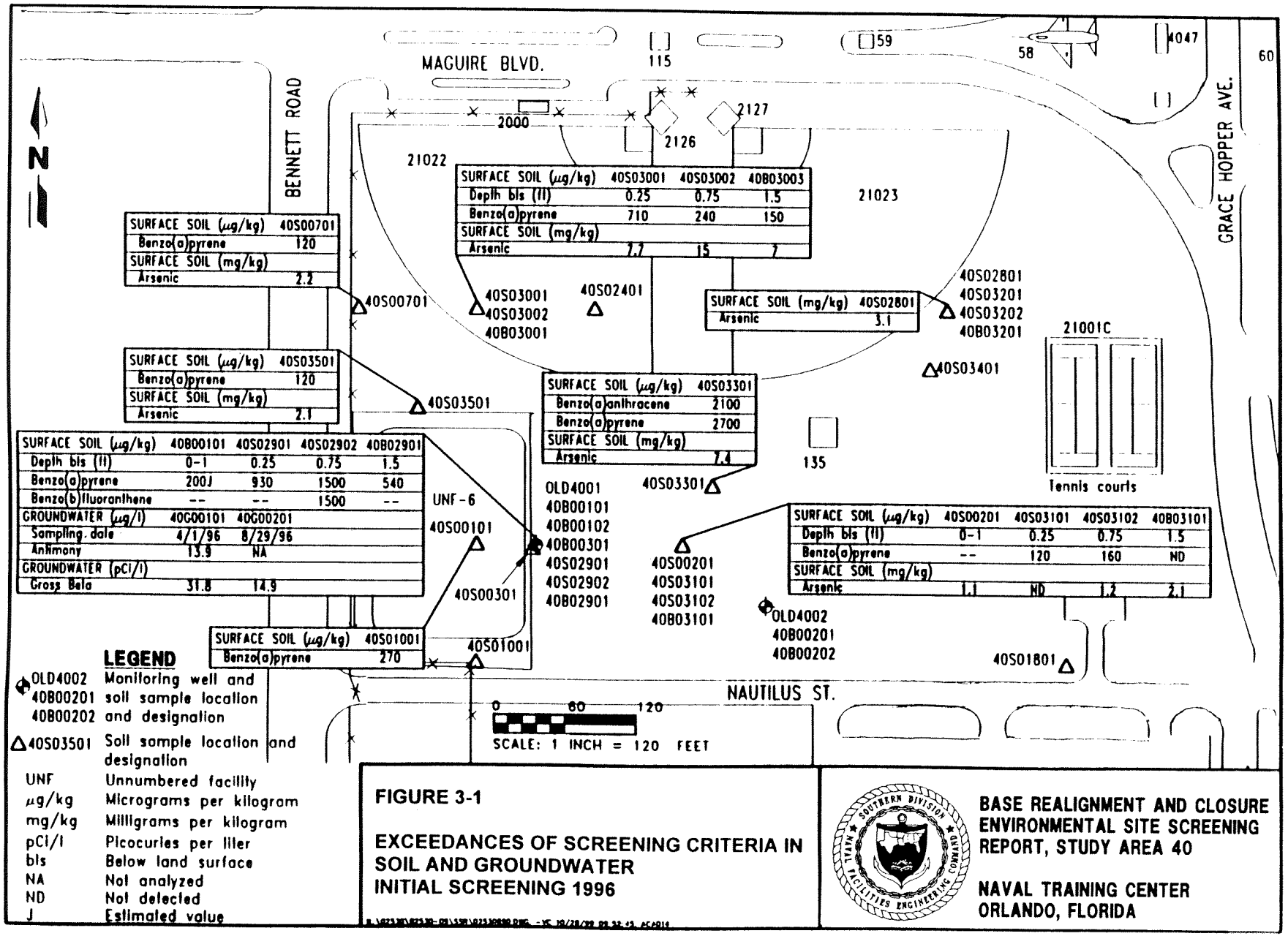


FIGURE 3-1

EXCEEDANCES OF SCREENING CRITERIA IN SOIL AND GROUNDWATER INITIAL SCREENING 1996

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT, STUDY AREA 40

NAVAL TRAINING CENTER ORLANDO, FLORIDA

3.1.5 Focused Risk Assessment

The FRA demonstrated that the potential future Reasonable Maximum Exposure (RME) for residential use of SAs 39 and 40 resulted in a cancer risk of $1x10^{-5}$, which exceeds the cancer risk target established by the State of Florida, but is within the acceptable risk range established by the USEPA. The potential future average residential risk posed by exposure to surface soil at SAs 39 and 40 was at an acceptable risk level of $1x10^{-6}$. The RME residential cancer risk was based on exposure to arsenic and two carcinogenic PAHs [benzo(a)pyrene and dibenz(a,h)anthracene], which were detected in surface soil. The risk range of the two scenarios evaluated (maximum and average risks) provides risk managers additional perspective into the risks presented by the Study Areas as a whole. While these conclusions have not been verified for SA 40 alone, it is not expected that they would change substantially if SA 40 results were evaluated separately.

Based on the RGOs established, the following statements regarding the reduction in the predicted cancer risks were made.

- Remediation of arsenic-contaminated soil to background levels (1 mg/kg) would result in a predicted RME residential cancer risk of $2.5x10^{-6}$. This risk level is greater than the FDEP's acceptable cancer risk target level of $1x10^{-6}$.

- Remediation of benzo(a)pyrene and dibenz(a,h)anthracene-contaminated soils to the residential Florida SCTLs would result in a predicted RME residential cancer risk of $1.6x10^{-6}$; this risk level is greater than FDEP's acceptable cancer risk target of $1x10^{-6}$.

In summary, the FRA predicted that the presence of arsenic and two carcinogenic PAHs in surface soil at SAs 39 and 40 may be presenting an unacceptable cancer risk of approximately $1x10^{-5}$ based on exposure of a future resident to surface soil. Although remediation of surface soil to RGOs would reduce the total predicted cancer risk, the remaining risk upon completion of the remedial action would still present a predicted RME cancer risk of $4.1x10^{-6}$.

In order that risk managers gain perspective on the viability of remediating surface soil at the SA and the resultant reduction in risk that would be achieved, the Navy requested that HLA develop cost estimates for various remedial options addressing contaminated surface soil at the Study Area. The remedial options for which cost estimates were developed consisted of a cross-section of potentially viable technologies to address contaminated surface soil at the Study Area and included the following:

- Treatment (in situ stabilization)
- Containment (soil cover/capping)
- Disposal (excavation and off-site disposal)

The cost estimates developed were presented to the OPT in July 1997 and varied from approximately $500,000 for treatment to $1.6 million for disposal (ABB-ES, 1997a). At that time, the Navy requested additional information regarding the vertical extent of surface soil contamination at the Study Areas, because the cost estimates assumed a depth of contamination of 2 feet. If the depth of contaminated soil was actually less, a smaller volume of soil would require treatment or excavation, and the cost of remediation would be lower. Accordingly, ABB-ES prepared a sampling and analysis plan for SAs 39 and 40 to evaluate the vertical distribution of arsenic and PAHs in surface soil (ABB-ES, 1997d).

3.1.6 Groundwater

The groundwater under SA 40 meets the criteria for a G-II aquifer as defined in Chapter 62-520, *Florida Administrative Code*. A G-II aquifer in Florida is classified according to its designated use as follows:

> "Potable water use, ground water in aquifers which has a total dissolved solids content of less than 10,000 µg/L, unless otherwise classified by the Commission."

The analytical results of the groundwater samples were evaluated by comparing the concentrations of the various compounds detected to FDEP Groundwater Cleanup Target Levels (GCTLs) (FDEP, 1999), tapwater RBCs, and basewide background levels (inorganic and radiological parameters only). Tapwater RBCs were used for comparison purposes only. The State of Florida GCTLs were considered the screening criteria, unless the basewide background levels for inorganics exceeded the GCTLs. If the background level exceeded the GCTL, the background level was used as the screening criterion. The nature and location of the exceedances are presented on Figure 3-1 and are discussed below. The groundwater analytical results are provided in Appendices F (Summary of Detections) and G (Summary of Analytical Results).

Antimony, arsenic, calcium, magnesium, mercury, and potassium and gross beta radiation were detected at concentrations in excess of their background screening values. Although background levels for gross beta radiation were exceeded, the State of Florida only requires additional analysis and total body dose calculations if the gross beta particle activity exceeds 50 picocuries per liter (pCi/L) (Chapter 62-550.519, *Florida Administrative Code*).

The only inorganic chemical exceeding regulatory criteria was antimony in sample 40G00101 with a concentration of 13.1 micrograms per liter (µg/L) compared to a Florida GCTL of 6 µg/L.

Initially antimony was thought to be potentially related to batteries in the Bottle Landfill. However, no batteries were found during the excavation (OPT, 2002), and no lead (expected to be associated with batteries) was detected above screening criteria in either soil or groundwater.

Gross beta radiological activity in well OLD-40-01 during the initial sampling in April 1996 was 31.8 pCi/L, compared to a screening level of 9.5 pCi/L. The well was re-sampled in August 1996 to confirm the earlier results, and radiological activity was 14.9 pCi/L. The decrease in radiological activity may be related to a decrease in suspended solids in groundwater during the re-sampling event.

3.2 SUPPLEMENTAL SITE SCREENING

Results of the supplemental site screening phase, beginning in August 1996 and ending in November 1998, are summarized below.

3.2.1 Radiological Analysis of Surface and Subsurface Soil - August 1996

The single surface soil sample submitted for gross alpha and gross beta analysis (40S00301) had very low levels of radiological activity. The gross alpha and gross beta activity levels were 0.01 and 0.04 picocuries per gram (pCi/g), respectively. These values are insignificant when compared to the standard of 5 pCi/g above background for radium-226 and thorium-232 in soil provided in 40 *Code of Federal Regulations* (CFR) 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings."

The single subsurface soil sample submitted for gross alpha and gross beta analysis (40B00302) also had very low levels of radiological activity. The gross alpha and gross beta activity levels were 0.01 and 0.18 pCi/g, respectively. These values are also insignificant when compared to the applicable standard, above.

3.2.2 Immunoassay Testing for PAHs and Laboratory Analysis for Arsenic - December 1996

IA results indicated that much of the surface soil at SA 40 had PAH concentrations greater than 0.1 mg/kg. A summary of the total PAH results using IA testing for 25 surface soil samples is presented in Appendix H, Table H-1.

Two of the five confirmation samples submitted to the laboratory had PAH concentrations in excess of the SCTLs (40S007 and 40S010), and both of these were attributed to a single PAH compound, benzo(a)pyrene. The benzo(a)pyrene concentrations in these two samples were 120 and 270 µg/kg, respectively, compared to a Florida residential SCTL of 100 µg/kg. Two of the five confirmation samples had arsenic concentrations that exceeded the screening value of 1 mg/kg. The concentrations were 2.2 mg/kg (40S007) and 3.1 mg/kg (40S028) (Figure 3-1). A summary of the positive detections and the full listing of analytical results for these samples are provided in Appendices F and G, respectively. A summary table comparing IA and laboratory results is provided in Appendix H, Table H-2.

3.2.3 Soil Sampling to Determine Vertical Distribution of Contaminants in Surface Soil - September 1997

As stated in Subsection 2.2.3, after a review of initial site screening results, concerns regarding the presence of PAHs and arsenic in surface soils prompted the OPT to request that HLA further evaluate the vertical distribution of contaminants in surface soil. Benzo(a)pyrene exceeded the residential SCTL at all depths at two of the three locations sampled and analyzed (samples from collection point 32 were not analyzed). Two locations had the highest concentrations at the 0.75-foot depth and one location had the highest concentration at the 0.25-foot depth. The lowest concentrations were found at the 1.5-foot depth at all three locations. Concentrations ranged from 120 to 1,500 µg/kg. Benzo(b)fluoranthene exceeded the residential SCTL at one location (40S029) at the mid-range sampling depth (0.75 foot bgs).

Arsenic was detected in five of the nine samples submitted for arsenic analysis. Results did not indicate a correlation between depth and concentration. Arsenic was not detected in any of the samples collected at 40S032, and the samples collected at location 40S029 were not analyzed. Concentrations of arsenic at the remaining two sample locations did exceed the screening value in all five of the samples in which it was detected. The highest concentrations were observed at the mid-range depth at sample location 40S030 and at the deepest depth (1.5 feet bgs) at sample location 40S031. Concentrations of arsenic ranged from 1.2 to 15 mg/kg. Analytical results are presented in Appendices F and G.

3.2.4 Soil Sampling to Support an IRA - November 1998

HLA collected three additional samples at SA 40 in November 1998 to further characterize portions of the Study Area that had not yet been adequately sampled and support an IRA soil removal to be conducted by the DET.

Benzo(a)pyrene was detected in two of the three samples, 40S03301 and 40S03501, at concentrations of 2,700 and 120 µg/kg, respectively, compared to the Florida residential SCTL of 100 µg/kg (Figure 3-1).

Sample 40S03301 also contained benzo(a)anthracene at a concentration of 2,100 µg/kg, compared to the Florida SCTL of 1,400 µg/kg. Arsenic was also detected in samples 40S03301 and 40S03501 at concentrations of 7.4 and 2.1 mg/kg, respectively, compared to a screening value for arsenic of 1.0 µg/kg.

Based on these data, the planned soil removal area was designed to include sample locations 40S03301 and 40S03501. Sample 40S03301 is located near the middle of the eastern boundary of the excavation and sample 40S03501 is located at the north end of UNF-6 (HLA, 1999a).

3.3 IRA SOIL REMOVAL

The IRA soil removal at SA 40 was conducted by DET in April and May 1999 (Figure 2-3). Their report is included as Appendix I.

The results of the follow-up confirmation sampling indicated that seven samples (40S003, 99SPORT0172-11, 40S008, 40S009, 99SPORT0172-12, 99SPORT0172-14, and 40S023) at the large excavation area (Figure 3-2) and one sample (SA40S034) at the small excavation area (Figure 3-3) exceeded the screening level for arsenic. One sample (40S001) at the large excavation area exceeded the residential SCTL for dibenz(a,h)anthracene; however, that sample location was included in the additional excavation of the debris area bordering the fence line (Figure 3-2); therefore, the extent of PAH contamination had been remediated. Analytical results are provided in Appendix I.

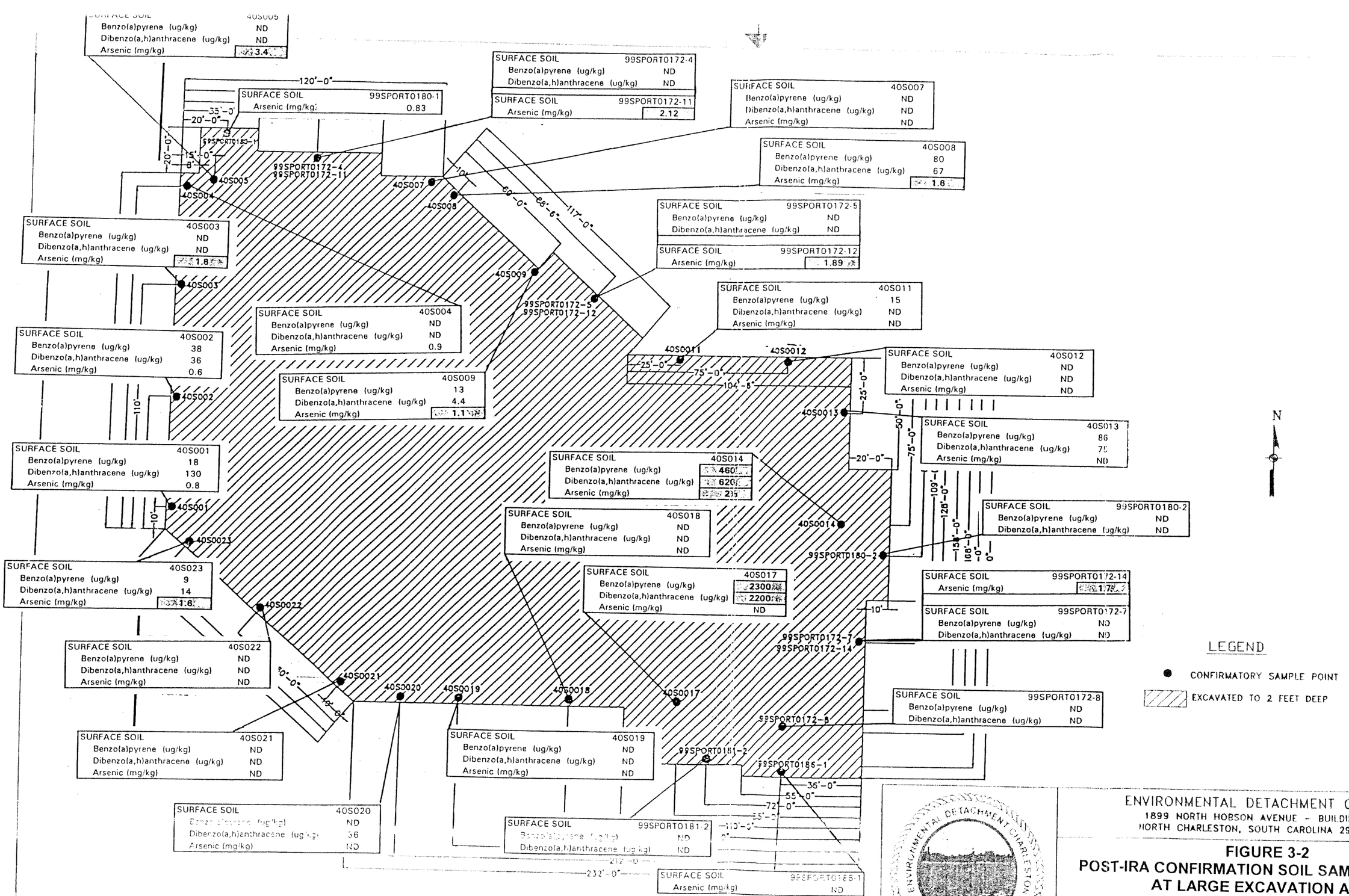
In response to the arsenic exceedances in the samples identified above, the FDEP issued a letter concluding that the property was not suitable for reclassification or transfer, and that additional investigation and remediation were necessary. A copy of that letter is provided in Appendix J.

3.4 POST-IRA SOIL SAMPLING

3.4.1 Soil Sampling – April, June, and July 2000

TtNUS collected soil samples for arsenic analysis outside the edges of both excavation areas at SA 40 on April 17, 2000. Analytical results are provided in Appendix K. At the large excavation area, only one of five "A" samples, NTC40S038A01 (38A), contained arsenic at a concentration exceeding the screening criterion (Figure 3-4). Sample 38B also exceeded the criterion; however, the concentration in 38C (0.70 mg/kg) was below the criterion.

At the small 10- x 10-foot excavation area, the "A" sample (41A) exceeded the screening criterion. In addition, samples 41B, 41C, and 41D all exceeded the screening criterion (Figure 3-5). Twelve additional

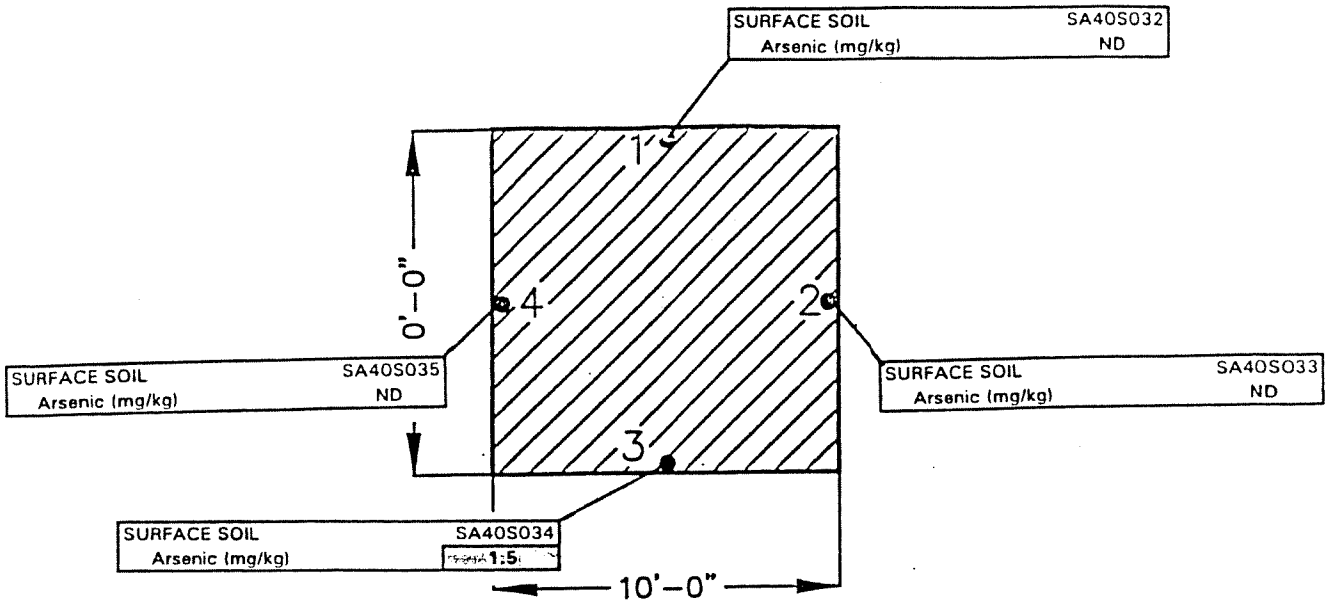


ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE - BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 3-2
POST-IRA CONFIRMATORY SOIL SAMPLE RESULTS AT LARGE EXCAVATION AREA

DATE	PREPARED BY:	REV
17 AUGUST 1999	A. J. MOYER	-
SCALE: NONE		SHEET

471001002



LEGEND

1 ● CONFIRMATORY SAMPLE ID SA40S032

2 ● CONFIRMATORY SAMPLE ID SA40S033

3 ● CONFIRMATORY SAMPLE ID SA40S034

4 ● CONFIRMATORY SAMPLE ID SA40S035

EXCAVATED TO 2 FEET DEEP

N

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 3-3
POST-IRA CONFIRMATION SOIL SAMPLE RESULTS AT SMALL EXCAVATION AREA

DATE:	PREPARED BY:	REV
20 JULY 1999	A. J. MOYER	–

SCALE: NONE		SHEET: –

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.

Rev. 1
06/03/02

NTC40S036A01

CHEMICAL	4/00
ARSENIC	<1.1

NTC40S037A01

CHEMICAL	4/00
ARSENIC	0.64-B

NTC40S038C01

CHEMICAL	4/00
ARSENIC	0.70

NTC40S038B01

CHEMICAL	4/00
ARSENIC	1.3

NTC40S038A01

CHEMICAL	4/00
ARSENIC	1.1-B

NTC40S040A01

CHEMICAL	4/00
ARSENIC	0.42-B/ <1.1

NTC40S039A01

CHEMICAL	4/00
ARSENIC	0.51-B

99SPORT0180-1
99SPORT0172-11
40S005
40S004
40S007
40S008
40S009
99SPORT0172-12
40S003
40S002
40S001
40S023
40S022
40S021
40S020
40S019
40S018
40S017
40S011
40S012
40S013
40S014
99SPORT0180-2
99SPORT0172-14
99SPORT0172-8
99SPORT0181-2
99SPORT0186-1

SOFTBALL FIELD
SOFTBALL FIELD
BLDG. 135
BENNETT ROAD
NAUTILUS STREET
FENCE (TYP.)
LIMIT OF EXCAVATION

LEGEND

- CONFIRMATION SOIL SAMPLE (APRIL 1999)
- SURFACE SOIL SAMPLE (APRIL 2000 - NOT ANALYZED)
- SURFACE SOIL SAMPLE (APRIL 2000 - ANALYZED)
- DEBRIS AREA EXCAVATED 1' DEPTH (APRIL 1999)
- DEBRIS AREA OF PAH & ARSENIC EXCAVATED 2' DEPTH (APRIL 1999)
- NON-DEBRIS AREA OF PAH & ARSENIC EXCAVATED 2' DEPTH (APRIL 1999)

CHEMICAL	4/00
ARSENIC	0.42-B/ <1.1

SAMPLE COLLECTION DATE
CHEMICAL
CHEMICAL CONCENTRATION [1,2]
DUPLICATE SAMPLE

QUALIFIER FOR INORGANIC ANALYTES INDICATES A CONCENTRATION BETWEEN THE INSTRUMENT DETECTION LIMIT AND THE REPORTING LIMIT — B

SCREENING CRITERION [1]	
ARSENIC	1.0

1-CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
2-BOLD CONCENTRATION INDICATES SCREENING CRITERIA EXCEEDANCE

NOTE:
LIMIT OF EXCAVATION AND SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

-N-

40 0 40
SCALE IN FEET

FIGURE 3-4
ARSENIC CONCENTRATIONS IN SOIL
AT LARGE EXCAVATED AREA - APRIL 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17h.dgn

n8_5x11h.dgn

471001002

LEGEND

EXCAVATED 2' DEPTH (APRIL 1999)

CONFIRMATION SOIL SAMPLE (APRIL 1999)

SURFACE SOIL SAMPLE (APRIL 2000)

SURFACE SOIL SAMPLE (JUNE 2000)

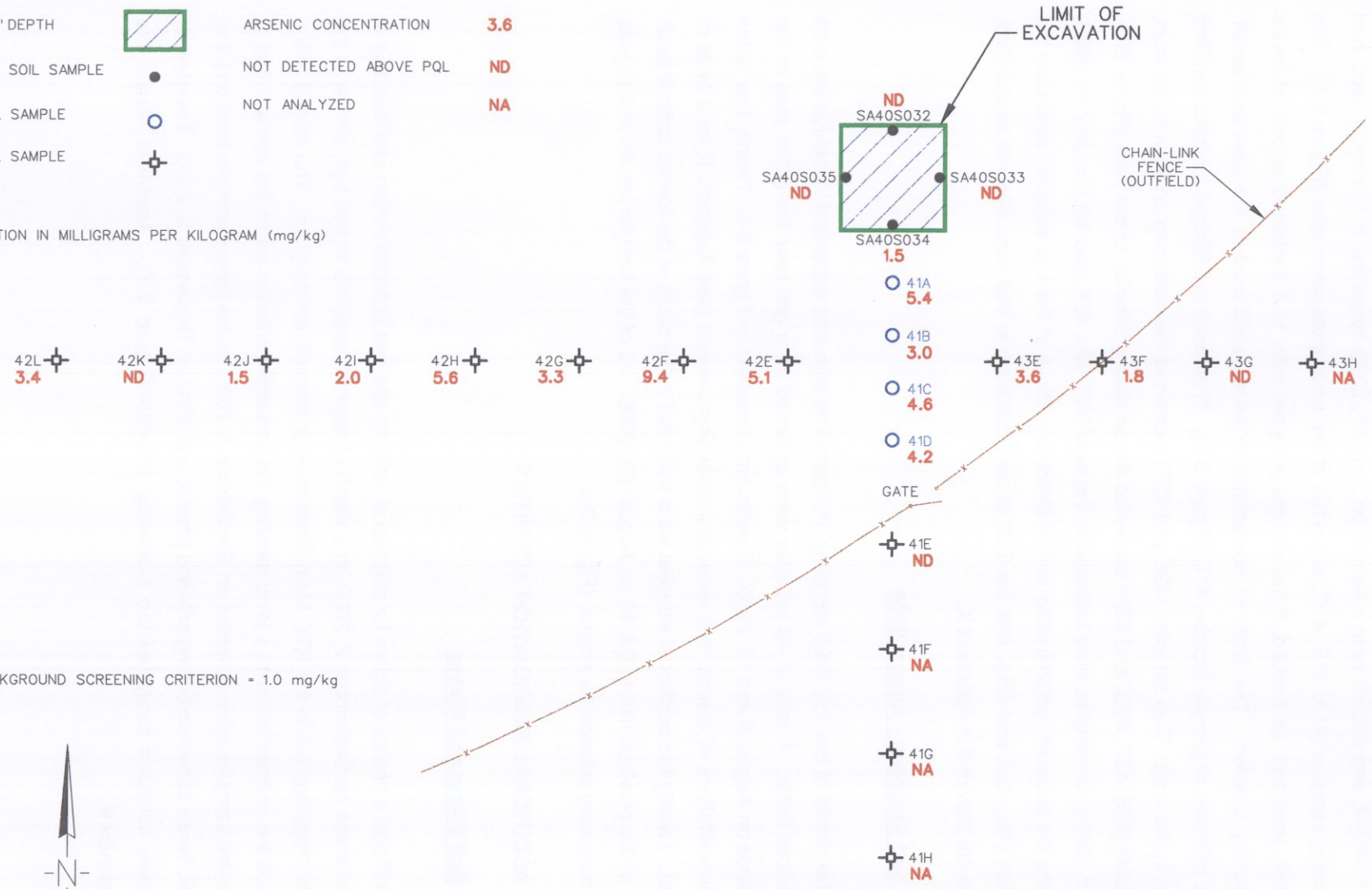
ARSENIC CONCENTRATION 3.6

NOT DETECTED ABOVE PQL ND

NOT ANALYZED NA

1-CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)

SOURCE: HLA, 1999



NOTE:
ARSENIC BACKGROUND SCREENING CRITERION = 1.0 mg/kg

-N-

15 0 15

SCALE IN FEET

FIGURE 3-5
ARSENIC CONCENTRATIONS IN SOIL
NEAR SMALL EXCAVATED AREA
JUNE AND JULY 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Rev. 1
06/03/02

3-15

CTO 0024

CAD FILE NO./DATE: k:\dgn\navy\orlando\sites\sa40\sa40-005.dgn/12-3-01 ENVIRONMENTAL SITE SCREENING REPORT

samples (41E-H, 42E-H, and 43E-H) were collected on June 21, 2000, extending to the south, east, and west of the previous samples (41A, 41B, 41C, and 41D) at the small excavation area (Figure 3-5). The samples were only analyzed, as needed, if the sample analyzed prior to it contained arsenic at levels above the screening criterion. The limits of contamination were established to the east and south. Arsenic was not detected at sample location 41E (Figure 3-5). This result established the southern limit of contamination in this area. Two samples (43E and 43F) exceeded the screening criterion to the east, but all four samples (42E, 42F, 42G, and 42H) exceeded the screening criterion to the west (Figure 3-5). In response, four additional samples were collected to the west (42I, 42J, 42K, and 42L) on July 15, 2000, to try to determine the limits of contamination in that direction. Three of the four samples exceeded the screening criterion (42I, 42J, and 42L), and the limit of contamination in that area was not established. Analytical results are provided in Appendix K.

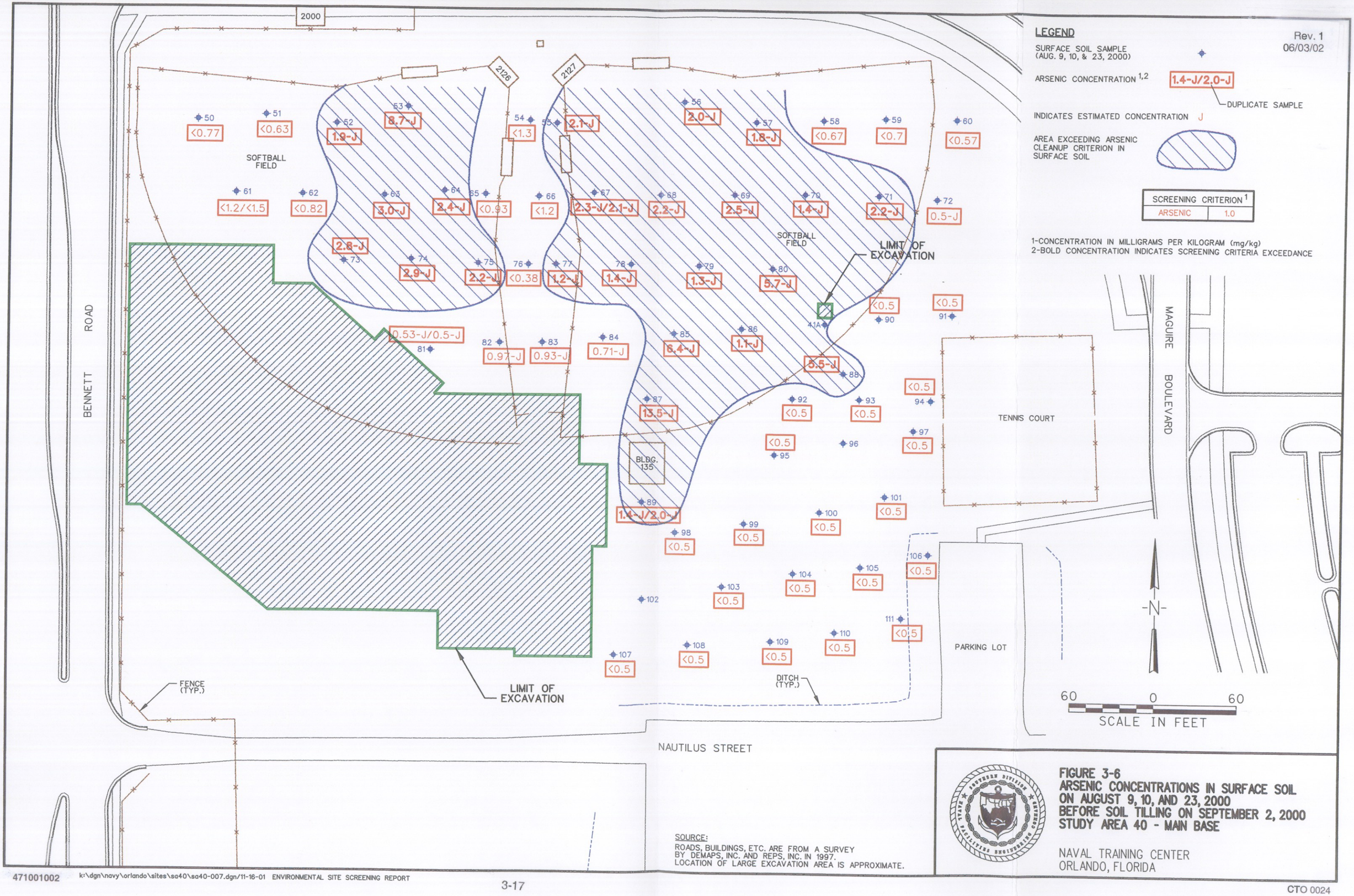
3.4.2 Soil Sampling - August 2000

In response to the results of the July 2000 sampling, the sampling area was expanded to include the area of the former softball fields. A total of 40 samples were collected on a grid over the entire area of the former softball fields on August 9 and 10, 2000. Results are presented on Figure 3-6. Twenty-four of the samples had concentrations of arsenic that exceeded screening criterion (see Appendix K for a table of analytical results). Twenty-two additional samples were collected to the south of the former softball fields and to the east of the previous IRA in SA 40 on August 23, 2000. All of the sample results in that area were below the screening criterion for arsenic (Figure 3-6).

3.5 ADDITIONAL REMEDIATION ACTIVITIES

3.5.1 Soil Tilling and Mixing

The U.S. Navy initiated a course of action for cleanup of soils on site that included mixing and blending of the contaminated areas on September 2, 2000, to a depth of approximately 15 inches bgs, similar to the remediation technology applied to the NTC Main Base arsenic remediation program. The mixing of the soil did not reduce the contamination to a level meeting the screening criterion within the upper 2 feet of soils. Twenty-seven samples were collected on September 7, 2000, at the former sample locations that contained arsenic levels above screening criterion prior to soil tilling on September 2, 2000. Twenty-four of the 27 samples collected exceeded the screening criterion (Figure 3-7). Analytical results are presented in Appendix K.


LEGEND
Rev. 1
06/03/02
SURFACE SOIL SAMPLE
(AUG. 9, 10, & 23, 2000)
ARSENIC CONCENTRATION 1,2
1.4-J/2.0-J
DUPLICATE SAMPLE
INDICATES ESTIMATED CONCENTRATION J
AREA EXCEEDING ARSENIC CLEANUP CRITERION IN SURFACE SOIL
SCREENING CRITERION 1
ARSENIC 1.0
1-CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
2-BOLD CONCENTRATION INDICATES SCREENING CRITERIA EXCEEDANCE
2000
2126
2127
BENNETT ROAD
MAGUIRE BOULEVARD
SOFTBALL FIELD
SOFTBALL FIELD
TENNIS COURT
BLDG. 135
PARKING LOT
LIMIT OF EXCAVATION
LIMIT OF EXCAVATION
FENCE (TYP.)
DITCH (TYP.)
NAUTILUS STREET
50 <0.77
51 <0.63
52 1.9-J
53 8.7-J
54 <1.3
55 2.1-J
56 2.0-J
57 1.8-J
58 <0.67
59 <0.7
60 <0.57
61 <1.2/<1.5
62 <0.82
63 3.0-J
64 2.4-J
65 <0.93
66 <1.2
67 2.3-J/2.1-J
68 2.2-J
69 2.5-J
70 1.4-J
71 2.2-J
72 0.5-J
73 2.8-J
74 2.9-J
75 2.2-J
76 <0.38
77 1.2-J
78 1.4-J
79 1.3-J
80 5.7-J
41A
<0.5 90
<0.5 91
81 0.53-J/0.5-J
82 0.97-J
83 0.93-J
84 0.71-J
85 6.4-J
86 1.1-J
88 5.5-J
<0.5 94
87 13.5-J
92 <0.5
93 <0.5
95 <0.5
96
97 <0.5
89 1.4-J/2.0-J
98 <0.5
99 <0.5
100 <0.5
101 <0.5
106 <0.5
105 <0.5
104 <0.5
103 <0.5
102
111 <0.5
110 <0.5
109 <0.5
108 <0.5
107 <0.5
N
60 0 60
SCALE IN FEET
SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.
LOCATION OF LARGE EXCAVATION AREA IS APPROXIMATE.
FIGURE 3-6
ARSENIC CONCENTRATIONS IN SURFACE SOIL
ON AUGUST 9, 10, AND 23, 2000
BEFORE SOIL TILLING ON SEPTEMBER 2, 2000
STUDY AREA 40 - MAIN BASE
NAVAL TRAINING CENTER
ORLANDO, FLORIDA
n11x17h.dgn
471001002
k:\dgn\navy\orlando\sites\sa40\sa40-007.dgn/11-16-01 ENVIRONMENTAL SITE SCREENING REPORT
3-17
CTO 0024

Rev. 1
06/03/02

LEGEND

SURFACE SOIL SAMPLE (SEPT. 7, 2000)

ARSENIC CONCENTRATION [1,2] 0.89/**1.2** — DUPLICATE SAMPLE

SCREENING CRITERION [1]	
ARSENIC	1.0

1-CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
2-BOLD CONCENTRATION INDICATES SCREENING CRITERION EXCEEDANCE

2000
2126
2127
BENNETT ROAD
MAGUIRE BOULEVARD
SOFTBALL FIELD
SOFTBALL FIELD
LIMIT OF EXCAVATION
BLDG. 135
TENNIS COURT
PARKING LOT
FENCE (TYP.)
LIMIT OF EXCAVATION
DITCH (TYP.)
NAUTILUS STREET
-N-
60 0 60
SCALE IN FEET

50 51 52 2.0 53 2.6 54 55 1.7 2.0 56 7.0 57 3.4 58 59 60
61 1.4 62 63 2.4 64 2.5 65 66 0.89/**1.2** 67 3.6 68 4.2 69 2.4 70 1.1 71 1.3 72
73 2.1 74 2.1 75 2.9 76 77 0.95 78 2.4/2.7 79 3.0 80 1.9
81 82 83 84 85 1.5 86 41A 1.9 90 91
2.9 88
87 2.7 92 93 94 97
95 96
89 0.86/0.74 98 99 100 101
102 103 104 105 106
107 108 109 110 111

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.
LOCATION OF LARGE EXCAVATION AREA IS APPROXIMATE.

FIGURE 3-7
ARSENIC CONCENTRATIONS IN SURFACE SOIL ON SEPTEMBER 7, 2000 AFTER SOIL TILLING ON SEPTEMBER 2, 2000
STUDY AREA 40 - MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17h.dgn

3.5.2 Soil Excavation - July 2001

During July 2001, the arsenic-contaminated soil was excavated to a depth of 2 feet by Nodarse & Associates and disposed of at the North Grinder Landfill (see Figure 2-7). A total of 23 grab samples were collected from sidewalls by Nodarse & Associates to confirm that all contaminated soil had been excavated. Only one sample (40-CS-10) exceeded the residential criterion for arsenic. Additional soil was excavated from the area of the contaminated sample and the location was sampled again. The result of the second sample analysis indicated that arsenic was below the screening criterion. A portion of the Nodarse & Associates Completion Report and tables of confirmation sample results are provided in Appendix L.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The soil and groundwater at SA 40 have been impacted by previous activities at the site. A summary by medium is presented below.

4.1.1 Surface Soil

The screening investigation results indicated that PAHs, primarily benzo(a)pyrene, were detected in the surface soil at concentrations exceeding their respective residential SCTLs. Arsenic was also detected at concentrations exceeding its screening concentration. The results of the FRA conducted for this medium indicated that the potential future RME for residents exposed to surface soils at SA 40 was at a risk level of $1x10^{-5}$, which exceeds the cancer risk target established by the State of Florida. The FRA also concluded that the potential future average residential risk posed by exposure to surface soil was at an acceptable cancer risk level of $1x10^{-6}$.

Because the RME risk exceeded the cancer risk target established by the State, the Navy implemented an IRA, consisting of a soil removal conducted by the DET in April and May 1999 and a second soil removal conducted by Nodarse & Associates during July 2001. A total of 7,916 tons (approximately 6,100 cubic yards) of PAH and arsenic-contaminated soil were removed during the initial IRA, and an additional 5,500 cubic yards of arsenic-contaminated soil were removed during the second excavation. Confirmation samples have verified that the remaining soil meets the State's residential surface soil criteria. However, portions of the Study Area may still be underlain by buried debris consisting of inert materials.

4.1.2 Subsurface Soil

There were no exceedances of screening criteria in the subsurface soil samples collected for analysis.

4.1.3 Groundwater

There were no organic compounds detected in groundwater at concentrations exceeding Florida GCTLs. The only inorganic chemical exceeding regulatory criteria was antimony in well OLD-40-01 with a concentration of 13.1 µg/L compared to a Florida GCTL of 6 µg/L and the USEPA Region III RBC of 15 µg/L. The OPT determined that the presence of antimony at a concentration above the screening level was related to high turbidity at the time of sampling [the turbidity was 96.4 nephelometric turbidity

units (NTUs)]. Antimony was not detected in any of the wells downgradient of OLD-40-01 (OLD-40-02 and SA 39 wells OLD-39-01 through –05) (HLA, 1999b).

The background concentration for gross beta radiation was exceeded in monitoring well OLD-40-01 (31.8 pCi/L, compared to a background level of 9.5 pCi/L). The well was resampled in August 1996, and gross beta radiological activity had decreased to 14.9 pCi/L. The State of Florida only requires additional analysis and total body dose calculations if the gross beta particle activity exceeds 50 pCi/L (Chapter 62-550.519, *Florida Administrative Code*). The groundwater under SA 40 meets the criteria for a G-II aquifer.

Based on visual observations during excavation of the bottle landfill and analytical results from samples collected during the site screening investigation, the buried material associated with the bottle landfill is inert debris. The material excavated and removed consisted mainly of bottles, wire, and scrap metal (OPT, 2002). Soil gas results were considered nondetect (per Northeast Research Institute, Appendix E) for all target compounds in the area of the bottle landfill. Subsurface soil samples collected below the bottom of the deepest identified debris in the immediate vicinity of the bottle landfill and submitted for a full suite of analyses did not contain any contaminants at or above screening levels. Groundwater samples from the site, also analyzed for a full suite of contaminants, did not contain any organic chemicals above screening levels. Although antimony did exceed the screening level in the initial sample, the OPT determined that high sample turbidity was the cause. The weight of evidence indicates that any buried material left at the site is inert debris.

4.2 RECOMMENDATIONS

Based on the findings of the site screening investigation and the remedial actions taken, SA 40 is suitable for residential reuse without further investigation or remediation. However, certain portions of the Study Area may still be underlain by inert debris (bottles, wire, scrap metal, etc.) that should pose no chemical risk to human health or the environment. Therefore, future property owners should be advised that inert debris may exist in the subsurface soil. It is recommended that the Base Realignment and Closure Color Code be changed to "4/Dark Green" to signify "an area where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

4.3 OPT CONCURRENCE

The undersigned members of the OPT concur with the findings and recommendations of this site screening report. A letter from the FDEP, dated October 8, 2001, approving the soil cleanup is located in Appendix J.

STUDY AREA 40

Gregory Fraley
U.S. Environmental Protection Agency, Region 4

8/5/02
Date

David P. Grabka, P.G.
Remedial Project Manager
Florida Department of Environmental Protection

7/24/02
Date

Barbara Nwokike
BRAC Environmental Coordinator
U.S. Department of the Navy

7-24-02
Date

REFERENCES

ABB-ES (ABB Environmental Services Inc.), 1995a. *Background Sampling Report, Naval Training Center, Orlando, Florida.* Unit Identification Code N65928, Contract No. N62467-89-D-0317, August.

ABB-ES, 1995b. *Site Screening Plan, Groups I Through V Study Areas and Miscellaneous Additional Sites,* September.

ABB-ES, 1995c. *Site Screening Plan, Former Air Force Sites, Addendum 2, NTC, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, December.

ABB-ES, 1996. *Technical Memorandum, Site Survey Investigations, Study Areas 39, 40 and 45, NTC, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, June.

ABB-ES, 1997a. *Cost Estimates for Surface Soil Remedial Options at Study Areas 39 & 40, Naval Training Center (NTC), Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, July.

ABB-ES, 1997b. *Technical Memorandum, Focused Risk Assessment, Surface Soil, SA 39 and 40 Surface Soil, Naval Training Center (NTC), Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

ABB-ES, 1997c. *Project Operations Plan for Site Investigations and Remedial Investigations, Volumes I and II, Naval Training Center (NTC), Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

ABB-ES, 1997d. *Study Areas 39 and 40 Sampling and Analysis Plan, Vertical Extent of Contamination in Surface Soil, Naval Training Center (NTC), Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

DET (Environmental Detachment Charleston), 1999. *Completion Report for SAs 17, 18, 23, 35, 37, 40, and 42 and OUs 3 and 4, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

FDEP (Florida Department of Environmental Protection), 1999. *Technical Report: Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C.* CEHT/TR-99-01, May 26, 1999.

HLA (Harding Lawson Associates), 1999a. *Base Realignment and Closure Workplan for Interim Remedial Action, Study Areas 39 and 40, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, January.

HLA, 1999b. *Base Realignment and Closure Environmental Site Screening Report, Study Area 39, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, April.

N&A (Nodarse & Associates), Inc., 2001. *Post Soil Remediation Activities, Study Areas 39 and 40, Naval Training Center, Orlando, Florida.* Prepared for Florida Department of Environmental Protection, Orlando, Florida, August.

OPT (Orlando Partnering Team), 2002. Meeting Minutes, April 23-24.

TtNUS (Tetra Tech NUS, Inc.), 2000a. *Work Plan for Soil Sampling, Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract, Naval Training Center, Orlando, Florida*, Pittsburgh, Pennsylvania, June.

TtNUS, 2000b. *Surface Soil Sampling at SA 40, Main Base, Naval Training Center, Orlando, Florida,* September.

USDA (U. S. Department of Agriculture, Soil Conservation Service), 1989. *Soil Survey of Orange County, Florida,* August.

APPENDIX A

PHOTOS OF PRE-SITE SCREENING UNF-6 EXCAVATION

Photo 1: UNF-6 Excavation, March 16, 1994

Photo 2: UNF-6 Excavation, March 16, 1994

Photo 3: UNF-6 Excavation, March 16, 1994

Photo 4: UNF-6 Excavation, March 16, 1994

APPENDIX B

SUMMARY OF MONITORING WELL CONSTRUCTION DETAILS, SOIL BORING LOGS, INDIVIDUAL WELL CONSTRUCTION DETAILS, WELL DEVELOPMENT RECORDS, AND GROUND-WATER SAMPLE FIELD DATA SHEETS

Table B-1
Monitoring Well Construction Details

Base Realignment and Closure
Environmental Site Screening Report
Study Area 40
Naval Training Center
Orlando, Florida

Well ID[1]	Date Installed	Borehole Depth (feet bgs)	Well Depth (feet bgs)	Screen Interval (feet bgs)	Filter Pack Interval (feet bgs)	Seal Interval (feet bgs)	Grout Interval (feet bgs)	Casing Depth (feet bgs)
OLD-40-01A	3/19/96	18	18	8 to 18	6 to 18	2 to 6	0 to 2	N/A
OLD-40-02A	3/19/96	18	18	8 to 18	6 to 18	2 to 4	0 to 2	N/A

Notes: All permanent monitoring wells constructed with 2-inch-diameter PVC riser and screen (01-inch slot), and installed in a 6.5-inch-diameter borehole.
"A" suffix on well ID notes shallow (water table) well.

ID = identification.
bgs = below ground surface.
N/A = no surface casing utilized in construction.
PVC = polyvinyl chloride.
-- = not available.

Table B-2
Monitoring Well Elevation Survey

Base Realignment and Closure
Environmental Site Screening Report
Study Area 40
Naval Training Center
Orlando, Florida

Well Identifier	Horizontal Coordinates[1]		Top-of-Casing Elevation (feet msl)	Depth to Water (feet)		Water Elevation (feet msl)	
	Northing	Easting		September 96	January 97	September 96	January 97
OLD-40-01A	1,536,307.00	549,311.65	119.66	10.54	12.43	109.12	107.23
OLD-40-02A	1,536,258.62	549,509.67	120.86	12.42	14.23	108.44	106.63

[1] U.S. Geological Survey, North American Datum, 1927.

Note: msl = mean sea level.

Project: BRAC NTC	**Well ID:** S.A. 40		**Boring No.:** OLD-40-01
Client: SOUTHDIVNAVFACENGCOM			**Job No.:** 8519.10
Contractor: GPI		**Date started:** 03/19/96	**Complted:** 03/19/96
Method: HSA	**Casing Size:** 6-1/4" ID/10" OD	**Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** Porta FID II	**Total depth:** 18Ft.	**Dpth to ▽** 12 Ft.
Logged by: WDO	**Well Development Date:** PVC		**Site:**

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
	40B00101 0-1' CLP		0	SAND, off-white, mottled with brown silt, subrounded, loose, dry. Rusty mottling at 8 feet, moist at 11 feet, wet at 12 feet.		SP	Posthole
5		80%	0				2,3,5,8
		80%	0				6,7,7,11
		90%	0				8,9,9,11
10	40B00102 10-12' CLP	75%	0				10,8,8,8
		90%	0				5,6,10,8
		90%	0	Fine SAND, dark gray, trace silt, subrounded sand, saturated.			7,8,10,11
15		90%	0				10,15,16,14
		90%		Boring terminated at 18 feet bgs			
20							

HARDING LAWSON ASSOCIATES

SOIL BORING LOG

Client: SOUTH DIV	Project No.: 08519.10	Point of Interest: SA 40	
Contractor: GPI	Date Started: 3-19/96	Boring No.: BLD-40-01	
Method: HSA	Casing Size: 6 1/4 ID 10" OD	Protection: D	
Ground Elev.:	Soil Drilled: 18'	Completed: 3-19/96	
Logged by: WDO	Checked by:	PI Meter:	
Screen: 10 (ft.)	Riser: 8 (ft.)	Diam: 2 (ID)	Material: PVC
		Total Depth: 18'	
		▽ Below Ground: 12'	
		Page 1 of: 1	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
1	40800101	0-1	CLP		0	fine SAND, off white, mottled with brown silt, sand subrounded, loose, dry. Rusty mottling at 8 ft moist at 11 ft wet at 12 ft	SP	POST HOLE	GRAT		
2					0						
3											
4											
5				80	0				SEAL		
6											
7				80	0						
8											
9				90	0						
10											
11	40800102	10-12	CLP	75	0					▽	
12											
13				90	0						
14											
15				90	0	fine SAND, dark gray, trace silt, subrounded sand, saturated.	SP		FILTER PACK		
16											
17				90	0						
18						BT @ 18'					

PROPORTIONS	(-) AMOUNT (-)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (lt)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

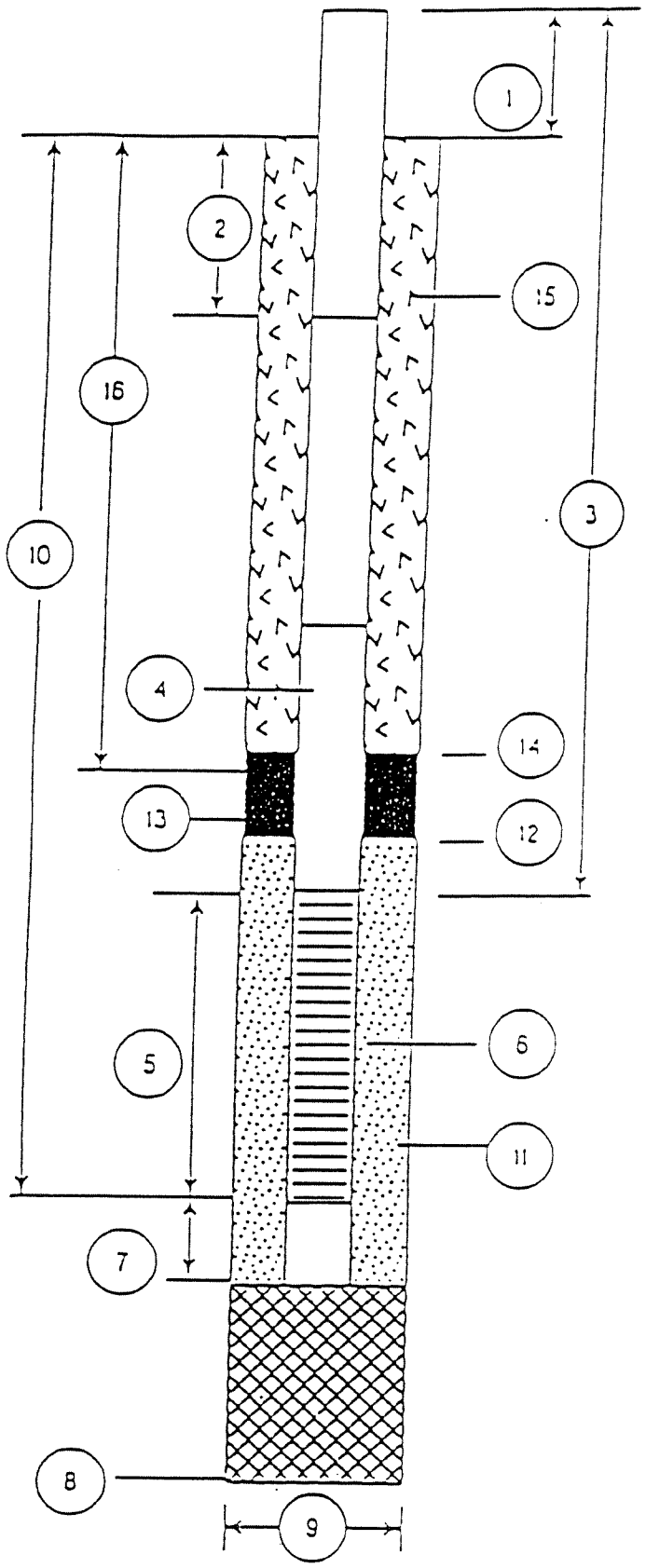
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-40-QL

DATE OF INSTALLATION: 3-19/96



1. Height of Casing above ground: FM
2. Depth to first Coupling: 8'
   Coupling Interval Depths: ~~10'~~ NA
3. Total Length of Riser Pipe: 8'
4. Type of Riser Pipe: 2" sched. 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" Sched 40 PVC 0.010 slo
7. Length of Sump: 6"
8. Total Depth of Boring: 18'
9. Diameter of Boring: 10"
10. Depth to Bottom of Screen: 18'
11. Type of Screen Filter: Silica Sand
    Quantity Used: 45016 Size: 20/30
12. Depth to Top of Filter: 6'
13. Type of Seal: fine Sand / Bentonite
    Quantity Used: 10016 / 5016
14. Depth to Top of Seal: 2'
15. Type of Grout: ~~Bentonite~~ (Portland) cement
    Grout Mixture: 100lb Portland / ~~5 lb bentonite~~ 8 gal water
    Method of Placement: POUR
16. Tot. Depth of 6 in. Steel Casing: NA

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 0920 3-19/96		Project No. 08519.10
Client: SOUTH DIV	Well Development Date and Time: 3-25/96 1148	Logged by: WDO	Checked by:
Well/Site I.D.: OLD-40-01	Weather:	Start Date: 3-25/96	Finish Date: 3-25/96
Volume of Drilling Fluid Lost (gal.) NA	Volume of Water in Well and Filter Pack (gal.)	Start Time: 1148	Finish Time: 1235

Installed Depth From Top of Well Casing to Bottom of Well: 18.4

Initial Depth to Water (ft): 9.85	Initial Depth to Well Bottom: 18.09
Water Level during Initial Pumping/Purging (ft):	
Depth to Water at Termination of Pumping/Purging (ft): 10.10	Depth to Well Bottom at Termination of Pumping/Purging (ft): 18.08

BEGINNING OF WELL DEVELOPMENT

Time	Temperature	pH	Conductivity	Turbidity	Other gal rem.	Approximate Pumping Rate (gal/min.)
1214	24.0	5.85	312	197.2	110	4
1219	26.0	6.02	350	155.8	125	4
1222	24.0	6.05	320	7200	135	4
1225	23.5	6.08	318	7200	145	4
1228	23.5	6.08	320	7200	155	4
1231	24.0	6.09	318	7200	165	4

END OF WELL DEVELOPMENT

Notes: (Include Physical character of removed water, type and size of pump, volume of water removed.)

Turbid water

Honda Pump w/Poly tubing

165 gal rem.

Well Developer's Signature: Wilbur D. Olson

FIGURE 4-3

EXAMPLE WELL DEVELOPMENT RECORD

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

8519-03 940321WEM

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 08519.10
Sample Location ID: OLD-40-01
Time: Start: 1224 End: 1355
Point of Interest: SA 40
Date: 4-11-96
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 18.22 Ft. — X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing
Well Riser Stick-up (from ground) FM Ft.
Protective Casing/Well Difference NA Ft.
Protective Casing NA Ft.

Depth to Water 9.83 Ft.
Well Material: X PVC / ___ SS / ___
Well Locked?: X Yes / ___ No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch / ___
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer / ___

Height of Water Column 8.39 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ ___ Gal/Ft. (___ in.)
= [1.3 Gal/Vol] [4.5 Total Gal Purged]

Well Integrity:

	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other ___		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
—	—	Submersible Pump	
—	—	Bailer	
—	—	PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	—	In-line Filter	
—	—	Press/Vac Filter	
—	—		

Decontamination Fluids Used: (✓ All That Apply at Location)

___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None
___ ___
___ ___

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected ___ In-line / X In Container
Sample Observations: X Turbid / ___ Colored / ___ Clear / ___ Odor / ___ Cloudy

Purge Data	@ 2.5 Gal.	@ 3.0 Gal.	@ 3.5 Gal.	@ 4.0 Gal.	@ 4.5 Gal.
Temperature, Deg. C	23.0	22.5	23.0	23.0	23.0
pH, units	6.16	6.16	6.20	6.17	6.17
Specific Conductivity	150	155	152	158	160
~~(umhos/cm @ 25 Deg. C)~~ TURB	114.6	109.1	101.3	100.7	96.4
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA	___	HCl	___	X	___/___/___/___
SVOA	___	4°C	___	X	___/___/___/___
Pest/PCB	___	4°C	___	X	___/___/___/___
Inorganics	___	HNO_3	___	X	___/___/___/___
Explosives	___	4°C	___	X	___/___/___/___
TPH	___	H_2SO_4	___	—	___/___/___/___
TOC	___	H_2SO_4	___	—	___/___/___/___
Nitrate	___	H_2SO_4	___	—	___/___/___/___

Notes: ___

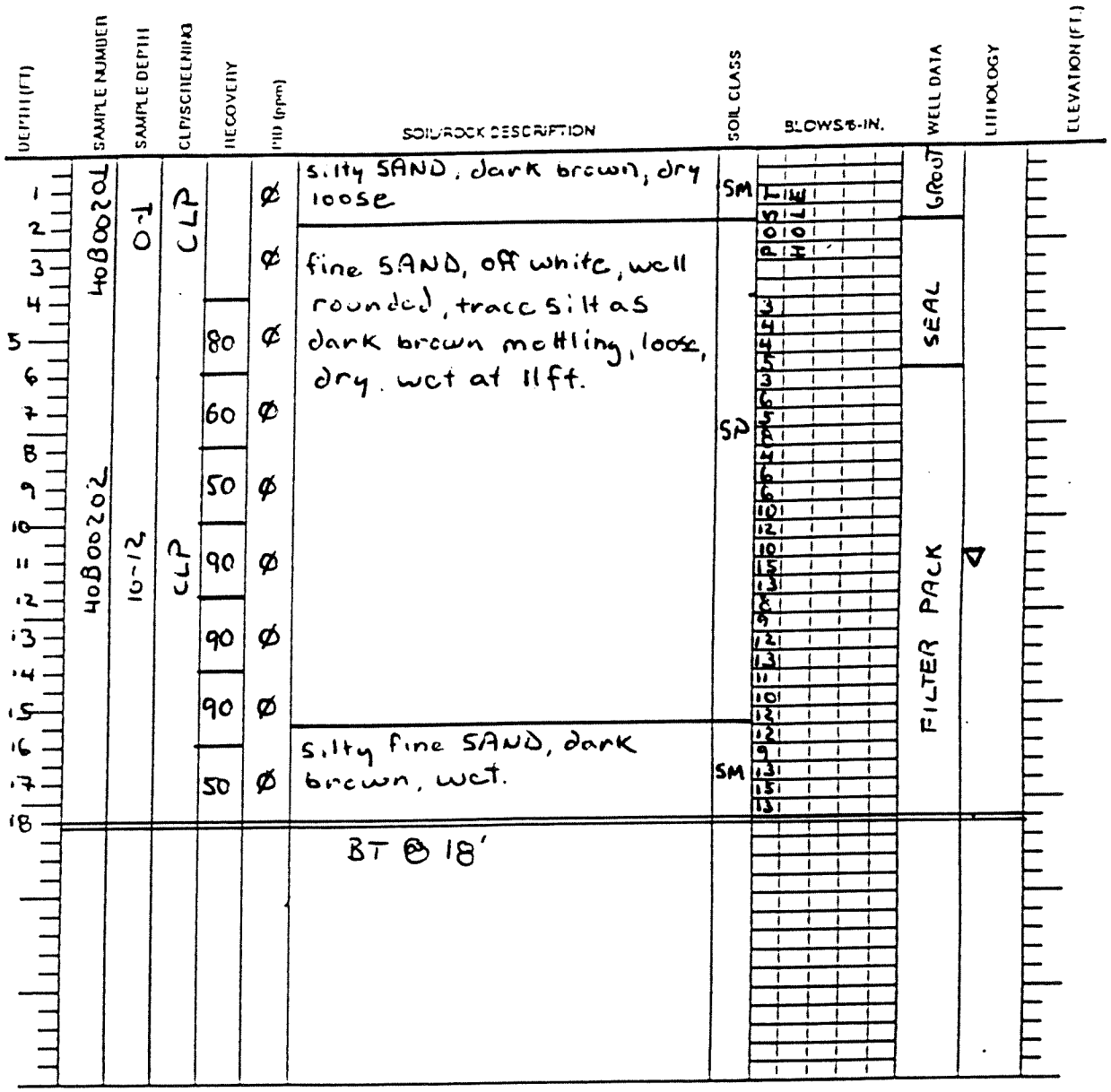
Project: BRAC NTC	**Well ID:** S.A. 40	**Boring No.:** OLD-40-02
Client: SOUTHDIVNAVFACENGCOM		**Job No.:** 8519.10
Contractor: GPI	**Date started:** 03/19/96	**Complted:** 03/19/96
Method: HSA	**Casing Size:** 6-1/4" ID/10" OD; **Screen Int.:** 10 ft.	**Protection level:** D
Ground Elev.:	**Type of OVM.:** Porta FID II; **Total depth:** 18Ft.	**Dpth to ▽** 11 Ft.
Logged by: WDO	**Well Development Date:** PVC	**Site:**

Depth Ft.	Sample ID (Depth) (Type)	Split Spoon	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.
	40B00201 0-1' CLP			0	Silty SAND, dark brown, dry, loose		SM	
				0	Fine SAND, off-white, well-rounded, trace silt as dark brown mottling, loose, dry, wet at 11 feet		SP	Posthole
5			80%	0				3,4,4,5
			60%	0				3,6,5,8
			50%	0				4,6,6,10
10	40B00102 10-12' CLP		90%	0				12,10,15,13
			90%	0				8,9,12,13
			90%	0				11,10,12,12
15			90%	0	Silty fine SAND, dark brown, wet		SM	9,13,15,13
			50%		Boring terminated at 18 feet bgs			
20								

HARDING LAWSON ASSOCIATES

SOIL BORING LOG

Client: SOUTH DIV	Project No. 08519.10	Point of Interest: SA 40	
Contractor: GPI	Date Started: 3-19/96	Boring No.: OLD-40-02	
Method: HSA	Casing Size: 6¼" ID 10" OD	Protection: D	
Ground Elev.:	Soil Drilled: 18'	Completed: 3-19/96	
Logged by: WDO	Checked by:	PI Meter:	
Screen: 10 (ft.)	Riser: 8 (ft.)	Diam: 2 (ID)	Material: PVC
		Total Depth: 18'	
		▽ Below Ground: 11 ft	
		Page 1 of: 1	



PROPORTIONS	(-) AMOUNT (-)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

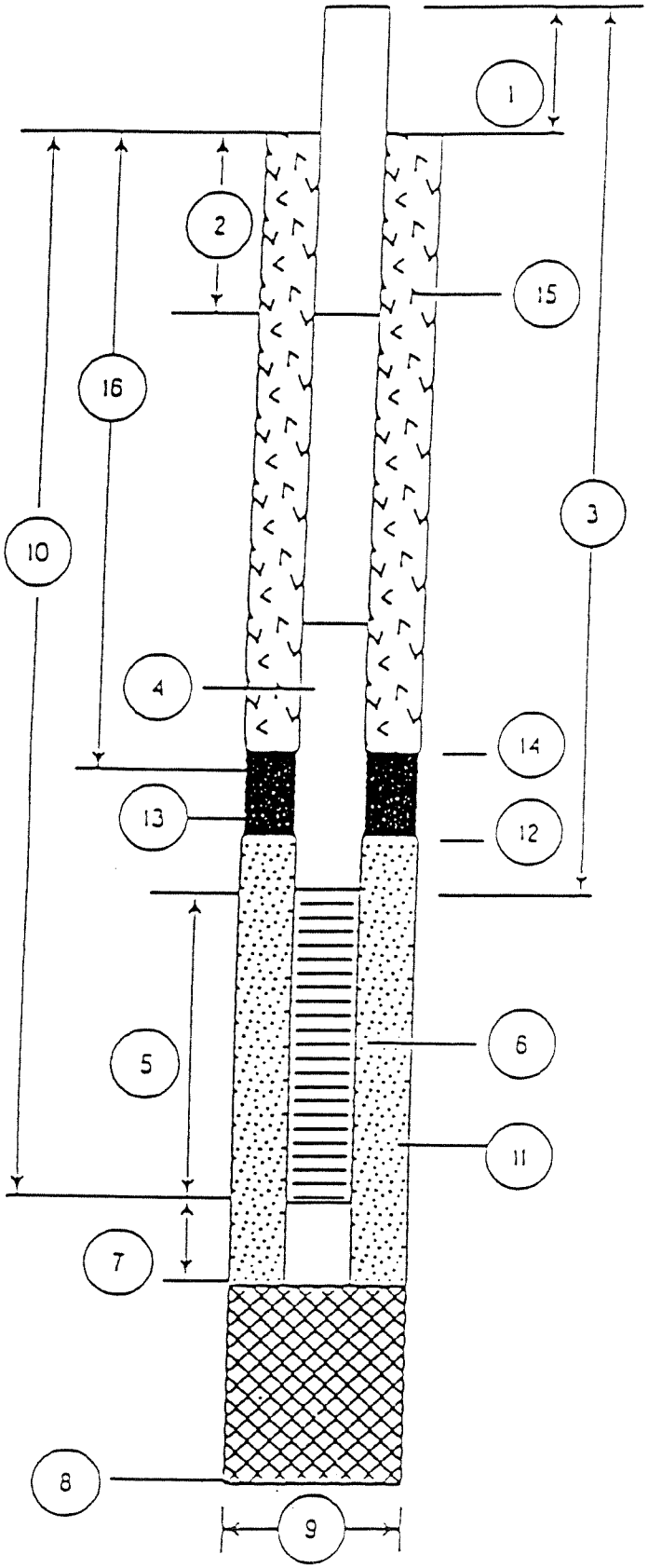
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-40-02

DATE OF INSTALLATION: 3-19, 16



1. Height of Casing above ground: FM
2. Depth to first Coupling: 8'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 8'
4. Type of Riser Pipe: 2" Sched. 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" Sched 40 PVC 0.010 Slot
7. Length of Sump: 6"
8. Total Depth of Boring: 18'
9. Diameter of Boring: 10'
10. Depth to Bottom of Screen: 18'
11. Type of Screen Filter: Silica Sand
    Quantity Used: 500 lb Size: 20/30
12. Depth to Top of Filter: 6'
13. Type of Seal: fine Sand / bentonite
    Quantity Used: 100 lb / 50 lb
14. Depth to Top of Seal: 2'
15. Type of Grout: Portland cement
    Grout Mixture:
    Method of Placement: POUR
16. Tot. Depth of 6 in. Steel Casing: NA

WELL DEVELOPMENT RECORD

Project: NTC ORLANDO	Well Installation Date and Time: 3-19/96		Project No. 08519.10
Client: SOUTH DIV	Well Development Date and Time: 3-25/96	Logged by: WDO	Checked by:
Well/Site I.D.: OLD-40-02	Weather:	Start Date: 3-25/96	Finish Date: 3-25/96
Volume of Drilling Fluid Lost (gal.) NA	Volume of Water in Well and Filter Pack (gal.) 8.33	Start Time: 1252	Finish Time: 1350

Installed Depth From Top of Well Casing to Bottom of Well: 18.4

Initial Depth to Water (ft): 11.83	Initial Depth to Well Bottom: 18.12
Water Level during Initial Pumping/Purging (ft):	
Depth to Water at Termination of Pumping/Purging (ft): 12.20	Depth to Well Bottom at Termination of Pumping/Purging (ft): 18.25

BEGINNING OF WELL DEVELOPMENT

Time	Temperature	pH	Conductivity	Turbidity	Other gal rem	Approximate Pumping Rate (gal/min.)
1330	25.0	6.34	290	164.8	80	2.5
1334	25.0	6.27	285	133.3	90	2.5
1338	25.0	6.12	285	102.2	100	2.5
1342	25.0	6.29	288	94.2	110	2.5
1346	25.0	6.32	282	114.3	120	2.5
1350	25.0	6.31	284	114.7	130	2.5

END OF WELL DEVELOPMENT

Notes: (Include Physical character of removed water, type and size of pump, volume of water removed.)

WATER clearing w/brown tint

Honda Pump w/Poly tubing

110 gal rem.

Well Developer's Signature Willie D. Olson

FIGURE 4-3

EXAMPLE WELL DEVELOPMENT RECORD

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

8519-03 940321WEM

NTC_Orl.POP
MVL.07.94

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 085191.10
Sample Location ID: OLD-40-02
Time: Start: 0904 End: 1205

Point of Interest: SA 40
Date: 4-11-96
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 18.11 Ft. — [X] Measured [ ] Historical
[X] Top of Well [ ] Top of Protective Casing
Well Riser Stick-up (from ground) FM Ft.
Protective Casing/Well Difference NA Ft.
Protective Casing NA Ft.

Depth to Water 1.75 Ft.
Well Material: [X] PVC [ ] SS
Well Locked?: [X] Yes [ ] No
Well Dia. [X] 2 inch [ ] 4 inch [ ] 6 inch
Water Level Equip. Used: [X] Elect. Cond. Probe [ ] Float Activated [ ] Press. Transducer

Height of Water Column 6.36 Ft. X
[X] .16 Gal/Ft. (2 in.) [ ] .65 Gal/Ft. (4 in.) [ ] 1.5 Gal/Ft. (6 in.) [ ] Gal/Ft. (in.) =
1.01 Gal/Vol
7 Total Gal Purged

Well Integrity:

	Yes	No
Prot. Casing Secure	✓	
Concrete Collar Intact	✓	
Other		

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
		Airlift	
		Hand Pump	
		In-line Filter	
		Press/Vac Filter	

Decontamination Fluids Used:

(✓ All That Apply at Location)
- [ ] Methanol (100%)
- [X] 25% Methanol/75% ASTM Type II water
- [X] Deionized Water
- [ ] Liquinox Solution
- [ ] Hexane
- [ ] HNO_3/D.I. Water Solution
- [ ] Potable Water
- [ ] None

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected [ ] In-line [X] In Container

Sample Observations: [ ] Turbid [ ] Clear [X] Cloudy [ ] Colored [ ] Odor

Purge Data	@ 5.0 Gal.	@ 5.5 Gal.	@ 6.0 Gal.	@ 6.5 Gal.	@ 7 Gal.
Temperature, Deg. C	22.5	23.0	23.0	23.0	23.0
pH, units	6.58	6.49	6.51	6.51	6.57
Specific Conductivity	3000	305	308	305	308
~~(umhos/cm @ 25 Deg. C)~~ TURB	50.3	52.3	43.4	41.7	40.2
Oxidation - Reduction, +/- mv					
Dissolved Oxygen, ppm					

Sample Collection Requirements (✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL		✓	/ / /
SVOA		4°C		✓	/ / /
Pest/PCB		4°C		✓	/ / /
Inorganics		HNO_3		✓	/ / /
Explosives		4°C		✓	/ / /
TPH		H_2SO_4			/ / /
TOC		H_2SO_4			/ / /
Nitrate		H_2SO_4			/ / /

Notes:

APPENDIX C

TECHNICAL MEMORANDUM GEOPHYSICAL SURVEY RESULTS STUDY AREAS 39 AND 40

TECHNICAL MEMORANDUM

PROJECT: Study Areas 39 and 40
Naval Training Center, Orlando

SUBJECT: Geophysical Surveys

PREPARED BY: Richard Allen, Principal Scientist

DATE: May 10, 1996

1.0 INTRODUCTION

A geophysical survey was conducted at Study Areas (SAs) 39 and 40 in the southwest portions of the Main Base of the Naval Training Center, Orlando. The objective for the survey was to evaluate the nature and extent of potential landfilling activities that may have taken place in these areas. Also of concern are allegations of ordnance disposal in landfilled areas, prompting arrangements for an unexploded ordnance (UXO) survey prior to any intrusive activities.

Geophysical techniques employed during these surveys included magnetometry (MAG), time domain metal detector (TDMD), and ground penetrating radar (GPR). Figure 1 shows the area of the investigation and outlines the approximate boundaries of each of the geophysical techniques used in the survey.

The field program was conducted between January 15 and January 26, 1996.

1.1 PERSONNEL. ABB Environmental Services, Inc. (ABB-ES) personnel involved in the field program include William Olson, Geologist; Marc Hawes, Associate Geologist; Robert Burns, Associate Engineer; and John Nash, Geologist. Greg Mudd was the Field Operations Lead during the investigation. Overall direction for the field program was provided by Richard Allen, Principal Scientist and Project Technical Lead.

1.2 FIELD PROGRAM

1.2.1 Survey Grid Prior to the start of the field program, ABB-ES established an arbitrary grid coordinate system in SAs 39 and 40. The grid coordinate system was oriented along magnetic north and consisted of a 100- by 100-foot grid established over the two adjoining survey areas with a cloth measuring tape and transit.

1.2.2 Magnetometer Survey The instrumentation consisted of an EDA OmniPlus proton precession magnetometer with vertical gradient capability. The survey was conducted on a 20- by 20-foot measurement grid.

The magnetic method is a versatile geophysical technique used for evaluating shallow geologic structures and for locating buried manmade objects and buried debris by mapping local distortions in the earth's magnetic field produced by buried magnetic objects (steel and other magnetic materials). Vertical gradient measurements of the earth's magnetic field are often taken during environmental magnetic surveys, as they are more sensitive to the presence of near-surface metal objects than total field values alone.

A total of 2,508 magnetometer measurements were acquired during the investigation.

1.2.3 Time Domain Metal Detector Survey A TDMD survey was conducted over SAs 39 and 40 between January 20 and January 26, 1996. The survey consisted of a series of parallel north-south traverses separated by 10 feet. Data were acquired along each traverse at the rate of 1.60 readings per foot (1 reading every 19 centimeters). Approximately 90,000 lineal feet of coverage and more than 140,000 readings were acquired during the investigation. The instrumentation consisted of a Geonics EM-61 TDMD with Polycorder high-capacity data logger.

The EM-61 TDMD was designed to map buried conductive objects, such as metal tanks, drums, and utilities. The instrument incorporates an antenna system consisting of a transmitter and receiver. The transmitter produces a series of electromagnetic (EM) wavelets that pulse into the earth 75 times per second. After each pulse, a secondary EM field is produced briefly from moderately conductive shallow soils and for a longer period of time from buried metallic objects. Between primary EM pulses, a time delay is imposed upon the data logger to permit the secondary response from the soils to dissipate prior to the somewhat later and longer response from any buried metal that is present. The receiver senses the secondary responses from metallic objects, and they are recorded by the data logger.

1.2.4 Ground Penetrating Radar Survey A GPR survey was conducted at SAs 39 and 40 between February 2 and February 9, 1996. The purpose for this work was to evaluate MAG/TDMD anomalies that were mapped during those investigations. The instrumentation consisted of a GSSI SIR 3 radar system equipped with a 500 MHz antenna.

The GPR technique uses high frequency radio waves to determine the presence of subsurface objects and structures. The radio wave energy is reflected from surfaces where there is a contrast in the electrical properties of subsurface materials, such as naturally occurring geologic horizons or manmade objects (e.g., buried utilities, tanks, and drums). Typical applications for GPR include mapping buried utilities and delineating the boundaries of buried hazardous waste materials and abandoned landfills.

1.3 RESULTS.

1.3.1 Survey Grid The arbitrary survey grid for SAs 39 and 40 established by ABB-ES with a cloth tape and level is shown on Figure 1. The origin of the survey grid was located in the southwestern corner of SA 39 at a point designated as (X=1000 feet east, Y=1000 feet north).

1.3.2 Magnetometer Survey Figure 2 presents the locations for all MAG measurements taken in SAs 39 and 40. They were taken in the two study areas

every 20 feet (20- by 20-foot measurement grid). The results of the magnetometer survey are presented as vertical gradient contours on Figure 3. The contour interval for Figure 3 is 10 gammas per meter.

Vertical gradient measurements are very useful in mapping the lateral extent of landfilled materials, since nearly all landfills contain sufficient ferrous materials to be mapped with this technique. As anticipated during the site walkover prior to the start of the geophysical survey, the survey area contains some cultural features that have produced significant distortion in the magnetic data. Such features include buried utilities, light poles, vehicles, fencing, buildings, and overhead power lines. Accordingly, only those portions of the study area sufficiently far removed from these surface and buried sources of magnetic interference can be used to assess the presence or absence of landfilled materials and potential contaminant sources. Magnetic disturbances from cultural features rendered some of the data collected during this investigation unusable for evaluation.

Figure 3 indicates that there are many areas with anomalous magnetic disturbances, but some of these areas can be explained by cultural features observed at the surface (Figure 4). There were 17 magnetic disturbances that could not be explained by correlation with surface features. These disturbances were chosen for further investigation with GPR, below.

1.3.3 **Time Domain Metal Detector Survey** The individual traverse locations for the TDMD survey for SAs 39 and 40 are presented on Figure 5. The TDMD vertical gradient contours are presented on Figure 6.

There is an upper and a lower coil (Channel [1] and Channel [2], respectively, on the data output) on the EM-61 TDMD. The lower coil is more sensitive to shallow buried objects. The vertical gradient contours presented on Figure 6 represent difference in the response between the upper and lower coils and is a dimensionless parameter. The gradient values minimize the effects of near surface metallic materials. Thus, theoretically, a contour map of the lower coil (Channel [2]) would map shallow metallic objects, whereas the vertical gradient contours would tend to emphasize the presence of relatively deeper metallic objects.

The most prominent feature on the vertical gradient contours is a southwest to northeast lineament starting at the southwest corner of SA 39. The feature is coincident with an 8-inch cast iron water main.

The "bottle landfill" (UNF-6) is also an area of anomalous TDMD contours, although the boundary of the disturbed area appears to extend approximately 75 feet north of the boundary that is shown. The southeast portion of SA 39 is quite disturbed, due to numerous cultural features in the area (Figure 4).

1.3.4 **Ground Penetrating Radar Survey** Figure 7 shows the locations of the GPR traverses that were completed in SAs 39 and 40. All GPR traverse locations were selected based on the results of the magnetometer survey. As previously discussed, there were approximately 17 magnetic anomalies that could not be explained by correlation with surface features. These disturbances were chosen for further investigation with GPR. Table 1 presents an annotated interpretation of the GPR anomalies used as the basis for an explosive ordnance disposal

(EOD) survey conducted by the U.S. Navy's EOD, Mobile Unit Six, Detachment Mayport, Mayport, Florida.

1.4 CONCLUSIONS. As anticipated, interference from cultural objects limited the effectiveness of the MAG and TDMD data in assessing subsurface conditions in some portions of SAs 39 and 40.

The geophysical data were useful in confirming the approximate outline of UNF-6 (the "bottle" landfill) and were essential in providing direction for the Navy's Mayport EOD team in their UXO investigation.

Appendix C

Table 1. Magnetic Anomalies, Study Areas 39 and 40

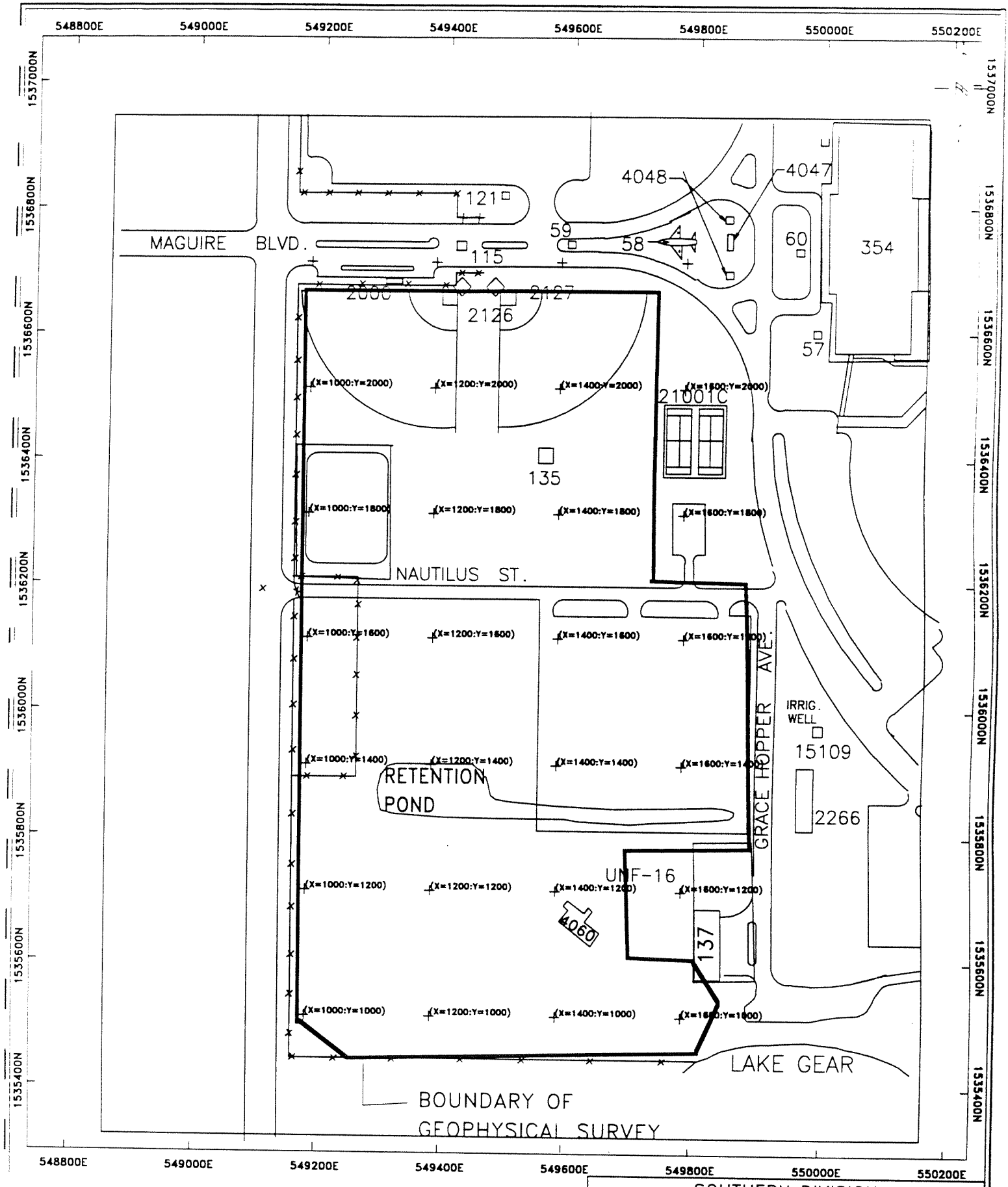
Naval Training Center
Orlando, Florida

	East	North	Comments (Based on GPR Survey)
1	1180	1100	Water main or other major utility oriented SW/NE through middle of grid, 3.5 feet bls. Do not recommend dig.
2	1520	1280	At least 10 anomalies from less than 1 foot bls to nearly 3 feet bls. Anomaly locations: (1510E, 1270N, 2.5 feet bls), (1510E, 1280N, <1 foot bls), (1510E, 1300N and 1305N, 1 foot and 1.7 feet bls), (1520E, 1263N, 1.5 feet bls), (1520E, 1275N, 2.7 feet bls), (1520E, 1290N, 1.5 feet bls), (1530E, 1280N, 1 foot bls), (1535E and 1540E, 1270N, 1.5 feet and 1 foot bls).
3	1400	1360	No mappable GPR anomaly, data P-F.
4	1580	1360	GPR anomaly 1 foot bls, several feet across, does not look like metallic target, more geologic in nature.
5	1660	1440	Two small anomalies 1 foot bls at (1650E, 1450N) and (1660E, 1430N); series of 3 apparent utilities 3 feet to 5 feet bls at (1670E, 1430N to 1440N). Recommend dig two small anomalies.
6	1500	1480	One double anomaly at (1510E, 1475N to 1482N, 1.5 feet bls); another anomaly at (1490 to 1500E, 1465N), probably buried utility at 2.7 feet bls. Recommend dig first double anomaly.
7	1520	1520	Anomalies at (1515E and 1520E and 1530E, 1520N, 1.5 to 2.5 feet bls), and (1520E, 1530N, 2 feet bls). Recommend dig all.
8	1600	1520	Anomalies at (1590E, 1530N and 1537N, 4 feet and 2.2 feet bls), (1600E, 1530N, 4 feet bls), (1610E, 1514N, 4 feet bls), and (1610E, 1527 and 1530 and 1542N, 4 feet bls). Probable utilities. Do not recommend dig.
9	1180	1680	No GPR targets due to asphalt.
10	1440	1680*	
11	1540	1720	Many anomalies here. Probable utilities for some of the deeper ones (>2.0 feet bls). Anomaly locations: (1530E, 1710N, 1 foot bls), (1530E, 1715N, 1 foot bls), (1530E, 1726N, 2 feet bls), (1540E, 1714N, 1.6 feet bls), (1540E, 1717N, 1 foot bls), (1550E, 1718N, 1.7 feet bls), (1550E, 1728N, 1.6 feet bls), (1550E, 1732N, 1 foot bls), (1524E, 1710N, 1 foot bls), (1532E, 1710N, 1 foot bls), (1540E, 1710N, 2 feet bls), (1556E, 1710N, 2 feet bls), (1536E, 1720N, 1 foot bls), (1538E, 1720N, 1 foot bls), (1545E, 1720N, 1.6 feet bls), (1543E, 1720N, 1.5 feet bls), (1530E, 1730N, 2 feet bls), (1534E, 1730N, 1 foot bls), (1537E, 1730N, 1 foot bls), (1543E, 1730N, 2.7 feet bls), (1552E, 1730N, 2.7 feet bls). Recommend confirm.
12	1180	1780	No GPR targets.
13	1340	1800	Anomalies at (1330E, 1784N, 1 foot bls), (1330E, 1802N, 1.2 feet bls), (1342E, 1810N, 1 foot bls). Recommend confirm.
14	1180	1820	Two minor anomalies at (1170E, 1810N and 1834N, less than 1 foot bls). Possible buried cable? Recommend confirm.
15	1060	1840	Anomalies at (1048E, 1830N, 1 foot bls), (1058E, 1830N, 2 feet bls), (1050E, 1823N, 1 foot bls), (1060E, 1837N, 1.5 feet bls). Recommend confirm.
16	1180	1870	Minor anomaly at (1165E, 1860N, less than 1 foot bls). Possible buried cable? Recommend confirm.
17	1040	1950	One anomaly at (1034E, 1940N, 1 foot bls). Recommend confirm.

Notes: bls = below land surface.
GPR = ground-penetrating radar.
* probable car?

FIGURES FOR GEOPHYSICAL TECH MEMO

1 Site Location Plan and Survey Grid
2 Magnetometer Survey
3 Vertical Gradient Contours (Magnetometer)
4 Annotated Map of Magnetometer Anomalies
5 Time Domain Metal Detector Survey
6 Vertical Gradient Contours (TDMD)
7 Ground Penetrating Radar Traverse Locations



Scale 1:2400

100 0 100 200

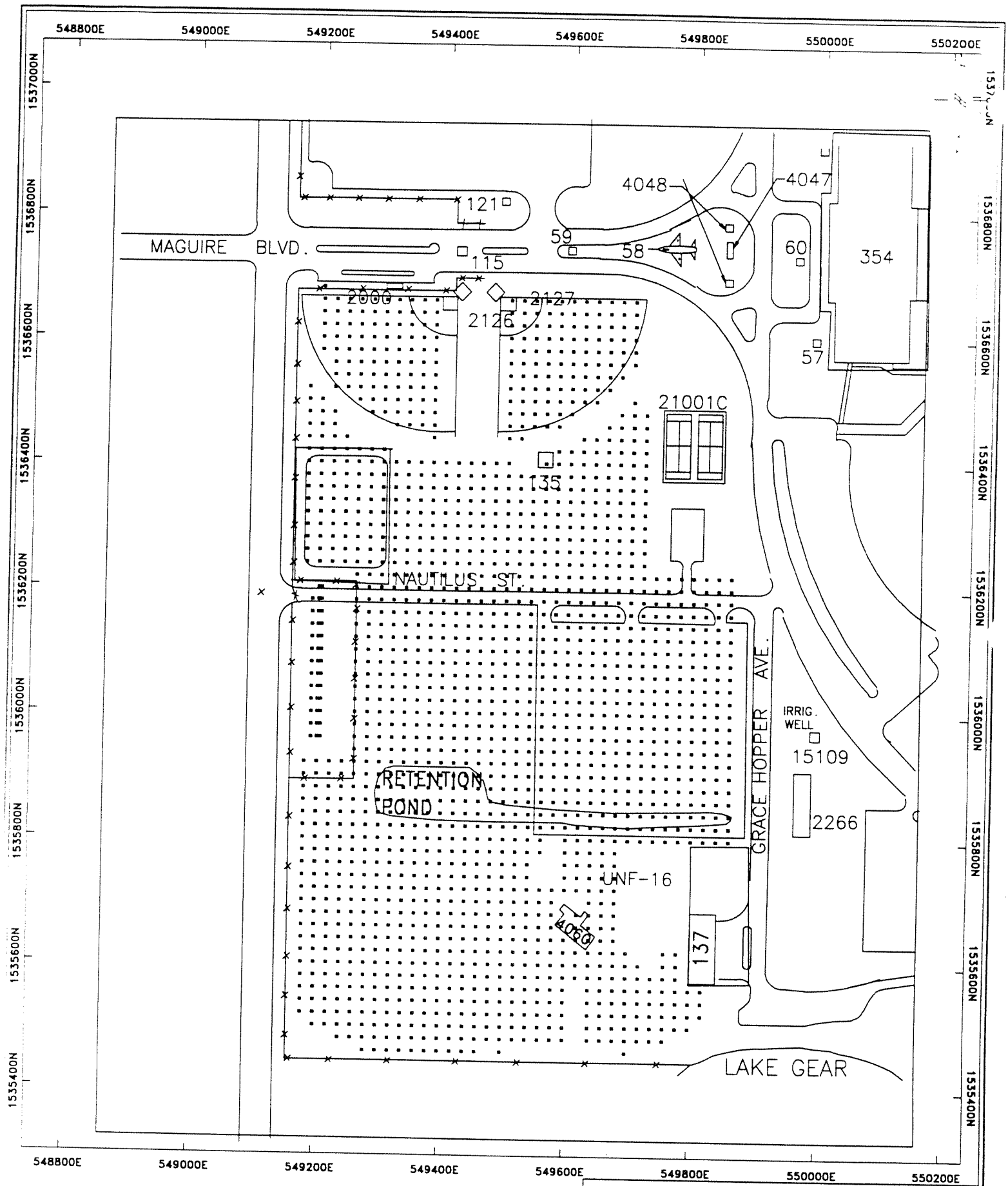
(feet)

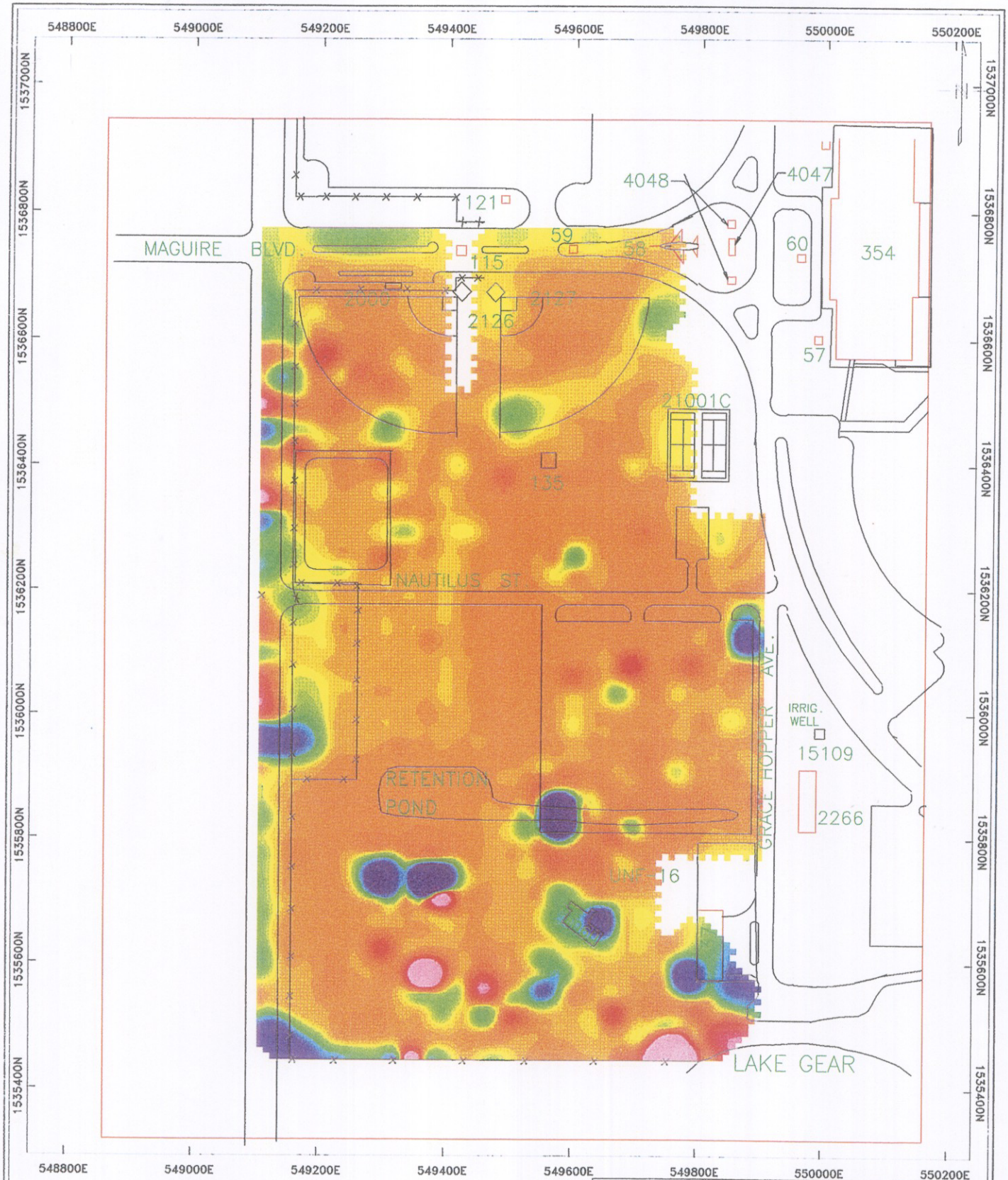
SOUTHERN DIVISION

SITE LOCATION PLAN AND SURVEY GRID
STUDY AREAS 39 AND 40

ABB ENVIRONMENTAL SERVICES, INC.

FIGURE 1


548800E
549000E
549200E
549400E
549600E
549800E
550000E
550200E
1537000N
1536800N
1536600N
1536400N
1536200N
1536000N
1535800N
1535600N
1535400N
MAGUIRE BLVD.
121
115
4048
4047
59
58
60
354
57
2000
2127
2126
21001C
135
NAUTILUS ST.
RETENTION POND
GRACE HOPPER AVE.
IRRIG. WELL
15109
2266
UNF-16
4060
137
LAKE GEAR
Scale 1:2400
100 0 100 200
(feet)
SOUTHERN DIVISION
MAGNETOMETER SURVEY
STUDY AREAS 39 AND 40
ABB ENVIRONMENTAL SERVICES, INC.
FIGURE 2



Scale 1:2400

100 0 100 200

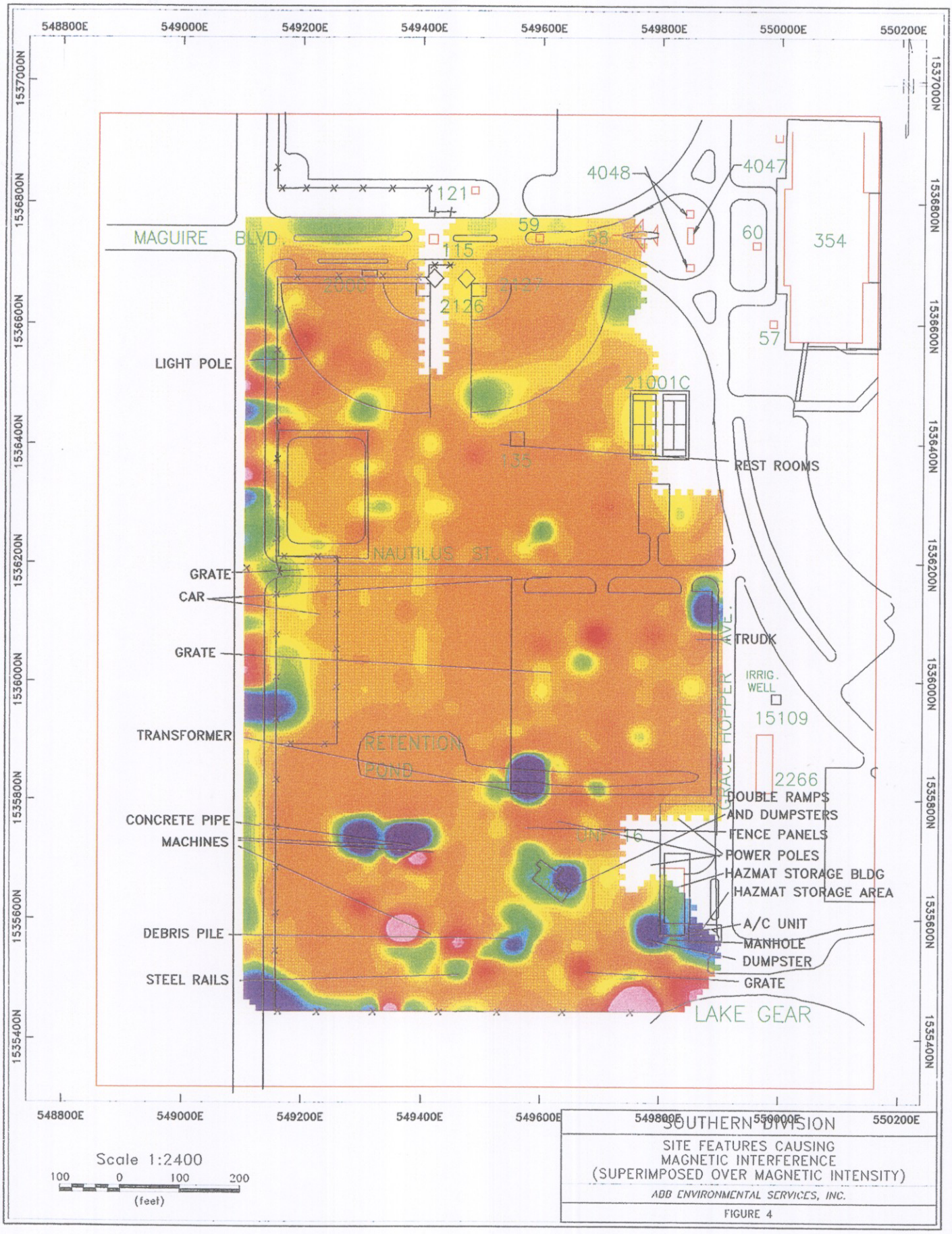
(feet)

SOUTHERN DIVISION

MAGNETIC VERTICAL GRADIENT INTENSITY
STUDY AREAS 39 AND 40

ABB ENVIRONMENTAL SERVICES, INC.

FIGURE 3

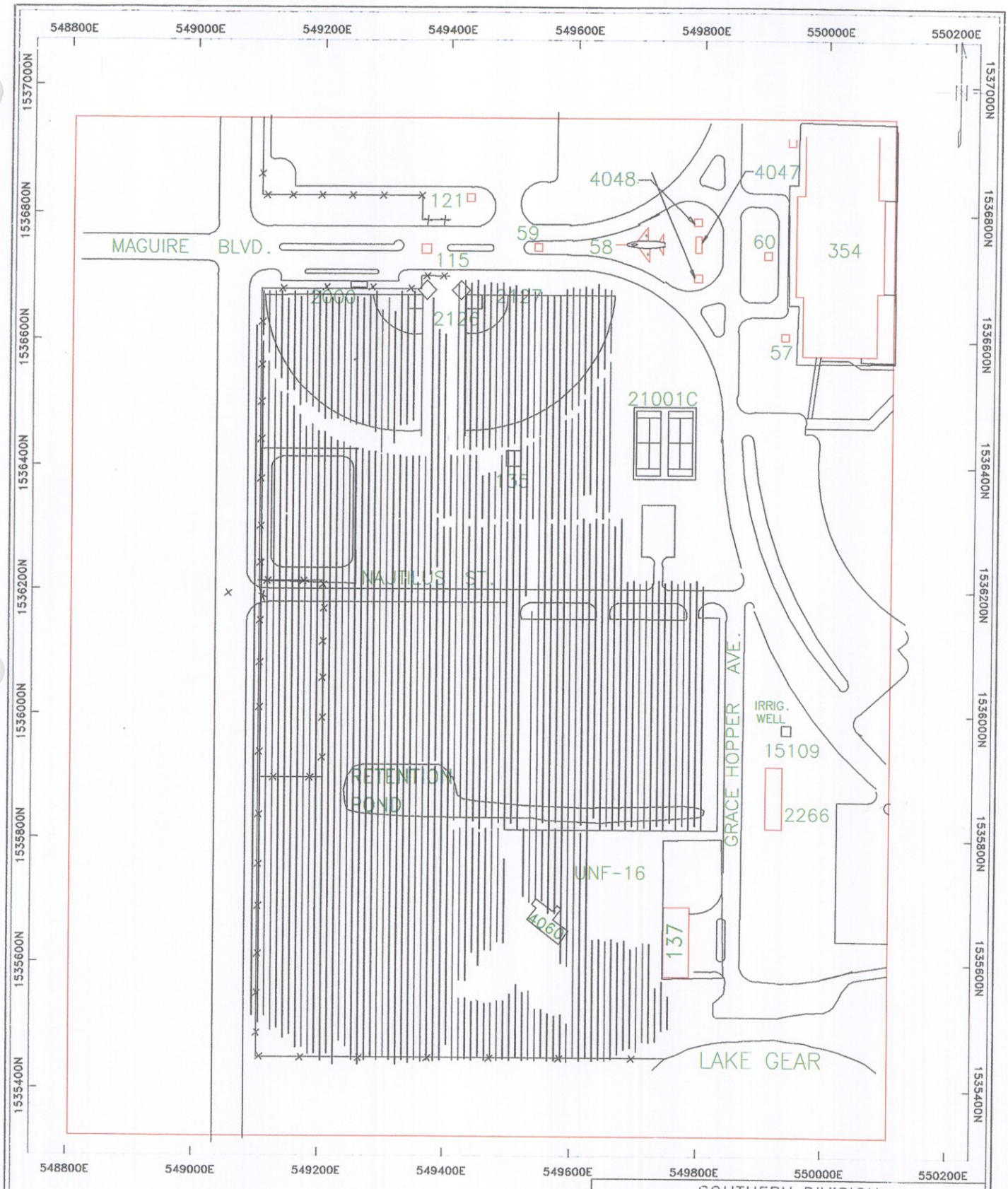


SOUTHERN DIVISION

SITE FEATURES CAUSING MAGNETIC INTERFERENCE (SUPERIMPOSED OVER MAGNETIC INTENSITY)

ADB ENVIRONMENTAL SERVICES, INC.

FIGURE 4

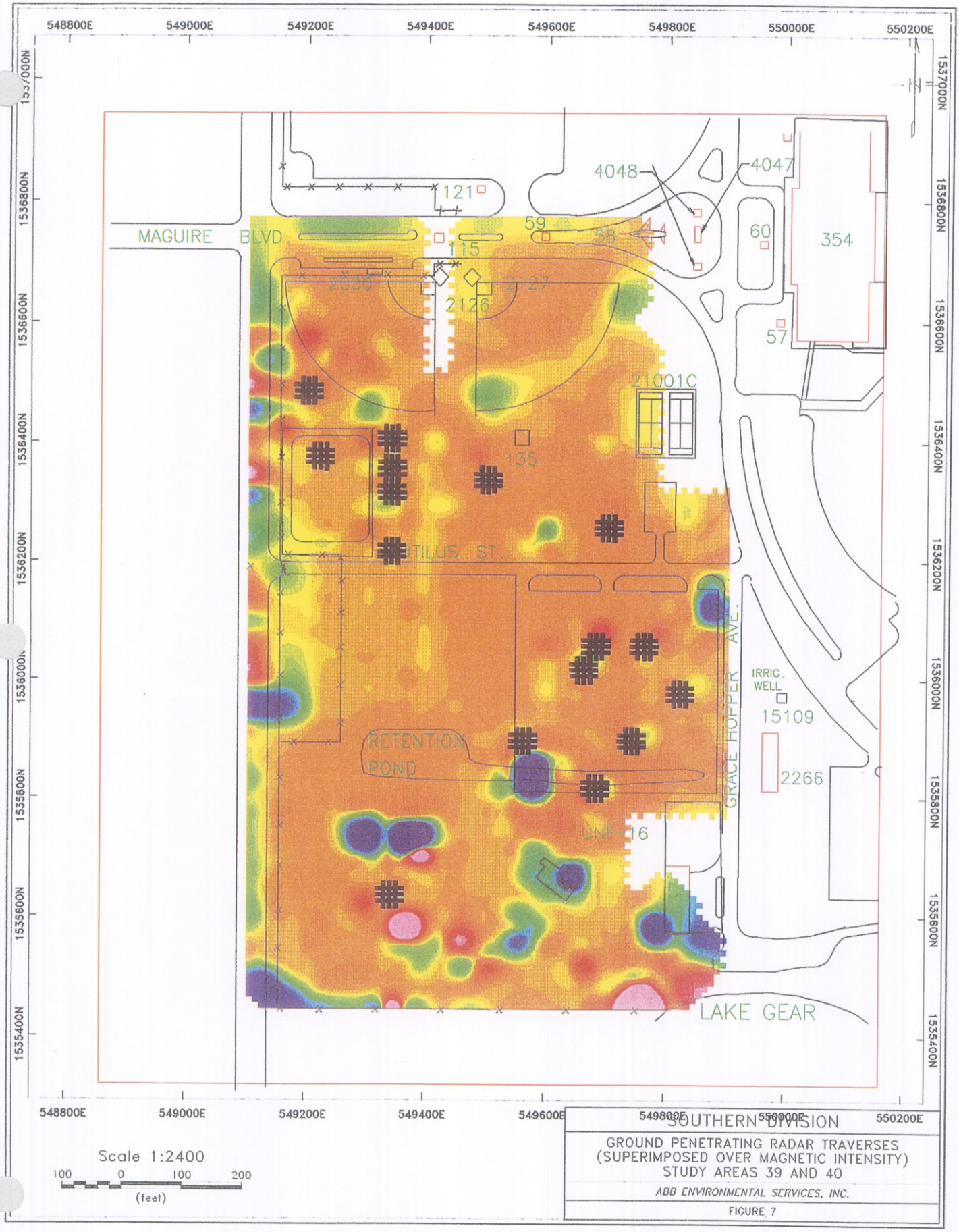

548800E
549000E
549200E
549400E
549600E
549800E
550000E
550200E
1537000N
1536800N
1536600N
1536400N
1536200N
1536000N
1535800N
1535600N
1535400N
MAGUIRE BLVD.
121
115
59
58
4048
4047
60
354
57
2000
2126
21001C
155
NAUTILUS ST.
GRACE HOPPER AVE.
IRRIG. WELL
15109
2266
RETENTION POND
UNF-16
4060
137
LAKE GEAR
Scale 1:2400
100 0 100 200
(feet)
SOUTHERN DIVISION
TIME DOMAIN METAL DETECTOR TRAVERSE LOCATIONS
STUDY AREAS 39 AND 40
ABB ENVIRONMENTAL SERVICES, INC.
FIGURE 5

SOUTHERN DIVISION

TIME DOMAIN METAL DETECTOR
VERTICAL GRADIENT INTENSITY

ABB ENVIRONMENTAL SERVICES, INC.

FIGURE 6


548800E
549000E
549200E
549400E
549600E
549800E
550000E
550200E
1537000N
1536800N
1536600N
1536400N
1536200N
1536000N
1535800N
1535600N
1535400N
MAGUIRE BLVD.
121
59
58
115
2127
2126
4048
4047
60
354
57
21001C
135
UTILUS ST.
GRACE HOPPER AVE.
IRRIG. WELL
15109
2266
RETENTION POND
UNF-16
LAKE GEAR
Scale 1:2400
100 0 100 200
(feet)
SOUTHERN DIVISION
GROUND PENETRATING RADAR TRAVERSES
(SUPERIMPOSED OVER MAGNETIC INTENSITY)
STUDY AREAS 39 AND 40
ABB ENVIRONMENTAL SERVICES, INC.
FIGURE 7

APPENDIX D

UXO SURVEY RESULTS

DEPARTMENT OF THE NAVY
EXPLOSIVE ORDNANCE DISPOSAL MOBILE UNIT SIX
DETACHMENT MAYPORT
MAYPORT, FLORIDA 32228-0023

8027
Ser 008
15 Feb 1996

From: Officer in Charge, Explosive Ordnance Disposal Mobile Unit SIX
Detachment Mayport
To: Commander, Naval Training Center Orlando

Subj: RESULTS OF EOD ANOMALY SURVEY ISO NTC ORLANDO BRAC 5-16 FEB 1996

Encl: (1) Gas Well Test Site (adjacent to NTC Main Gate)
(2) McCoy Annex Fence Line Site
(3) McCoy Annex Pond Site

1. This detachment conducted magnetic anomaly surveys and intrusive operations at designated sites in support of NTC Orlando BRAC. Enclosures 1-3 contain specific results of excavation operations. Magnetic anomalies were initially identified by civilian contractor. Anomalies were surface marked prior to USN EOD arrival. Surface marks were found to be within plus/minus 20 feet of original survey. The marks at McCoy Annex Fence Line Site 1A (enclosure 2) were deemed unreliable by EOD and a magnetic anomaly survey was conducted of the entire area. No ordnance or ordnance like objects were detected at any of the sites (enclosures 1-3).

2. Metallic contacts were reacquired or detected using the Mk 26 Ferrous Metal Detector and MK 29 All-Metals Detector. All anomalies detected to an approximate depth of 3-4 feet were investigated. Previous testing by civilian contractor using ground penetrating radar (GPR) had identified some anomalies to depths down to 8 feet.

3. As stated, I found NO indications of buried unexploded ordnance (UXO). "Indications" would include fragmented metal, UXO components such as fuzes, fins, containers, spent shell casings, aircraft suspension components, etc. As a result of these findings I do not recommend further investigation of the anomalies that were deeper than 3-4 feet. There is NO physical evidence that any ordnance was buried or discarded at any of the sites surveyed.

4. Point of contact is myself, CWO4 Thornton, Comm: (904)270-5412, DSN: 960-5412, FAX (904) 270-6880.

R. D. THORNTON

Copy to:
Base Transition Officer

RESULTS FOR ANOMALY INVESTIGATION
GAS WELL TEST SITE

1. This area, adjacent to the main gate and softball field, consisted of 430 gas test well sites and 30 magnetic anomalies. The test wells were designated by surface survey flags placed by ABB (civilian contractor). The anomalies were previously located by contractor, surface marked by contractor, and EOD was tasked with identification of anomaly.

2. All designated site were checked and anomalies unearthed, as required. NO ordnance related items were located. The majority of site was apparently an old dump area that had been covered over with dirt. Furthermore, no gases or odors were humanly detected at the excavation sites.

3. Several anomalies were not excavated due to the being detected under the adjacent parking lot. As a result of NO evidence of ordnance at throughout the survey of this area I do NOT recommend tearing up the parking lot and pursuing the excavation of the remaining anomalies.

Encl 1

RESULTS FOR ANOMALY INVESTIGATION
McCOY ANNEX FENCE LINE

GRID NO.	ITEMS FOUND
4A-001	TWO TIN CANS, SMALL PIPE, SURVEYOR FLAG WIRE
4A-002	SIX INCH WHEEL AND BRACKET
4A-003	SURVEYOR FLAG WIRE
4A-004	LARGE COTTER PIN
4A-005	NOTHING FOUND
4A-006	SURVEYOR FLAG WIRE AND ALUMINUM CAN
4A-007	ONE INCH BED SPRING
4A-008	NOTHING FOUND
4A-009	ONE INCH BED SPRING
4A-010	NOTHING FOUND
4A-011	ALUMINUM CAN
4A-012	NOTHING FOUND
4A-013	ONE INCH STEEL NUT
4A-014	NOTHING FOUND
4A-015	SURVEYOR FLAG WIRE
4A-016	ALUMINUM CAN
3A-017 thru 019	SURVEYOR FLAG WIRE
3A-020	SURVEYOR FLAG WIRE AND 3 INCH PIN BY ½ INCH DIAMETER
3A-021	NOTHING FOUND
3A-022	SIX INCH BY ½ INCH METAL ROD
3A-023	NOTHING FOUND
3A-024	SURVEYOR FLAG WIRE
3A-025 thru 026	NOTHING FOUND
3A-027	TWO ALUMINUM CANS
3A-028	NOTHING FOUND
3A-029	TWO SURVEYOR FLAG WIRES AND CHUNK OF METAL
3A-030	NOTHING FOUND
3A-031	TEN INCH METAL HANDLE AND ALUMINUM CAN
3A-032 thru 035	NOTHING FOUND
3A-036	ALUMINUM CAN
3A-037	THREE BINDER FRAME AND SIX INCH PIECE OF WIRE
2A-038	SURVEYOR FLAG WIRE AND ONE INCH WIRE
2A-039	THREE ALUMINUM CANS
2A-040	STEEL CAN
2A-041	NOTHING FOUND
2A-042	SIX INCH BY ½ INCH STEEL BAR
2A-043	NOTHING FOUND
2A-044	THREE INCH STEEL (RUSTED) SCRAP

2A-045	FOURTEEN INCH BY ONE INCH STEEL BAR
2A-046	TWO INCH METAL DISC
2A-047	SIX INCH BY EIGHT INCH METAL PLATE AND ALUMINUM CAN
2A-048	TWO INCH STEEL BOLT AND TWO INCH STEEL SCRAP
2A-049	TWO INCH SCRAP OF STEEL AND ALUMINUM CAN
2A-050	TOP FROM ALUMINUM CAN
2A-051	STEEL CAN OPENER
2A-052	SMALL PIECES OF SCRAP METAL
2A-053	FOUR INCH BY TWO INCH SCRAP METAL
2A-054	ONE INCH BY TWO INCH SCRAP METAL
2A-055	ALUMINUM CAN
2A-056	STEEL SHOCK ABSORBER
2A-057	SIX PIECES OF ALUMINUM FOIL
2A-058	SURVEYOR FLAG WIRE AND PIPE FITTING
2A-059	BICYCLE SEAT AND ALUMINUM CAN
2A-060	TIN CAN AND METAL TAG
2A-061	LINOLEUM KNIFE
2A-062	NOTHING FOUND
2A-063	ALUMINUM CAN AND TIN CAN
2A-064	SPARKPLUG AND LID TO METAL CAN
2A-065	SURVEYOR FLAG WIRE
2A-066	FLASHLIGHT AND SPARKPLUG
2A-067	TOP TO ALUMINUM CAN
2A-068	FOUR INCH STEEL WIRE
1A-069	ONE INCH BANDING MATERIAL
1A-070	STEEL SCREW
1A-071	STEEL WASHER
1A-072 thru 082	NOTHING FOUND
1A-083	CHUNK OF STEEL AND A NAIL
1A-084 thru 091	NOTHING FOUND
1A-092	TWO EACH RAIL ROAD SPIKES
1A-093 thru 094	NOTHING FOUND
1A-095	ALUMINUM FOIL
1A-096 thru 098.	NOTHING FOUND
1A-099	LARGE NAIL SPIKE WITH SURVEYOR TAPE ATTACHED
1A-100 thru 104	NOTHING FOUND
1A-105	SIX INCH BY TWO INCH STEEL BAR
1A-106 thru 110	NOTHING FOUND

RESULTS OF ANOMALY INVESTIGATION
McCOY ANNEX POND SITE

ID NO.	ITEMS FOUND
PS-001	THREE STEEL WASHER
PS-002 thru 004	NOTHING FOUND
PS-005	FIVE INCH BY ONE INCH STEEL BOLT
PS-006	CORRODED WELDING ROD
PS-007	NOTHING FOUND
PS-008	TWO INCH SQUARE BY HALF INCH THICK WASHER AND RAIL ROAD SPIKE
PS-009	NOTHING FOUND
PS-010	RAIL ROAD SPIKE
PS-011	DOOR HANDLE
PS-012 thru 014	NOTHING FOUND
PS-015	BOTTLE TOP
PS-016	TOP TO ALUMINUM CAN
PS-017	NOTHING FOUND
PS-018	ALUMINUM CAN
PS-019	NOTHING FOUND
PS-020	FOUR INCH NAIL
PS-021	THREE INCH HINGE AND WATER PIPE
PS-022	WET
PS-023	WET
PS-024	WET
PS-025	THREE INCH STEEL NAIL
PS-026	SIX INCH STEEL NAIL
PS-027	THREE INCH STEEL NAIL
PS-028	STEEL BOLT AND WATER PIPE THREE FEET DOWN
PS-029	NOTHING FOUND
PS-030	ALUMINUM CAN
PS-031 thru 033	SURVEYOR FLAG WIRE AT ALL LOCATIONS
PS-034	ALUMINUM CAN
PS-035	RAIL ROAD SPIKE
PS-036 thru 040	NOTHING FOUND
PS-041	NOTHING FOUND
PS-042	THREE INCH DIAMETER BY THREE INCH PIPE COUPLING
PS-043	ONE INCH CHUNK OF STEEL
PS-044	RAIL ROAD SPIKE AND LARGE STEEL NAIL
PS-045	TWO LARGE STEEL NAILS AND TWO SIX INCH BY THREE INCH RAIL ROAD HOLD DOWN PLATES

Encl 3

APPENDIX E

PASSIVE SOIL GAS SURVEY RESULTS

Northeast Research Institute LLC
303-238-0090 • 800-845-5137
Fax 303-238-2522

FINAL REPORT
ON THE FINDINGS OF
THE PETREX SOIL GAS SURVEYS
PERFORMED AT STUDY AREA 39
AND STUDY AREA 40
AT THE NAVAL TRAINING CENTER
IN ORLANDO, FLORIDA

PREPARED FOR:
ABB ENVIRONMENTAL SERVICES, INC.

PREPARED BY: DATE:

Julia Olney Gullett, Senior Geologist

APPROVED BY: DATE:

Paul A. Harrington, Operations Manager

NORTHEAST RESEARCH INSTITUTE
605 PARFET STREET, SUITE 100
LAKEWOOD. COLORADO 80215
(303) 238-0090

2465E

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 INTRODUCTION 2

3.0 OVERVIEW OF THE PETREX TECHNIQUE 2

4.0 OBJECTIVES 3

5.0 SCOPE OF WORK 3

6.0 FIELD ACTIVITIES 3
- 6.1 Sampler Exposure 3

7.0 METHOD QA/QC 4
- 7.1 Lot Control 4
- 7.2 Travel Blanks 4
- 7.3 Duplicate Samples 4

8.0 RESULTS 4
- 8.1 TD-MS Results 4
- 8.2 Duplicate Sample Results 5

9.0 DISCUSSION 6
- 9.1 Use of Soil Gas Data 6
- 9.2 Evaluation of Relative Response 6
- 9.3 Map Evaluation 7
- 9.3.1 The Distribution of Benzene, Toluene, Ethylbenzene/Xylene (BTEX) 7
- 9.3.2 The Distribution of Tetrachloroethene (PCE) 7
- 9.3.3 The Distribution of Gasoline Range Organics (GRO) 8

10.0 CONCLUSIONS 9

11.0 LIMITATIONS 9

APPENDICES
- A. PETREX Protocol
- B. Tables B1 and B2
- C. Sample Mass Spectra
- D. Histograms Used to Determine Contour Intervals
- E. Chain of Custody Documents
- F. Plates 1-4

1.0 EXECUTIVE SUMMARY

In February 1996, Northeast Research Institute LLC (NERI) and ABB Environmental Services, Inc. (ABB-ES) completed PETREX passive soil gas sampling at Study Areas 39 and 40 at the Naval Training Center in Orlando, Florida per P.O. SE627024G. According to ABB-ES, Study Area 39 was formerly used as a coal storage yard, an alleged drum storage area, and an alleged landfill. Study Area 40 is a former landfill reportedly used for the disposal of household wastes, and potentially petroleum wastes. The purpose of the PETREX surveys was to screen each landfill and determine the nature and areal extent of volatile and semivolatile organic compounds (VOCs and SVOCs) in the subsurface.

STUDY AREA 39

Tetrachloroethene (PCE) and petroleum hydrocarbon compounds related to a hydrocarbon mixture similar to gasoline were detected in Study Area 39. Occurrences of PCE, benzene, toluene, ethylbenzene/xylene(s) (BTEX) and Gasoline Range Organics (GRO) were reported and mapped. A potential source of PCE appears to have been identified northwest of the hazardous materials storage area and west of the ground maintenance building. PCE occurrences appear to be limited and were defined by this investigation. Potential source areas of BTEX and GRO include the vicinity of the hazardous materials storage area and areas located north and northeast of the former coal staging area. Migration of BTEX and GRO appears to trend east-west, and may indicate a preferential migration pathway created by an artificial conduit or a lithological changes. Occurrences of GRO and BTEX may extend beyond the limits of this investigation to the east, therefore the areal extent of petroleum hydrocarbons was not defined.

STUDY AREA 40

No VOCs or SVOCs indicative of widespread contamination in subsurface soils/groundwater were detected in Study Area 40.

2.0 INTRODUCTION

In February 1996, Northeast Research Institute LLC (NERI) and ABB Environmental Services, Inc. (ABB-ES) completed PETREX passive soil gas sampling at Study Areas 39 and 40 at the Naval Training Center in Orlando, Florida per P.O. SE627024G. According to ABB-ES, Study Area 39 was formerly used as a coal storage yard, an alleged drum storage area, and an alleged landfill. Study Area 40 is a former landfill reportedly used for the disposal of household wastes, and potentially petroleum wastes. The purpose of the PETREX surveys was to screen each landfill and determine the nature and areal extent of volatile and semivolatile organic compounds (VOCs and SVOCs) in the subsurface.

3.0 OBJECTIVES

The objectives of this soil gas survey were to:

1. Collect and report VOCs and SVOCs as constituents of the soil gas;

2. Map the distribution of the compound occurrences to aid in defining potential source areas, preferential migration pathways and the areal extent of chemical occurrences.

3. Provide data to aid in developing strategies for monitoring groundwater quality, and developing future investigative studies.

4.0 OVERVIEW OF THE PETREX TECHNIQUE

Each PETREX soil gas sampler consists of two or three activated charcoal adsorption elements (collectors) housed in a resealable glass container in an inert atmosphere.

Soil gas sample collection is performed by unsealing the sampler and exposing the collector to the soil gas of the subsurface environment at the base of a shallow borehole. Sample collection proceeds via free vapor diffusion through the opening of the uncapped sampler container. Following a controlled period of time, the sampler is retrieved from the borehole, resealed, and submitted for analysis.

One collector from each soil gas sampler is analyzed by Thermal Desorption/Mass Spectrometry (TD-MS). Selected second collectors may be analyzed by Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS) for compound confirmation. At least ten percent of samplers used in any project are three collector samplers. The third collector is used for setting instrument sensitivity prior to analysis.

Compounds are identified by comparison to standard reference spectra run on the same instrument. The mass spectral ion count of the appropriate indicator peak(s) for each compound or group of compounds is then plotted as relative response on a map and contoured using a variety of standard geostatistical analyses.

For a more detailed and technical discussion of the method, please refer to Appendix A, PETREX Protocol.

5.0 Scope of Work

NERI provided ABB-ES with 386 PETREX samplers, plus travel blanks and time calibration samplers. NERI also supplied written instructions on PETREX field methods, field sampling tools, and telephone support to ABB-ES as they conducted the field tasks to complete the sampling. The PETREX samplers and equipment were shipped to ABB-ES on February 1, 1996. ABB-ES began installation of the PETREX samplers the week of February 12, 1996. Time calibration samplers were used as a guide to estimate an appropriate exposure time. Samplers were retrieved from the field and sent to NERI's Lakewood laboratory for TD-MS analysis. The analytical results were compiled onto compound distribution maps and this interpretive report.

6.0 Field Activities

ABB-ES began installation of the PETREX samplers the week of February 12, 1996. Samplers were placed on a regular grid on fifty (50) foot intervals throughout the two adjacent Study Areas. All sampler locations are shown on Plate 1, Appendix F.

Sampler installation was performed by creating a narrow borehole, approximately 18" in depth below the surface, using a rotary hammer drill, and placing the opened sampler, inverted, at the bottom of the hole. The borehole was backfilled with an aluminum foil plug and capped with hydraulic cement with the sampler in place.

6.1 Sampler Exposure Time

PETREX soil gas samplers are retrieved following a time period that has allowed for the soil gas emanating from the subsurface environment of a survey area to equilibrate with the installed PETREX samplers. This time integration period is determined for each PETREX soil gas survey based on time calibration data or site conditions. Samplers reach equilibrium with soil gas during the exposure period so that there are minimal variances in response between samples. Samplers are retrieved in the same order in which they were installed to minimize any variations based upon sample exposure time.

ABB-ES personnel selected four locations for time calibration samplers. The first set of time calibration samplers was analyzed after a four day exposure and the second set of time calibration samplers was analyzed after a ten day exposure. The preliminary data from the time calibration samplers showed the presence of tetrachloroethene (PCE), methyl-tert-butyl-ether,

and petroleum hydrocarbons. Thus, after an exposure of sixteen days, ABB-ES returned to Study Areas 39 and 40 to retrieve all the samplers. The samplers were received at NERI's laboratory on March 4, 1996 and were analyzed by TD-MS on March 6-8, 1996. All Chain of Custody Documents received by NERI are included in Appendix E.

7.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

7.1 Lot Control

Quality assurance/quality control (QA/QC) collectors from each lot manufactured by NERI were analyzed by TD-MS to ensure that they were contaminant free before the lot of collectors used in the field was released from the PETREX laboratory. No compounds were detected above background on the QA/QC collectors.

7.2 Travel Blanks

One PETREX sampler was randomly selected as a travel blank from each bag of survey samplers. These travel blanks remained sealed and traveled with the survey samplers from the laboratory to the field and back to the laboratory to monitor potential contamination of the survey samplers. The travel blank samples were given the numeric designations 900 - 912 and were analyzed under the same instrument conditions as the survey collectors. Results of TD-MS analyses of the travel blanks for the targeted compounds are provided in Table B1, Appendix B.

7.3 DUPLICATE SAMPLES

Ten percent (10%) of the PETREX collectors were used as duplicate samples. The purpose of the duplicate samples was to monitor the reproducibility of the PETREX collector. Results of the replicate analyses are discussed in Section 8.2 of this report.

A more detailed description of the PETREX QA/QC may be found in the PETREX Protocol located in Appendix A.

8.0 RESULTS

8.1 TD-MS RESULTS

All samplers were analyzed by NERI's standard method of Thermal Desorption/Mass Spectrometry (TD-MS). Tetrachloroethene (PCE) and petroleum hydrocarbon compounds related to a hydrocarbon mixture similar in composition were the most prominent compounds detected in soil gas. In addition to the compounds mentioned above, a single sample exhibiting the occurrence of chloroform was identified, and a single sample exhibiting the occurrences of polycyclic aromatic hydrocarbons (PAHs) such as anthracene, was identified. The identification of anthracene as well as other PAHs are only tentative at this time, and can not be confirmed without TD-GC/MS analysis.

Occurrences of PCE, BTEX and Gasoline Range Organics (GRO) have been reported and mapped. In order to map the reported compounds, mass spectral peaks indicative of the compounds were selected and their corresponding ion counts were summed and plotted. Table 2 lists the reported compounds and their selected indicator mass peaks.

TABLE 2
Reported Compounds and Their Indicator Mass Peaks

Reported Compound	Indicator Mass Peak(s) (AMU)
PCE	164
BTEX	78, 92, 106
Gasoline Range Organics (excluding BTEX)	
Sum of the C4-C9 cylcloalkanes/alkenes	56, 70, 84, 98, 112, 126

Sample mass spectra of the compounds identified are shown as Figures C1-C4, Appendix C. A mass spectrum of a representative travel blank sample is shown as Figure C5.

The distributions of the compound occurrences have been mapped and are shown on the following plates:

Plate 1: Sample Location Map
Plate 2: Relative Response of Tetrachloroethene (PCE)
Plate 3: Relative Response of Benzene, Toluene, Ethylbenzene/Xylene(s)
Plate 4: Relative Response of Gasoline Range Organics

Plates 1 through 4 are provided in Appendix F.

8.2 Duplicate Samples

The second collector wire from ten percent (10%) or twenty six (26) of the survey samples were analyzed for the purpose of yielding a duplicate QA/QC sample result. The duplicate samples were analyzed by TD-MS analysis during the survey sample analysis. The results of the duplicate sample analysis indicate that identical compounds were detected in sample duplicates. The relative percent difference in the magnitude of response for the detection of PCE varied by an average of 4.2%; the relative percent difference in the magnitude of response for the detection of BTEX varied by an average of 30.6%; the relative percent difference in the magnitude of response for GRO varied by an average of 26.2 %.

Replication of the PETREX response values generally fall within a range of 20% variability in samples exhibiting high response. Samples exhibiting levels below the detection limit (ND), essentially show 100% reproducibility. In samples exhibiting intermediate response values, reproducibility becomes more variable and, as with any dataset, occasional outliers exist (i.e. samples 124 and 182). Reproducibility is not only influenced by the levels of compounds detected, but is also significantly influenced by the number of compounds summed to report a

mixture. The highest variability is generally observed in the reporting of mixtures such as BTEX and GRO. When the individual constituents of these mixtures are evaluated, the variation is much lower.

Though evaluation of the duplicate sample analysis was based upon and EPA accepted method for calculating the relative percent difference between analytical results, this calculation is based upon actual values rather than orders of magnitude; whereas orders of magnitude are the accepted parameter for evaluation of all soil vapor data. For example, sample number 124 (duplicate sample 2124) exhibited the greatest relative percent difference for BTEX and GRO; however our interpretation of the two values would indicate that these samples exhibited the same response level. Visual inspection of the data indicates greater reproducibility than the relative percent difference calculations indicate.

The analytical results of the duplicate collectors are provided in Table B2, Appendix B.

9.0 DISCUSSION

9.1 Use of Soil Gas Data

Soil gas data (including PETREX) reflect volatile and semivolatile organics collected at a point in the near surface. The sources of these volatile organics may be in the stratigraphic column and/or in groundwater below the collection point. Thus, the organics can be derived from surface spills, deposition, or migration into the deeper vadose zone, and groundwater. The soil gas survey reveals the areal extent of contamination and is the optimum guide in identifying areas in order to develop a vertical profile, including the drilling of soil borings and monitoring wells. Soil gas data are always semi-quantitative in that multiple sources in soil and/or groundwater cannot be readily differentiated without supporting soil and groundwater data. However, the higher soil gas responses are representative of higher concentrations in the subsurface, given that subsurface geologic conditions are relatively consistent.

The data from a PETREX survey are reported as the ion counts for the mass spectral peak which indicates the presence and relative abundance of a compound. Ion count values are the unit of measure generated by mass spectrometers to illustrate the relative response of a particular compound which was present in the soil gas at the sample location site. A difference in ion count values of an order of magnitude or more is typically considered significant when interpreting potential source areas and migration/dispersion pathways versus background areas.

9.2 Evaluation of Relative Response

The soil gas response levels discussed in the following section are described as high, elevated or low relative to the entire data set. The ion count values that are reported represent semi-qualitative soil gas values that were evaluated relative to the other sampler locations. Background conditions are described when only low levels of the compounds identified were detected. Low levels are considered those which would not represent detectable levels by standard quantitative methods for soils and/or groundwater. In NERI's experience, levels below

100.000 ion counts for a single compound such as PCE, and levels below 200.000 ion counts for mixtures such as BTEX and GRO would not represent detectable subsurface concentration levels under normal site conditions. Normal site conditions are considered to be sites in which soil matrices are somewhat uniform, the depth to groundwater is less than 100 feet below the surface, groundwater flow rates are undisturbed, and normal precipitation and temperatures occur during sampler exposure.

The contour intervals depicted on Plates 2 - 4 were determined based upon groupings in the data observed in histograms formulated from the statistical distribution of the soil gas data. The histograms are shown as Figures D1-D3, Appendix D.

For a complete discussion of relative response evaluation, please refer to the PETREX Protocol, Appendix A.

9.3 Map Evaluation

9.3.1 The Distribution of Tetrachloroethene (PCE)

STUDY AREA 39

The distribution of PCE as detected in soil gas is shown on Plate 2, Appendix F. High soil gas response levels, which generally serve to depict potential source areas, were detected in the southeastern portion of the Study Area 39, west-northwest of the hazardous materials storage area and west of the ground maintenance building. Intermediate and lower response levels, which generally serve to depict migration or vapor diffusion pathways, indicate that PCE has migrated from the potential source area to the southwest. The areal extent of PCE occurrences appears to be limited and appears to have been defined by this investigation.

The confirmed identification of PCE at sample location 201 was not possible due to high levels of petroleum hydrocarbons detected at this location. PCE was most likely not detected at this location, as it was not detected in any of the surrounding samples.

STUDY AREA 40

PCE was not detected in Study Area 40.

9.3.2 The Distribution of Benzene, Toluene, Ethylbenzene/Xylene(s) (BTEX)

STUDY AREA 39

The distribution of BTEX as detected in soil gas is shown on Plate 3, Appendix F. High levels of BTEX response were identified at several locations in the southern portion of the Study Area 39. These areas include the vicinity of the hazardous materials storage area, an area adjacent to the culvert and grate located in the southwestern portion of the parking lot, and areas located north and northeast of the former coal staging area. Migration of BTEX from the vicinity of the

hazardous materials storage area appears to be limited but may extend beyond the survey limits to the east; migration of BTEX in the vicinity of the culvert appears to follow a preferential pathway created by the utility corridor to the north; migration of BTEX in the south central portion of Study Area 39 appears to follow a linear east-west trend, and may indicate a preferential migration pathway created by an artificial conduit or subsurface conditions such as a change in lithology.

Isolated occurrences of BTEX were identified at samples located west of the grounds maintenance building and north of the storm drain located at the end of the retention pond. The environmental significance of discrete occurrences such as these is difficult to ascertain, however are not those normally associated with occurrences which would impact groundwater.

The soil gas response values for the detection of BTEX were falsely elevated at several sample locations by the presence of naturally occurring aromatic hydrocarbons sourced from terpenes. The presence of high levels of terpenes occasionally mask, and sometimes result in a false positive for the detection of BTEX. BTEX may also be naturally derived form terpenes. The soil gas response levels detected for BTEX in the surrounding samples are considered background levels; therefore only naturally existing hydrocarbons appear to have been detected at these locations. The samples in which terpenes were detected are indicated by a "NI - not identified" in Table B1, Appendix B, and on Plate 3, Appendix F.

STUDY AREA 40

Only a single occurrence of BTEX was identified in Study Area 40. This sample was located in the eastern ball field. The environmental significance of discrete occurrences such as these is difficult to ascertain, however are not those normally associated with occurrences which would impact groundwater.

9.3.3 The Distribution of Gasoline Range Organics (GRO)

STUDY AREA 39

The distribution of GRO as detected in soil gas is shown on Plate 4, Appendix F. The physio-chemical characteristics of the hydrocarbons which comprise GRO, render them less mobile in the subsurface and therefore may more clearly depict potential source areas of gasoline release than does BTEX. High soil gas response levels of GRO were identified in the south central portion of the survey area in areas located north and northeast of the former coal staging area and southeast of the ramps and dumpsters. Migration of GRO in the south central portion of Study Area 39 appears to follow a linear east-west trend, and may indicate a preferential migration pathway created by an artificial conduit or subsurface conditions such as a changes in lithology. GRO occurrences may extend beyond the limits of this investigation east of the hazardous materials storage area.

Isolated occurrences of GRO were also identified at samples located in the southwestern portion of the parking lot and north of the storm drain located at the end of the retention pond. As

previously discussed. the environmental significance of discrete occurrences such as these is difficult to ascertain.

The soil gas response values for the detection of GRO were falsely elevated at several sample locations by the presence of naturally occurring aromatic hydrocarbons sourced from terpenes. The data surrounding these samples indicate that GRO were not detected at these locations: only naturally existing hydrocarbons sourced from terpenes were detected at these locations. The samples in which terpenes were detected are indicated by a "NI - not identified" in Table B1. Appendix B. and on Plate 4. Appendix F.

STUDY AREA 40

Only limited occurrences of GRO were detected in Study Area 40. The detections were located northwest of the drainage ditch which runs parallel to Nautilus Street. As previously discussed. discrete occurrences such as these are not those normally associated with occurrences which would impact groundwater.

10.0 CONCLUSIONS

Tetrachloroethene (PCE) and petroleum hydrocarbon compounds related to a hydrocarbon mixture similar to gasoline were detected predominantly in Study Area 39. Occurrences of PCE. benzene. toluene. ethylbenzene/xylene(s) (BTEX) and Gasoline Range Organics (GRO) were reported and mapped. A potential source of PCE appears to have been identified northwest of the hazardous materials storage area and west of the ground maintenance building. PCE occurrence appear to be limited and were defined by this investigation. Potential source areas of BTEX and GRO include the vicinity of the hazardous materials storage area and areas located north and northeast of the former coal staging area. Migration of BTEX and GRO appears to trend east-west. and may indicate a preferential migration pathway created by an artificial conduit or a lithological changes. Occurrences of GRO and BTEX may extend beyond the limits of this investigation to the east. therefore the areal extent of petroleum hydrocarbons was not defined.

No VOCs or SVOCs indicative of widespread contamination in subsurface soils/groundwater were detected in Study Area 40.

11.0 LIMITATIONS

In connection with this survey and associated interpretation. only a limited scope of work was performed by NERI. Therefore. NERI maintains that it has not defined the scope of the environmental condition of the site. Professional judgments made within the context of this report are based on technical data made available to NERI. NERI assumes no responsibility for conditions which did not come to its actual knowledge. or conditions not generally recognized as environmentally unacceptable at the time this report was prepared. Furthermore, NERI assumes no responsibility for actions taken in response to the release of these findings.

APPENDIX A
PETREX PROTOCOL

PETREX ENVIRONMENTAL SOIL GAS PROTOCOL

INTRODUCTION

The PETREX Technique provides a means by which trace quantities of gases from subsurface derived organic contaminants can be detected and collected at the earth's surface. The Technique is integrative, thereby eliminating the short-term variations associated with other gas/vapor detection methods. The PETREX Technique directly collects and records a broad range of organic compounds emanating from subsurface sources.

SOIL GAS COLLECTOR PREPARATION

Adsorption collector wires (after construction) are cleaned by heating to 358° C in a high vacuum system. Wires are packed under an inert atmosphere in glass culture tubes. One collector out of every batch of thirty is checked for cleanliness by mass spectrometry. Another collector from the batch is checked for adsorptive capability. Based on the results, the batch of collectors is approved for release into the field.

SOIL GAS SAMPLER INSTALLATION

The sampler consists of two or three collectors, each a ferromagnetic wire coated with an activated charcoal adsorbent in a screw top glass culture tube. Each sampler is typically placed in a shallow hole, 14-18 inches deep. The hole is backfilled and the location is marked. The sampler is left in the ground from one to thirty days, then retrieved and sealed for transportation back to the laboratory for analysis.

The PETREX soil gas sampling technique is adaptable to various surface conditions commonly encountered within survey areas. These surfaces typically include concrete, asphalt, grass, and gravel. Two installation methods are routinely utilized to adapt to these surface conditions.

The first method utilizes a coring shovel for sampler installations in grass or otherwise loosely consolidated soil conditions. The shovel cores a 14 inch deep by 2 inch diameter hole in the surface soils.

PETREX soil gas samplers are placed (open end down) at the bottom of each core hole. The samplers are then backfilled with an aluminum foil plug and the original excavated soil. To complete installation, sample locations are marked with ribbon flagging and a numbered pin flag, as well as entered into a field notebook and plotted on a field map.

The second method of sampler installation utilizes an electric rotary hammer, equipped with an 18 inch by 1.5 inch diameter drill bit, for sampler installations under concrete, asphalt, or otherwise consolidated conditions. A hole is drilled through the surface to the dimensions of the drill bit equipped to the rotary hammer.

PETREX soil gas samplers are placed at the bottom of each drilled hole. For retrieval purposes, a cleaned galvanized steel wire is attached to each sampler. Aluminum foil is used to plug each hole to approximately two inches below grade. Then each hole is capped to grade with hydraulic cement. The hydraulic cement serves as protection from the external surface environment.

To complete sampler installation, sampler locations are marked with paint (where applicable), entered into a field notebook, and plotted on a field map.

SOIL GAS SAMPLER RETRIEVAL

PETREX soil gas samplers are retrieved following a time period that has allowed for the soil gas emanating from the subsurface environment of a survey area to equilibrate with the installed PETREX samplers. This time integration period is determined for each PETREX soil gas survey based on time calibration data or site conditions.

Retrieval operations are dependent on surface conditions and routinely consist of the following two methods.

The first method applies to grass covered or loosely consolidated soil conditions. A trowel is utilized to expose the backfilled samplers; then with a pair of tongs, the samplers are brought to the surface. At the surface, the samplers are sealed, cleaned, and labeled. Following retrieval, all debris are gathered and the core hole is backfilled with original material.

The second method applies to concrete, asphalt, or other consolidated surface conditions. A hammer and chisel is utilized to remove the hydraulic cement plug and expose the sampler. By means of the pre-attached retrieval wire, the sampler is brought to the surface. At the surface, the retrieval wire is removed and the sampler is sealed, cleaned, and labeled. Following retrieval, each drill hole is backfilled and patched with cement or asphalt.

TIME CALIBRATION SAMPLERS

Time calibration samplers are included in PETREX soil gas surveys, as appropriate. These samplers are included as a means of monitoring the loading rates of volatile and semivolatile organic compounds (VOCs and SVOCs) emanating from the soil gas at a survey area onto the PETREX collectors.

During PETREX sampler installation, two sets of three to five time calibration samplers are also installed at survey sample locations that best represent the range of soil gas response for the survey area. These representative locations are determined based on previous soils and/or groundwater studies and other site specific conditions such as gradient and potential source areas.

The first set of time calibration samplers are generally retrieved within a week or less following the initial installation and the second set one week later. Often, permanent on-site personnel are instructed to perform time calibration sampler retrieval.

Lengths of exposure periods of the survey samplers for each survey are determined based on the results of each respective set of time calibration samplers. Time calibration samplers are usually analyzed within 24 hours upon receipt at the laboratory. At the first indication of significant relative ion count intensities and significant total ion count values, the decision is made to retrieve the entire complement of survey samplers.

If there are no significant relative ion count intensities detected from the second set of time calibration samplers, then the survey samplers are allowed to equilibrate in the field for a maximum time period of up to 30 days. The average environmental PETREX soil gas survey requires a collector integration period of one day to two weeks.

METHOD QA/QC

Within every survey sampler, the two or three collector wires should have adsorbed identical compounds. Like compounds on separate collectors relate an acceptable quality assurance (QA) during the survey's analysis. The first wire is analyzed by Thermal Desorption/Mass Spectrometry (TD/MS). The data from the first wire is reported on the relative response maps. The second wire is retained for analysis by Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS), if warranted by the initial TD/MS analysis of the second wire.

Approximately ten percent of the total PETREX survey samplers contain three collector wires. The third collector wire, a QC collector wire, is used by the operator to test the mass spectrometer's operating conditions prior to survey analysis. Some of these quality control (QC) collectors are also used to check the mass spectrometer sensitivity during survey analysis. In addition, the QC collector may be used to compare the reproducibility of the detected VOCS.

TRAVEL BLANKS

Two PETREX samplers, each containing a single collector wire, are included with each PETREX soil gas survey as travel blanks. These blanks are analyzed with the survey samplers to indicate whether there may have been contamination introduced to the survey samplers during installation or shipment. If compounds other than normal atmospherics (e.g., CO_2, H_2O, N_2, and Ar) are detected on the blanks, these results are taken into consideration in the data presentation. This process, an initial step to data interpretation, involves the correction of ion count values of the detected blank contaminants from the entire survey's data set. The resulting ion count values are provided on the relative response maps.

MASS SPECTROMETER TUNING

An Extranuclear Quadrupole C-50 Mass Spectrometer or similar instrument, equipped with a Curie-point pyrolysis/thermal desorption inlet, is used for collector analysis. Mass assignment and resolution are manually adjusted using a Perfluorotributylamine (PFTBA) standard or a built-in tuning program, depending on the instrument. A linear correction, based on the known spectrum of PFTBA, is calculated. This correction is applied to a second PFTBA spectrum. If correct mass (M/Z) values are obtained, the operator proceeds to the next tuning step. If not, Step 1 is repeated until correct masses are obtained.

Peak intensity ratios are set from the major peaks in the PFTBA spectrum using the following values:

Mass (M/Z)		Spectrum Intensities
69	=	100%
131	=	48% ± 5%
219	=	50% ± 5%

During tuning, the ion signal for mass (M/Z) 69 of PFTBA is measured at a preset sample pressure and detector voltage and compared to previous values at the same setting.

Electron energy is set to 70 electron volts. All other operating parameters, such as scans, scan range, and mass offset, are established in the computer program. These values may only be changed by the laboratory manager.

Tuning is performed at the beginning of a run so that an individual survey is analyzed at the same set of instrument conditions. The samplers are analyzed in random order.

LABORATORY ANALYSIS

Periodic machine background and blank PETREX collector analyses are performed to assure that there is no carry-over between successive collectors. If there are peaks present which are not related to atmospheric gases, the supervisor is notified and the mass spectrometer is shut down and cleaned as necessary.

A written sample number record is kept during the analysis to prevent accidental cross numbering. The mass spectrometer control program contains appropriate "flag statements" that prompt the operator with a warning if an input sample number has already been analyzed. The operator then checks the current number, along with the disk storage location of the previously entered number to identify the true numbering situation.

COMPOUND IDENTIFICATION

Compound identification is based on molecular weight, compound fragmentation, and isotope distribution, as applicable. Each VOC exhibits a unique mass spectral signature. NERI maintains a large library of spectra of individual compounds, accessible by computer. In addition, the company maintains a large library of mass spectra of commonly used chemical mixtures: e.g., gasolines, diesels, industrial oils and solvents, coatings, plastics, etc. These spectra are used to assist in both compound and mixture identifications.

The ion count response of an indicator peak(s), representative of the compound and away from interference by other compounds, is extracted for data presentation and mapping.

INTERPRETATION OF SOIL GAS DATA

Soil gas data (including PETREX) reflect volatile and semivolatile organics collected at a point in the near surface. The sources of these volatile organics may be in the stratigraphic column and/or in groundwater below the collection point. Thus, the organics can be derived from surface spills, deposition, or migration into the deeper vadose zone, and groundwater. The soil gas survey reveals the areal extent of contamination and is the optimum guide in identifying areas in order to develop a vertical profile, including the drilling of soil borings and monitoring wells.

Soil gas data are always semi-quantitative in that multiple sources in soil and/or groundwater cannot be differentiated. However, the higher ion responses are representative of higher concentrations in the subsurface, given that geologic conditions are relatively consistent.

Due to chemical differences between individual compounds, including their ability to both adsorb and desorb from the charcoal PETREX collector element, it is invalid to compare the ion count of a compound at one sampling location to that of another compound.

Patterns of compound distribution in the soil gas, as detected at the surface, can be strongly influenced by irregularities in the near surface and subsurface environment through which the soil gas diffuses. These irregularities include subsurface man-made structures, such as concrete foundations, drainage systems, and wells, and such naturally occurring structures as fractured and unfractured bedrock, clay, and shale lenses.

Other factors influencing the soil gas signal include ground and surface water, the free carbon content of soils, microbiotic activity in the soil, and natural and synthetic ground cover.

All of these factors indicate that the most powerful use of soil gas data is in reconnaissance: identifying and mapping the relative abundance of the widest array of chemical species and mixtures. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

RELATIVE RESPONSE DETERMINATION AND MAPPING

The relative response values are reported as the ion counts of indicator peaks for any given compound or mixture. Sample locations on a base map are digitized as X-Y coordinates and ion counts for the reported compounds are plotted at respective locations.

Mapping of the ion counts occurs after contour intervals for each compound or component class are determined. In order to establish the contour intervals, factors such as statistical analysis of ion count distribution, physiochemical considerations, and component-source material relationships (if known) are taken into account for each compound or class, in each area, on an individual basis. Each map is then contoured by hand. The resultant contour zones for each compound or component class in each area are color coded on a relative basis depending on whether the data are interpreted to be of high, moderate to high, moderate, etc., intensity. The response values found on each of the response maps are color coded and contoured on this basis.

APPENDIX B
TABLES B1-B2

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
1	13,956	3,791	4,658	ND	ND
2	Missing				
3	Missing				
4	ND	438	299	ND	ND
5	Missing				
6	Missing				
7	Missing				
8	Missing				
9	Missing				
10	ND	3,133	322	ND	ND
11	Missing				
12	Missing				
13	1,619	NI	NI	ND	ND
14	ND	ND	ND	ND	ND
15	1,924	NI	NI	ND	ND
16	1,200	ND	ND	ND	ND
17	354	NI	ND	ND	ND
18	ND	500	310	ND	ND
19	ND	1,786	817	ND	ND
20	ND	ND	ND	ND	ND
21	ND	ND	ND	ND	ND
22	536	1,716	630	ND	ND
23	955	517	ND	ND	ND
24	ND	1,036	359	ND	ND
25	ND	2,493	ND	ND	ND
26	ND	ND	ND	ND	ND
27	ND	552	ND	ND	ND
28	ND	ND	1,376	ND	ND
29	ND	9,813	422	ND	ND
30	397	ND	ND	ND	ND
31	417	3,283	7,787	ND	ND
32	365	ND	ND	ND	ND
33	ND	578	ND	ND	ND
34	ND	10,173	35,781	ND	ND
35	ND	664	477	ND	ND
36	ND	7,794	3,545	ND	ND
37	ND	4,429	2,888	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
38	ND	446	973	ND	ND
39	ND	407	2,211	ND	ND
40	ND	327	ND	ND	ND
41	ND	ND	ND	ND	ND
42	ND	1,987	1,297	ND	ND
43	ND	2,670	282	ND	ND
44	525	2,035	456	ND	ND
45	ND	842	963	ND	ND
46	ND	ND	317	ND	ND
47	ND	ND	ND	ND	ND
48	ND	ND	ND	ND	ND
49	ND	7,549	1,709	ND	ND
50	ND	2,619	ND	ND	ND
51	ND	21,966	2,508	ND	ND
52	ND	ND	316	ND	ND
53	ND	ND	438	ND	ND
54	ND	926	ND	ND	ND
55	410	ND	ND	ND	ND
56	ND	ND	ND	ND	ND
57	ND	ND	364	ND	ND
58	1,052	1,229	762	ND	ND
59	ND	612	ND	ND	ND
60	ND	1,456	1,118	ND	ND
61	ND	ND	ND	ND	ND
62	ND	ND	ND	ND	ND
63	ND	378	ND	ND	ND
64	587	136,312	7,252	ND	ND
65	ND	3,791	1,923	ND	ND
66	ND	319	ND	ND	ND
67	ND	581	1,249	ND	ND
68	ND	3,851	370	ND	ND
69	ND	ND	ND	ND	ND
70	567	2,489	ND	ND	ND
71	ND	ND	ND	ND	ND
72	ND	ND	ND	ND	ND
73	543	3,800	3,009	ND	ND
74	406	2,273	579	ND	ND
75	521	5,902	2,584	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
76	ND	ND	ND	ND	ND
77	ND	ND	ND	ND	ND
78	ND	ND	ND	ND	ND
79	ND	ND	ND	ND	ND
80	ND	ND	ND	ND	ND
81	ND	3.775	379	ND	ND
82	ND	1.927	1,985	ND	ND
83	ND	1.183	ND	ND	ND
84	ND	2.489	408	ND	ND
85	ND	ND	617	ND	ND
86	613	1.826	392	ND	ND
87	ND	ND	ND	ND	ND
88	ND	1.698	658	ND	ND
89	ND	1,480	320	ND	ND
90	ND	1.357	ND	ND	ND
91	ND	ND	830	ND	ND
92	ND	1.313	ND	ND	ND
93	444	2.259	354	ND	ND
94	ND	891	ND	ND	ND
95	ND	2.587	ND	ND	ND
96	ND	364	ND	ND	ND
97	ND	455	354	ND	ND
98	ND	1.702	ND	ND	ND
99	ND	ND	744	ND	ND
100	ND	ND	ND	ND	ND
101	ND	1.360	ND	ND	ND
102	ND	1,164	ND	ND	ND
103	ND	ND	ND	ND	ND
104	12.839	33,572	1,868	ND	ND
105	ND	531	388	ND	ND
106	ND	5,610	4,847	ND	ND
107	ND	ND	ND	ND	ND
108	ND	542	ND	ND	ND
109	ND	1,087	ND	ND	ND
110	ND	555	339	ND	ND
111	ND	351	ND	ND	ND
112	ND	549	344	ND	ND
113	330	5.695	797	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
114	419	851	288	ND	ND
115	ND	369	352	ND	ND
116	345	624	ND	ND	ND
117	ND	8.078	3.339	ND	ND
118	ND	ND	ND	ND	ND
119	ND	436	298	ND	ND
120	ND	440	393	ND	ND
121	ND	120.391	832	ND	ND
122	ND	ND	344	ND	ND
123	ND	26.702	404.174	ND	ND
124	ND	927.948	62,799	ND	ND
125	ND	4,511	2.442	ND	ND
126	ND	12.187	1.215	ND	ND
127	2.390	1.393.722	327.202	ND	ND
128	ND	320.031	129.960	ND	ND
129	ND	11.907	7.687	ND	ND
130	ND	17.481	4.699	ND	ND
131	ND	4.560	815	ND	ND
132	10.059	97.794	113.810	ND	ND
133	79.796	51.968	36.973	ND	ND
134	ND	13.502	5.897	ND	ND
135	ND	2.674	ND	ND	ND
136	ND	1.194.729	51.464	ND	ND
137	ND	1.693.581	2.993.439	ND	ND
138	499	271.719	250.413	ND	ND
139	436	126.189	431.205	ND	ND
140	ND	135.204	198.487	ND	ND
141	402	22.656	167,665	ND	ND
142	ND	1,027,170	5.276.923	ND	ND
143	ND	538.218	563,639	ND	ND
144	848	NI	NI	ND	ND
145	ND	ND	ND	ND	ND
146	ND	ND	ND	ND	ND
147	ND	8.333	2,790	ND	ND
148	ND	222.456	312.817	ND	ND
149	ND	527.422	348,301	ND	ND
150	ND	120.358	426,263	ND	ND
151	10.842	NI	NI	ND	ND

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
152	282	2.860	630	ND	ND
153	ND	137.728	54.260	ND	ND
154	ND	698.735	2.084.264	ND	ND
155	ND	666	468	ND	ND
156	1.066	ND	ND	ND	ND
157	1.502	ND	ND	ND	ND
158	6.623	ND	ND	ND	ND
159	ND	1.112	1.520	ND	ND
160	ND	117.847	1.432.010	ND	ND
161	ND	5.333.626	3.162.332	ND	ND
162	ND	6.418	3.221	ND	ND
163	ND	5.723	8.561	ND	ND
164	7.460	30.729	27.330	ND	ND
165	532	2.406.990	1.303.653	ND	ND
166	1.449	7.730	2.726	ND	ND
167	2.414	90.487	213.131	ND	ND
168	4.641	225.057	7.899	ND	ND
169	ND	ND	881	ND	ND
170	ND	95.270	3.554	ND	ND
171	808	4.566	782	ND	ND
172	38.026	198.646	379.814	ND	ND
173	963.856	27.217	322.887	ND	ND
174	255.684	10.028	48.319	ND	ND
175	1,171.370	ND	201.027	ND	ND
176	789,291	734,171	564,952	ND	ND
177	ND	1.323	3.887	ND	ND
178	1.153	54.288	328.059	ND	ND
179	ND	ND	ND	ND	ND
180	ND	1,685	3.562	ND	ND
181	ND	640	ND	ND	ND
182	446	287.886	693,491	ND	ND
183	169.921	944.220	1.565.281	ND	ND
184	3,029,710	3.407	653,306	ND	ND
185	1,048.120	1,173,041	280,031	ND	ND
186	21.705	344.223	228,074	ND	ND
187	499.523	5.356	80.251	203,062	ND
188	123,450	88.221	208,816	ND	ND
189	7,067	881.210	3,403,986	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
190	ND	30,213	171,203	ND	ND
191	ND	552	ND	ND	ND
192	6,758	ND	414	ND	ND
193	16,537	38,328	321,998	ND	ND
194	ND	137,456	271,785	ND	ND
195	59,290	11,649	44,442	ND	ND
196	3,076	222,233	446,166	ND	ND
197	ND	997	986	ND	ND
198	ND	364	ND	ND	ND
199	ND	ND	2,232	ND	ND
200	ND	ND	ND	ND	ND
201	NI	6,828,930	19,851,990	ND	8,531,151
202	ND	ND	ND	ND	ND
203	ND	41,322	21,802	ND	ND
204	ND	4,960	2,456	ND	ND
205	ND	752	ND	ND	ND
206	ND	2,468	514	ND	ND
207	ND	917	962	ND	ND
208	ND	462	881	ND	ND
209	ND	ND	ND	ND	ND
210	ND	1,861	73,052	ND	ND
211	ND	693	260	ND	ND
212	303	ND	2,202	ND	ND
213	ND	ND	ND	ND	ND
214	ND	ND	ND	ND	ND
215	ND	6,001	5,375	ND	ND
216	ND	1,954	ND	ND	ND
217	ND	ND	ND	ND	ND
218	ND	7,095	851	ND	ND
219	ND	4,782	1,896	ND	ND
220	19,812	25,415	66,320	ND	ND
221	ND	553	ND	ND	ND
222	ND	ND	718	ND	ND
223	ND	370	ND	ND	ND
224	ND	390	ND	ND	ND
225	ND	378	ND	ND	ND
226	ND	11,415	121,345	ND	ND
227	ND	450	ND	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
228	376	ND	ND	ND	ND
229	ND	598	ND	ND	ND
230	1,290	1,082	ND	ND	ND
231	ND	10,482	475	ND	ND
232	ND	4,162	45,590	ND	ND
233	ND	27,000	581	ND	ND
234	ND	ND	ND	ND	ND
235	2,750	ND	ND	ND	ND
236	ND	ND	ND	ND	ND
237	616	ND	479	ND	ND
238	ND	536	1,189	ND	ND
239	ND	ND	ND	ND	ND
240	ND	17,374	529,606	ND	ND
241	311	35,460	548,479	ND	ND
242	ND	ND	ND	ND	ND
243	1,001	7,084	12,425	ND	ND
244	ND	ND	ND	ND	ND
245	ND	686	461	ND	ND
246	ND	461	ND	ND	ND
247	ND	ND	ND	ND	ND
248	ND	ND	893	ND	ND
249	ND	454	ND	ND	ND
250	ND	ND	3,992	ND	ND
251	ND	ND	ND	ND	ND
252	ND	2,941	2,571	ND	ND
253	ND	845	1,993	ND	ND
254	ND	487	510	ND	ND
255	ND	ND	ND	ND	ND
256	ND	1,193	1,144	ND	ND
257	ND	2,171	1,211	ND	ND
258	ND	585	ND	ND	ND
259	ND	2,429	993	ND	ND
260	ND	374	447	ND	ND
261	ND	ND	ND	ND	ND
262	ND	2,396	1,475	ND	ND
263	ND	ND	5387	ND	ND
* 900	ND	ND	ND	ND	ND
* 901	ND	ND	ND	ND	ND

Table B1

PETREX Relative soil gas Response Values (in ion counts)

Study Areas 39 and 40 - Main Base of the Naval Training Area, Orlando, Florida

Sample	PCE	BTEX	GRO	Chlorofor	PAHs
* 902	ND	ND	ND	ND	ND
* 903	ND	ND	ND	ND	ND
* 904	ND	ND	ND	ND	ND
* 905	ND	ND	ND	ND	ND
* 906	ND	ND	ND	ND	ND
* 907	ND	ND	ND	ND	ND
* 908	ND	ND	ND	ND	ND
* 909	ND	ND	ND	ND	ND
* 910	ND	ND	ND	ND	ND
* 911	ND	ND	ND	ND	ND
* 912	ND	ND	ND	ND	ND
* 913	ND	ND	ND	ND	ND

LEGEND:

PCE - Tetrachloroethene
Indicator Mass Peak - 164

BTEX - Benzene, Toluene,Ethylbenzene/xylene(s)
Sum of the C6 - C8 Aromatics
Indicator Mass Peaks - 78, 92, 106

GRO - Gasoline Range Organics
Sum of the C4 - C9 Aliphatics
Indicator Mass Peaks - 56, 70, 84, 98, 112, 126

Chloroform -
Indicator Mass Peak - 83

PAHs - Polycyclic Aromatic Hydrocarbons
Sum of the C11 - C13 Polycyclicaromatics
Indicator Mass Peaks - 149, 163, 178

ND - Not Detected

NI - Not Indentified due to interference from terpenes

* QA/QC Travel Blank Sample

Table 2

PETEX Duplicate Sample Analytical Results

Study Areas 39 and 40 Naval Training Center- Orlando, Florida

Soil Gas Sample	PCE	BTEX	GRO	Duplicate Sample	PCE	BTEX	GRO
27	ND	552	ND	2,027	ND	676	ND
40	ND	327	ND	2,040	ND	325	ND
49	ND	7,549	1,709	2,049	ND	5,242	4,152
52	ND	ND	316	2,052	ND	455	ND
53	ND	ND	438	2,053	ND	ND	ND
61	ND	ND	ND	2,061	ND	ND	ND
69	ND	ND	ND	2,069	ND	ND	ND
76	ND	ND	ND	2,076	ND	ND	ND
79	ND	ND	ND	2,079	ND	ND	ND
87	ND	ND	ND	2,087	ND	544	ND
100	ND	ND	ND	2,100	ND	ND	ND
109	ND	1,087	ND	2,109	ND	521	1,645
124	ND	927,948	62,799	2,124	ND	428,099	10,497
135	ND	2,674	ND	2,135	ND	3,125	ND
138	499	271,719	250,413	2,138	ND	297,920	273,576
166	1,449	7,730	2,726	2,166	520	2,661	675
181	ND	640	ND	2,181	ND	2,782	405
182	446	287,886	693,491	2,182	4,791	860,228	2,025,707
186	21,705	344,223	228,074	2,186	25,008	323,877	239,678
206	ND	2,468	514	2,206	ND	ND	341
218	ND	7,095	851	2,218	ND	3,775	2,386
224	ND	390	ND	2,224	ND	ND	384
231	ND	10,482	475	2,231	ND	1,933	381
242	ND	ND	ND	2,242	ND	315	ND
250	ND	ND	3,992	2,250	ND	ND	387
255	ND	ND	ND	2,255	ND	ND	ND
259	ND	2,429	993	2,259	ND	408	ND

APPENDIX C
SAMPLE MASS SPECTRA

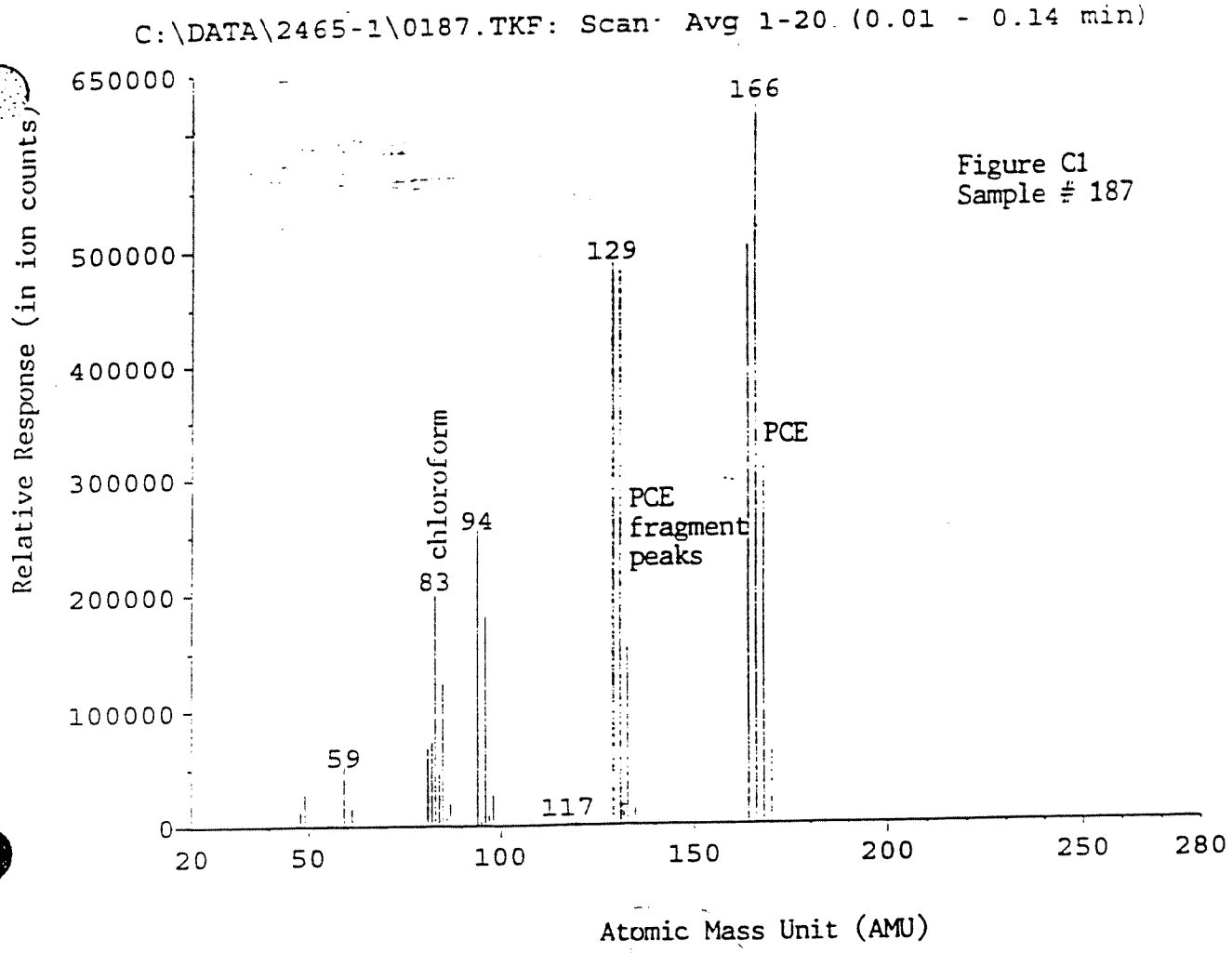


Figure C1
Sample # 187

PlotData

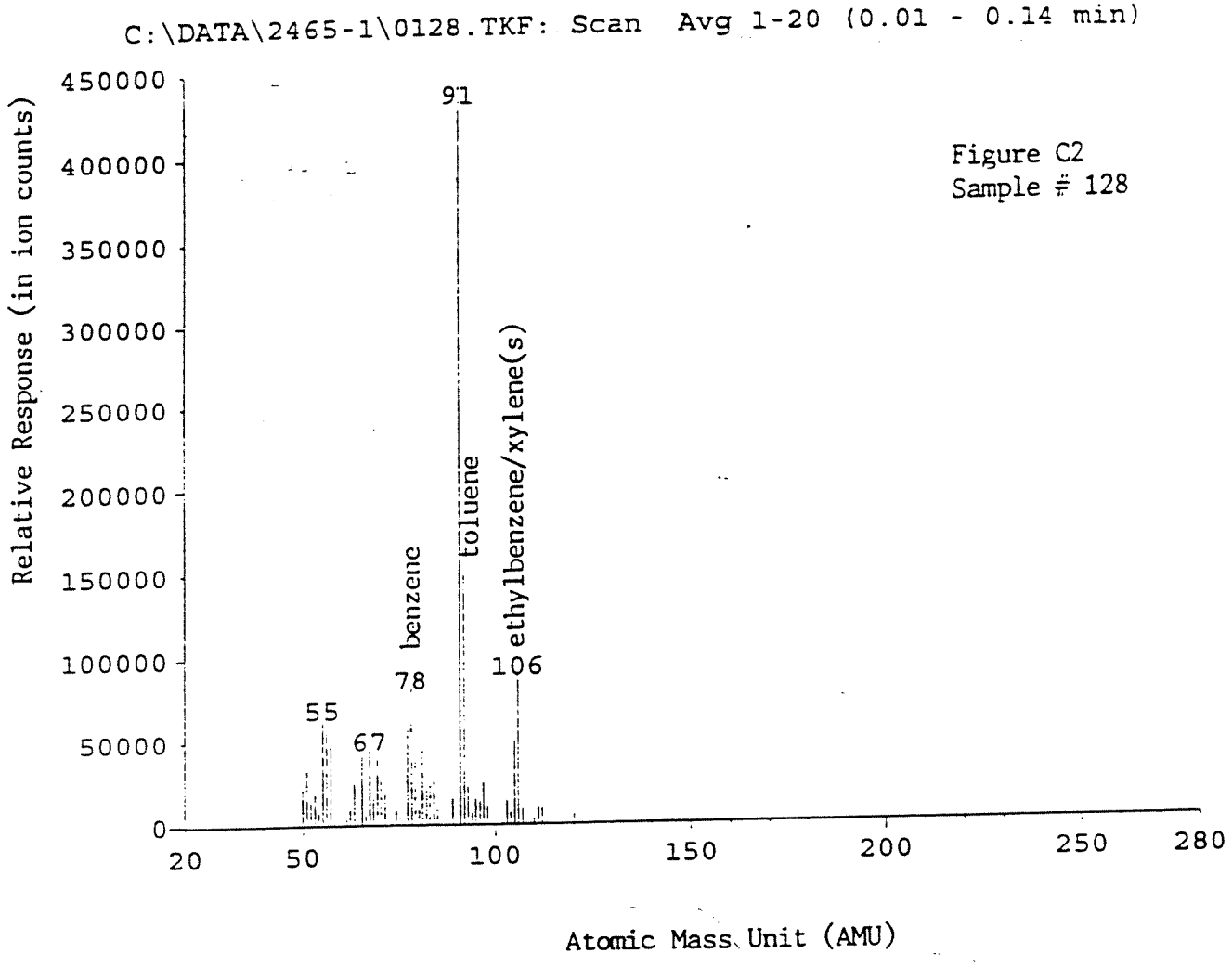


Figure C2
Sample # 128

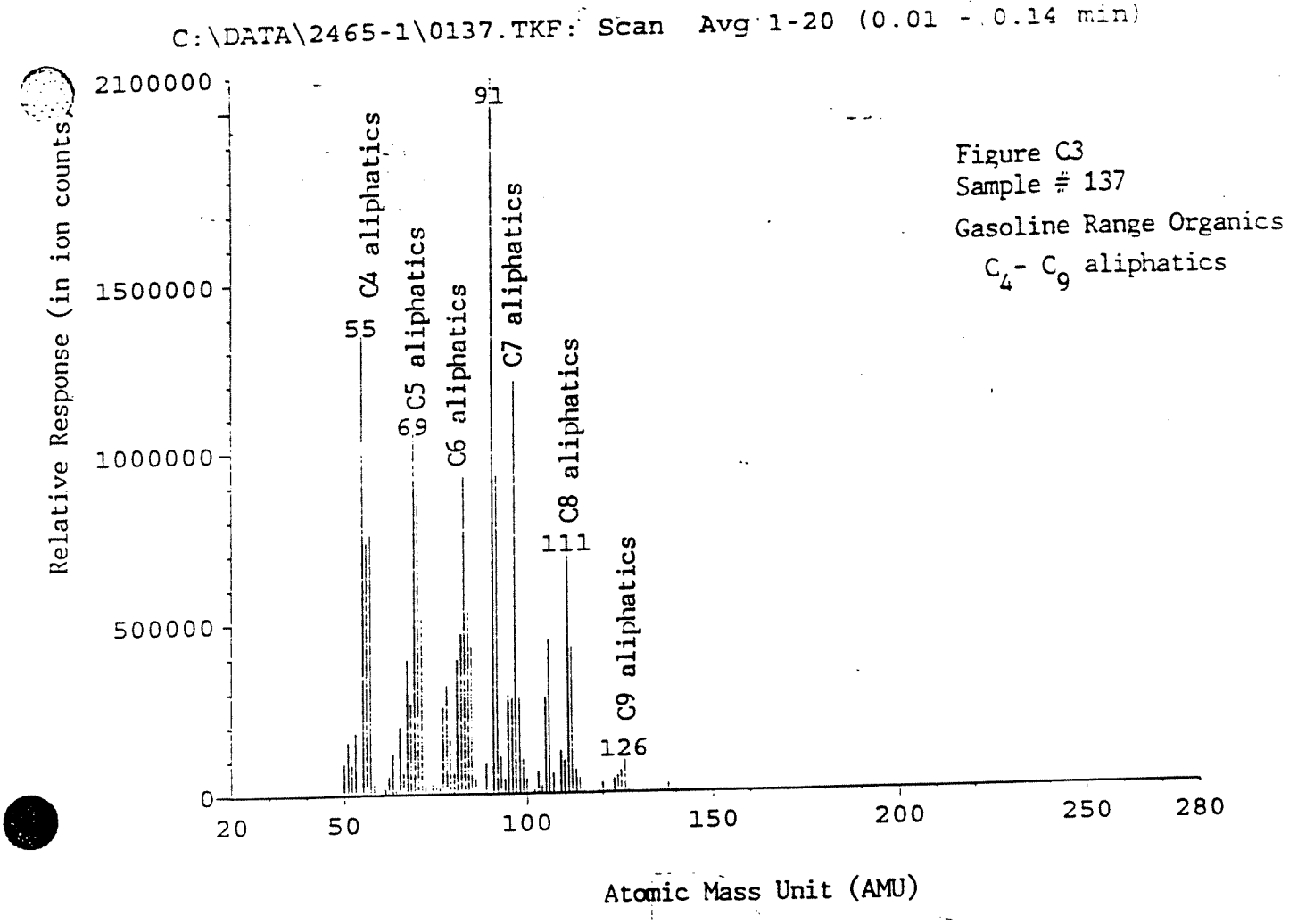


Figure C3
Sample # 137
Gasoline Range Organics
C_4- C_9 aliphatics

PlotData

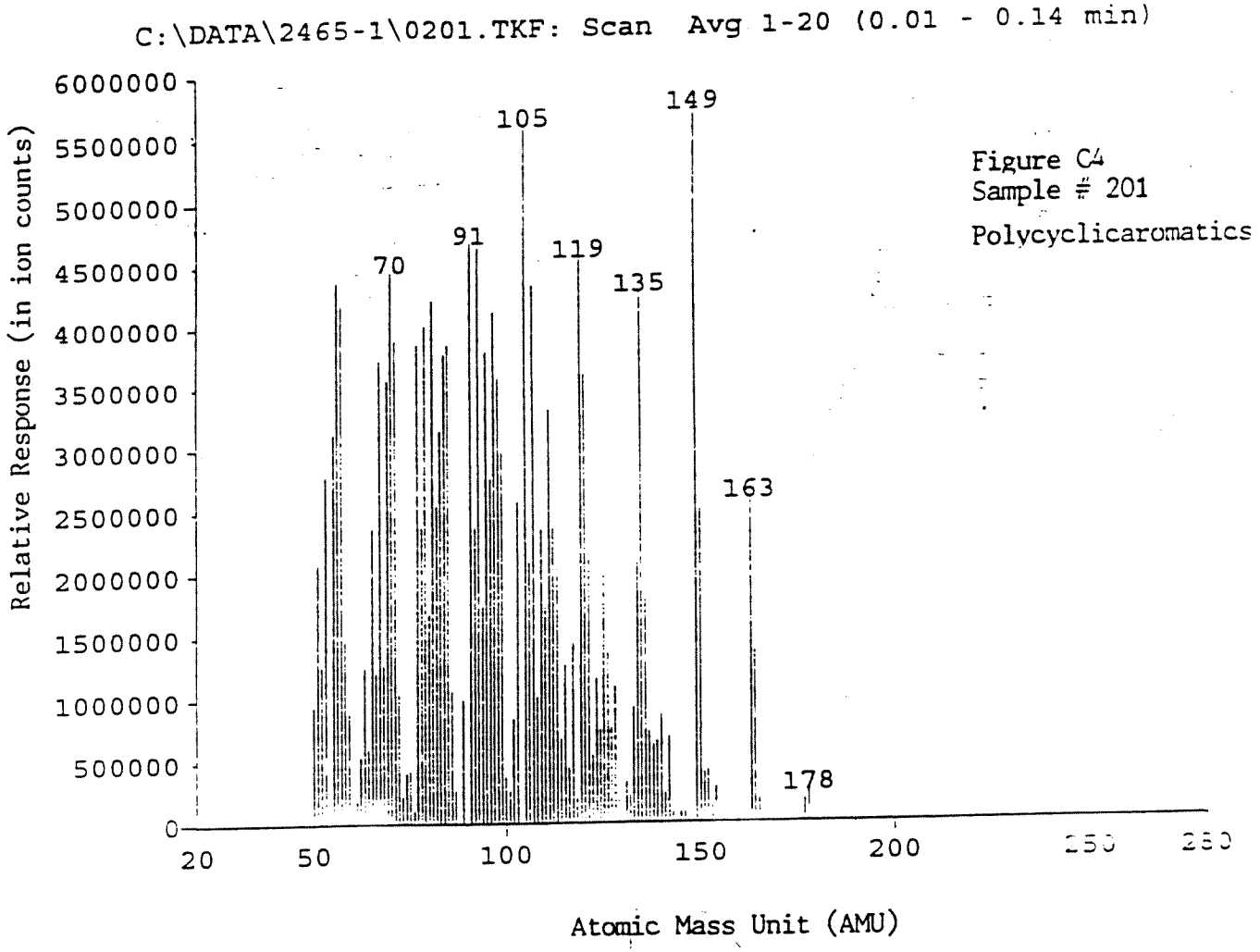


Figure C4
Sample # 201
Polycyclicaromatics

C:\DATA\2465-1\0912.TKF: Scan Avg 1-20 (0.01 - 0.14 min)

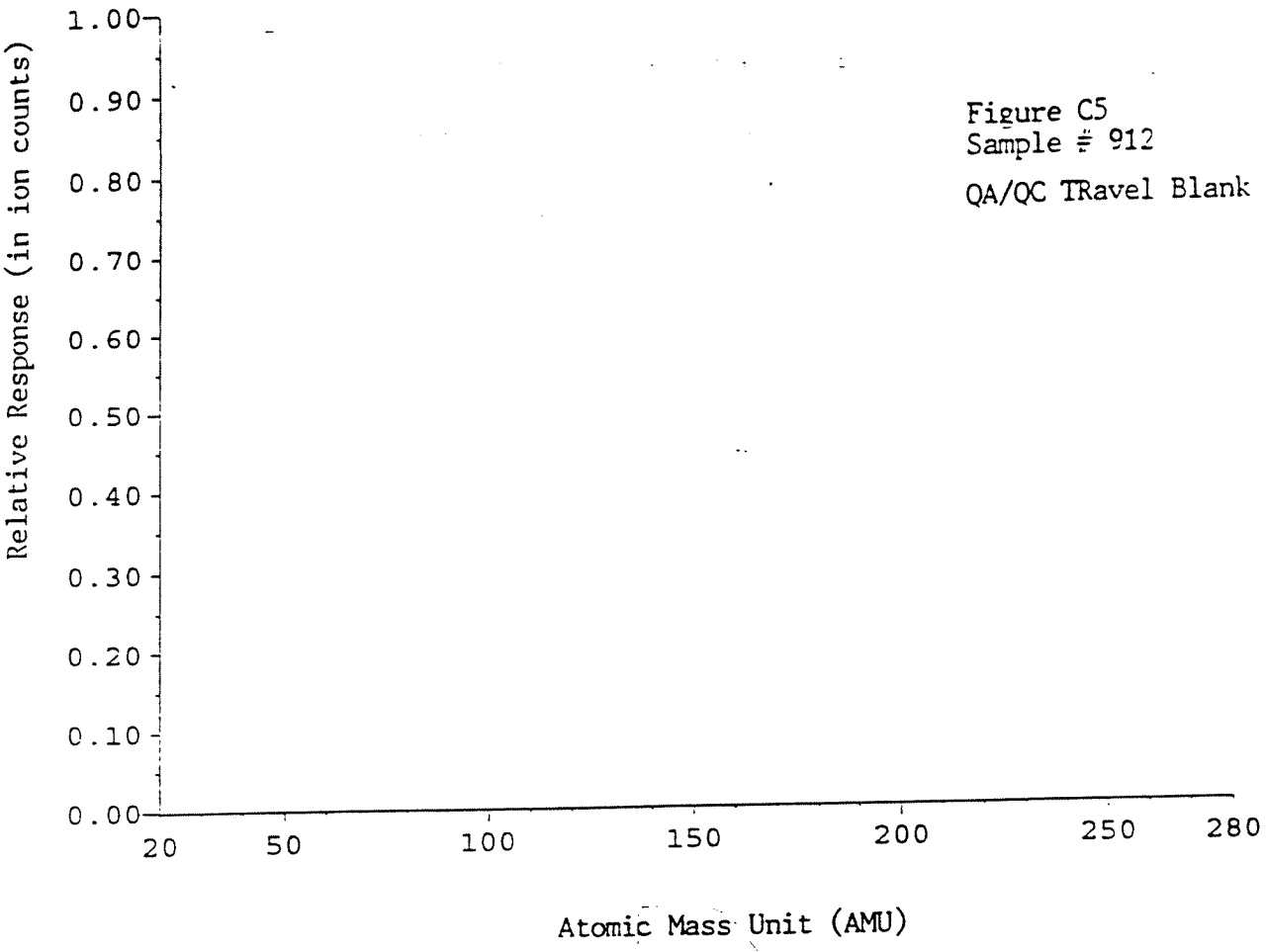
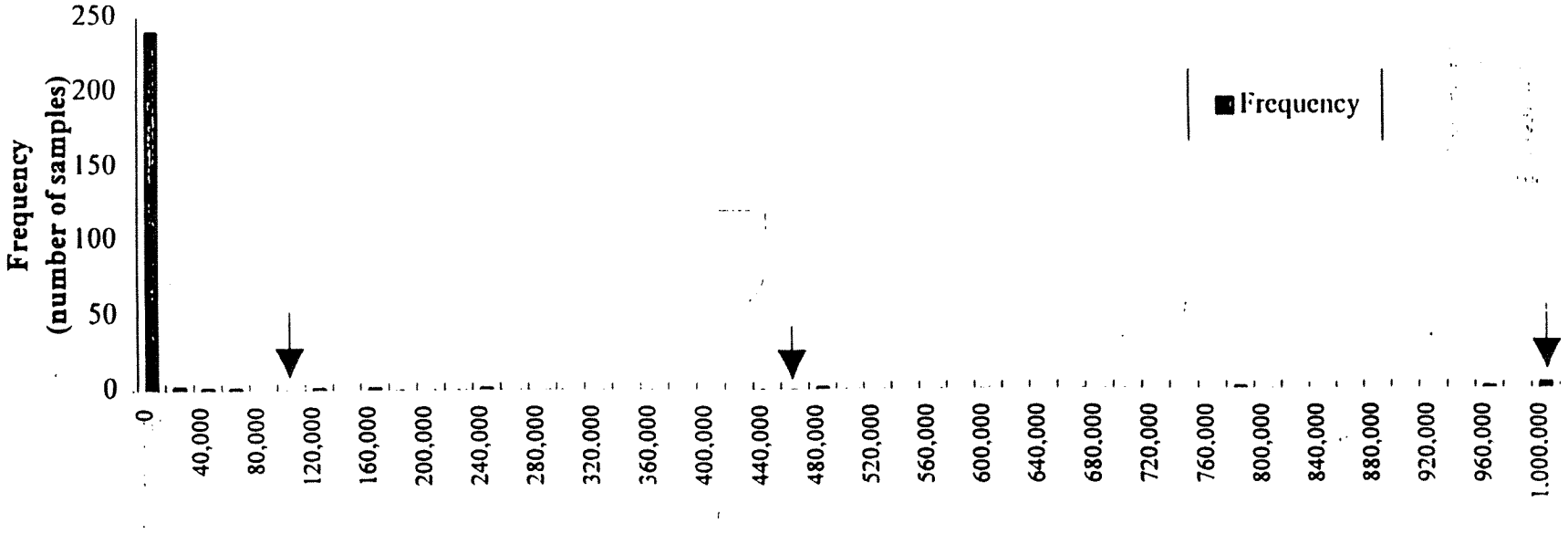


Figure C5
Sample # 912
QA/QC TRavel Blank Sample

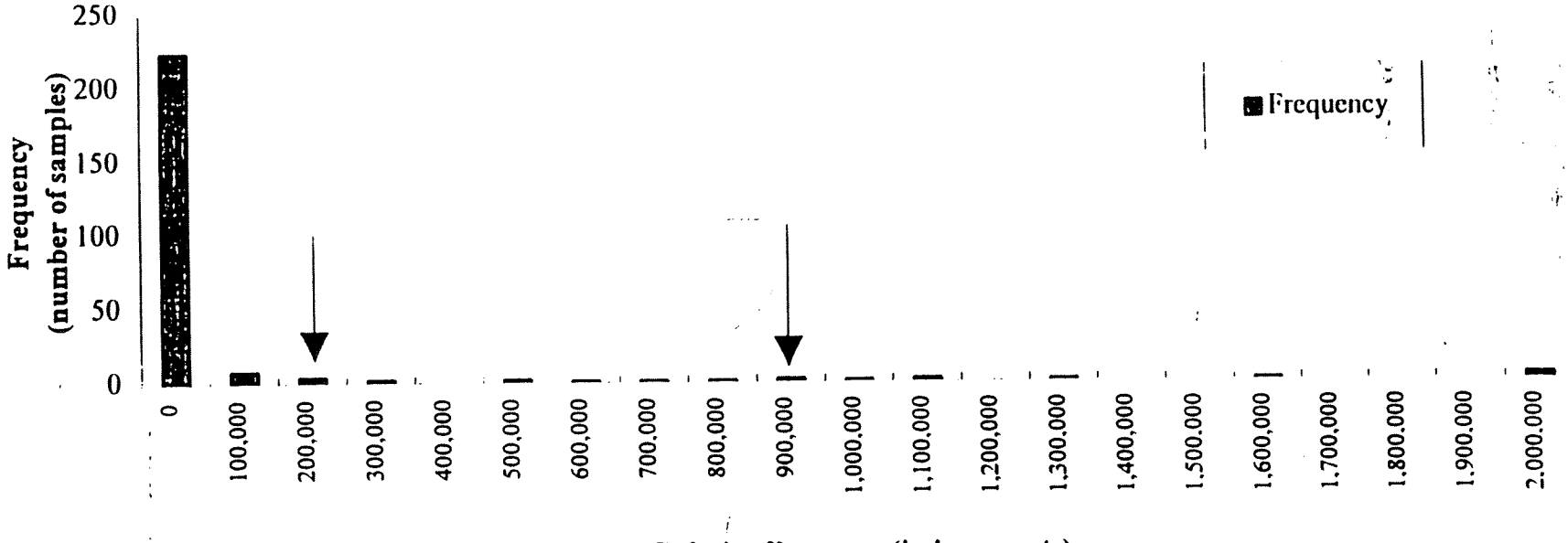
APPENDIX D
HISTOGRAMS USED TO DETERMINE CONTOUR INTERVALS

Figure D1
PCE Histogram



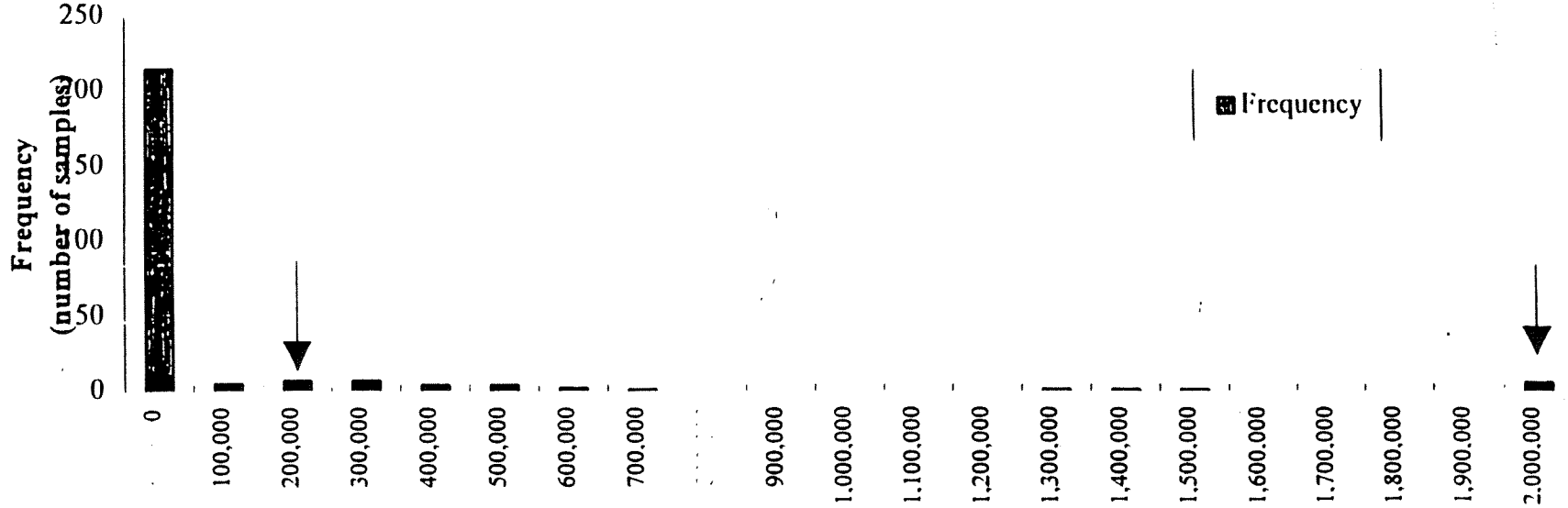
Arrows indicate sample population breaks used to establish contour intervals depicted on Plate 2.

Figure D2
BTEX Histogram



Arrows indicate sample population breaks used to establish contour intervals depicted on Plate 3.

Figure D3
O Histogram



Relative Response (in ion counts)

Arrows indicate sample population breaks used to establish contour intervals depicted on Plate 4.

APPENDIX E
CHAIN OF CUSTODY DOCUMENTS

NERI
Northeast Research Institute LLC
303-238-0090 • 800-845-51[illegible]
Fax 303-238-252[illegible]

Chain of Custody Document

Project Number: E 2465

Company: JBB Environmental Services Inc.

Address: 2590 Executive Center Circle East
Berkeley Building
Tallahassee, Fl 32301

Contact: Mr. Lee H. Green Phone: (904) 656-1293

Number of Samples: 336 Survey samples (40 True Duplicates).
16 TT, 17 Blanks (1 in each bag) Sextra, 5empty

Date Shipped to Field: 2-1-96 By: JDK

Client Use Only

Date Recvied in Field: 3/2/96 By: JMN

Condition Rec'd in Field Good

Date Shipped From Field: 3/4/96 By: JMN

Date Recieved from Field 3-5-96 By: LAP

Number of Samples Rec'd: 267

Condition as Rec'd in Lab: good

Notes:

NORTHEAST RESEARCH INSTITUTE, INC. (NERI)
SAMPLE SUBMITTAL CLIENT FORM

Please return this form with samples to:

NERI
605 Parfet Street
Suite 100
Lakewood, Colorado 80215

40 True Duplicates

*** Call with any questions: (303) 238-0090 ***

NERI PROJECT NUMBER: E2465

NERI PROJECT MANAGER: ~~DAH~~ JDG

DATE SAMPLES SENT TO CLIENT: 2-1-96

Please provide the following information:

DATE SAMPLES SENT TO NERI: 3/4/96

TOTAL NUMBER OF TUBES ENCLOSED: 254

GREATEST SAMPLE NUMBER: SG-263

MISSING SAMPLE NUMBERS: SG-7
Time Calibration Samples SG-2, SG-3, SG-5, SG-6, SG-8
SG-9, SG-11, SG-12 (already shipped)

NOTES:
Unused tubes enclosed

APPENDIX F
RELATIVE RESPONSE MAPS, PLATES 1-4

Northeast Research Institute LLC

PETREX FINGERPRINT TECHNOLOGY

Drawn By: PAL	Project #: 2465	ABB ENVIRONMENTAL SERVICES, INC.	
Checked By: JOG	Date: 03/12/96	STUDY AREA 39 AND STUDY AREA 40 – MAIN BASE	Sampler Locations
Project Mgr: JOG	File Name: 2465-1.DWG	Naval Training Center – Orlando, Florida	PLATE 1

BALL FIELD

BALL FIELD

TENNIS COURT

STUDY AREA 40

STUDY AREA 39

BENNETT ROAD

GRACE HOPPER AVENUE

UNPAVED VEHICLE PARKING

PARKING LOT

GRATE

PLATE

IRON PIPE

CULVERT

STORM DRAIN

DETENTION POND

ELECTRICAL SWITCHBOX

POWER LINES

GROUNDS MAINTAINENCE

HAZARDOUS MATERIALS

CONCRETE PAD

PATCHED ASPHALT

DITCH

NAUTILUS STREET

GRASS

GRAVEL

RAMPS

FORMER

WOODEN BRIDGE

LAKE GEAR

PATH

POWER LINE

MISSING

ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	525	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	587	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	MISSING	MISSING ND	ND	444	ND	ND	ND	ND	ND	ND	ND
955	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
536	ND	ND	ND	ND	ND	345	ND	311	ND	1001	ND		
MISSING	MISSING	MISSING ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
ND	ND	613	ND	419	ND								
ND	567	ND	ND	330	ND	ND	ND	ND					
1052	ND	ND	ND	ND	303								
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	543	ND	ND	ND	ND								
ND	ND	410	406	ND	ND	ND	ND	2390	10059	79796	ND		
ND	ND	ND	521	ND	ND	ND	ND	ND	ND	ND	ND	ND	NI
ND	ND	ND	ND	ND	12839	ND	ND	ND	ND	ND	ND	19812	ND
ND	ND	ND	ND	ND	ND	ND	ND	376	ND	1290	ND	ND	ND
354	ND	436	ND	10842	282	ND	ND	7460	963856	3029710	499623	ND	ND
1200	ND	499	402	ND	ND	ND	ND	532	3802591	1388204	169921	123400	ND
1924	365	ND	ND	ND	ND	ND	ND						
ND	417	ND	ND	ND	ND	ND	ND	1449	808	ND	446	7067	16537
1619	397	ND	848	ND	MISSING ND	MISSING	6623	2414	ND	1153	ND	ND	MISSING 13956
		ND	ND	ND	1066	1502	4641	ND	ND	ND	ND	6758	59290
													3076

25064	1171370	1088120	217065

LEGEND

Features:

PETREX Sampler Location

NI Not Identified

ND Not Detected

Relative Response Values

≥ 1,000,000

500,000 - 999,999

100,000 - 499,999

50 25 0 50 100 150 200

SCALE IN FEET

Northeast Research Institute LLC

PETRE• FINGERPRINT TECHNOLOG.©

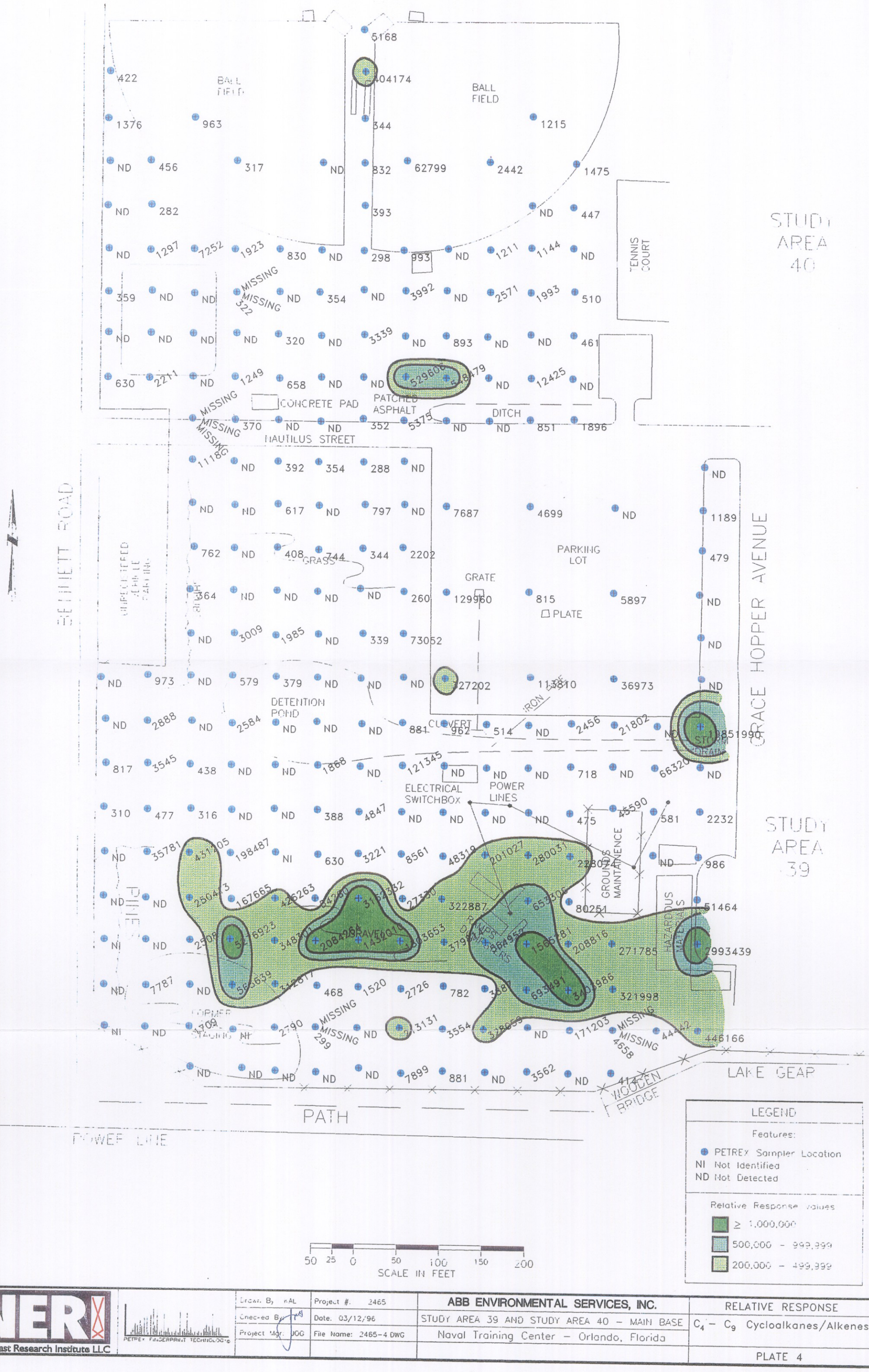
Drawn By: KAL	Project #: 2465	ABB ENVIRONMENTAL SERVICES, INC.
Checked By:	Date: 03/12/96	STUDY AREA 39 AND STUDY AREA 40 - MAIN BASE
Project Mgr: JOG	File Name: 2465-2.DWG	Naval Training Center - Orlando, Florida

RELATIVE RESPONSE

Tetrachloroethene (PCE)

PLATE 2

STUDY AREA 40
STUDY AREA 39
GRACE HOPPER AVENUE
PATH
LAKE GEAR
SCALE IN FEET
LEGEND
RELATIVE RESPONSE
Benzene, Toluene, Ethylbenzene/Xylene(s) (BTEX)
PLATE 3
ABB ENVIRONMENTAL SERVICES, INC.
Naval Training Center – Orlando, Florida
Northern Research Institute LLC



Northeast Research Institute LLC	Drawn By: KAL	Project #: 2465	ABB ENVIRONMENTAL SERVICES, INC.
PETREX FINGERPRINT TECHNOLOGY®	Checked By:	Date: 03/12/96	STUDY AREA 39 AND STUDY AREA 40 – MAIN BASE
	Project Mgr: JOG	File Name: 2465-4.DWG	Naval Training Center – Orlando, Florida

RELATIVE RESPONSE
C_4 – C_9 Cycloalkanes/Alkenes

PLATE 4

APPENDIX F

SUMMARY OF DETECTIONS TABLES - INITIAL INVESTIGATION

Table F-1 Summary of Detections in Surface Soil
Table F-2 Summary of Detections in Subsurface Soil
Table F-3 Summary of Detections in Groundwater

TABLE F-1

SUMMARY OF DETECTIONS IN SURFACE SOIL - INITIAL INVESTIGATION

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40B00101		40B00201		40S00101		40S00201		40S00301	
Sampling Date							19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96	
Feet bls							0-1		0-1		0-1		0-1		0-1	
Volatile organics, ug/kg																
Ethylbenzene		240,000	7,800,000	n	200,000,000	n			1	J			2	J	NA	
Toluene		300,000	16,000,000	n	410,000,000	n					21		190		NA	
Xylene (total)		290,000	160,000,000	n	1,000,000,000	n			3	J	1	J	8	J	NA	
Semivolatile organics, ug/kg																
1-Methylnaphthalene		290,000	ND		ND										NA	
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n									NA	
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n									NA	
Acenaphthylene		1,100,000	2,300,000	n	61,000,000	n	74	J							NA	
Anthracene		19,000,000	23,000,000	n	610,000,000	n									NA	
Benzo(a)anthracene		1,400	880	c	7,800	c	210	J	59	J			46	J	NA	
Benzo(a)pyrene		100	88	c	780	c	200	J	66	J			49	J	NA	
Benzo(b)fluoranthene		1,400	880	c	7,800	c	140	J	63	J			57	J	NA	
Benzo(g,h,i)perylene		2,300,000	2,300,000	n	61,000,000	n	160	J	66	J			51	J	NA	
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	210	J	71	J			43	J	NA	
bis(2-Ethylhexyl)phthala		75,000	46,000	c	410,000	c	50	J							NA	
Chrysene		140,000	88,000	c	780,000	c	300	J	92	J			62	J	NA	
Dibenz(a,h)anthracene		100	88	c	780	c	51	J							NA	
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	350	J	99	J			92	J	NA	
Fluorene		2,100,000	3,100,000	n	82,000,000	n									NA	
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	130	J	52	J			43	J	NA	
Naphthalene		1,000,000	3,100,000	n	82,000,000	n									NA	
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n	300	J	46	J			63	J	NA	
Pyrene		2,200,000	2,300,000	n	61,000,000	n	530		140	J			91	J	NA	

Appendix F
Table F-1. Summary of Detections Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40B00101		40B00201		40S00101		40S00201		40S00301	
Sampling Date							19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96	
Feet bls							0-1		0-1		0-1		0-1		0-1	
Pesticides/PCBs, ug/kg																
4,4'-DDT		3,200	1900	c	17,000	c			5.1	J					NA	
alpha-Chlordane		3,000	490	c	4400	c							13		NA	
Dieldrin		70	40	c	360	c			6.3	J					NA	
gamma-Chlordane		3,000	490	c	4400	c							8		NA	
Inorganics, mg/kg																
Aluminum	2088	72,000	78,000	n	1,000,000	n	255	J	764	J	28.6	B	1080	J	NA	
Arsenic	1	0.8	0.43 /23	c/n	3.8 /610	c/n	0.51	B	0.9	B			1.1	B		
Barium	8.7	105	5,500	n	140,000	n	12.2	B	8.9	B	1.8	B	8	B	NA	
Cadmium		75	39	n	1000	n					0.61	B			NA	
Calcium	25295	ND	1,000,000		1,000,000		1930		9430		142	B	2650		NA	
Chromium	4.6	290	390	n	10,000	n	1.1	B	2.7				2.7		NA	
Copper	4.1	105	3,100	n	82,000	n	6.2		4.6	B	0.99	B	3.7	B	NA	
Iron	712	23000	23,000	n	610,000	n	462		400		35.8		740		NA	
Lead	14.5	500	400		400		242		43.5		4.2		19.1		NA	
Magnesium	328	ND	460,468		460,468		73	B	114	B	6.4	B	74.9	B	NA	
Manganese	8.1	1600	1800	n	47,000	n	14.3		11.3		1.4	B	10.3		NA	
Mercury	0.07	3.7	23	n	610	n			0.03	B	0.05	B	0.07	B	NA	
Sodium	91.4	ND	1,000,000		1,000,000				28.6	B					NA	
Vanadium	3.1	15	550	n	14,000	n	0.86	B	1.2	B			1.1	B	NA	
Zinc	17.2	23,000	23,000	n	610,000	n	42.8		20.4		9.5		46.7		NA	
Radiological, pCi/g																
Gross Alpha	ND	ND	ND		ND		NA		NA		NA		NA		0 01	
Gross Alpha, Uncertaint	ND	ND	ND		ND		NA		NA		NA		NA		0 05	
Gross Beta	ND	ND	ND		ND		NA		NA		NA		NA		0 04	
Gross Beta, Uncertainty	ND	ND	ND		ND		NA		NA		NA		NA		0 09	
General Chemistry, mg/kg																
Total Petroleum Hydroc	ND	350	ND		ND		20.3		7.4				10.2		NA	

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S00701 4-Dec-96 0-1	40S01001 4-Dec-96 0-1	40S01801 4-Dec-96 0-1	40S02401 5-Dec-96 0-1	40S02801 5-Dec-96 0-1
Sampling Date											
Feet bls											
Volatile organics, ug/kg											
Ethylbenzene		240,000	7,800,000	n	200,000,000	n	NA	NA	NA	NA	NA
Toluene		300,000	16,000,000	n	410,000,000	n	NA	NA	NA	NA	NA
Xylene (total)		290,000	160,000,000	n	1,000,000,000	n	NA	NA	NA	NA	NA
Semivolatile organics, ug/kg											
1-Methylnaphthalene		290,000	ND		ND		5.5	4.5	18		
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n	9	8	30	4	4
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n	3.5	3			
Acenaphthylene		1,100,000	2,300,000	n	61,000,000	n	19	29	46	10	38
Anthracene		19,000,000	23,000,000	n	610,000,000	n	90	100	42	36	50
Benzo(a)anthracene		1,400	880	c	7,800	c	85	160	55	19	38
Benzo(a)pyrene		100	88	c	780	c	**120**	**270**	90	43	75
Benzo(b)fluoranthene		1,400	880	c	7,800	c	55	120	24	24	34
Benzo(g,h,i)perylene		2,300,000	2,300,000	n	61,000,000	n	43	46	12	24	9.5
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	55	120	24	24	34
bis(2-Ethylhexyl)phthala		75,000	46,000	c	410,000	c	NA	NA	NA	NA	NA
Chrysene		140,000	88,000	c	780,000	c	100	160	60	23	50
Dibenz(a,h)anthracene		100	88	c	780	c	4	15	4	4	
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	95	150	42	18	60
Fluorene		2,100,000	3,100,000	n	82,000,000	n	4	3.5	2.5	3	2.5
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	34	47	14	18	12
Naphthalene		1,000,000	3,100,000	n	82,000,000	n	14	8.5	24	5	4.5
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n	95	55	27	20	20
Pyrene		2,200,000	2,300,000	n	61,000,000	n	120	220	65	32	100

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S00701	40S01001	40S01801	40S02401	40S02801
Sampling Date							4-Dec-96	4-Dec-96	4-Dec-96	5-Dec-96	5-Dec-96
Feet bls							0-1	0-1	0-1	0-1	0-1
Pesticides/PCBs, ug/kg											
4,4'-DDT		3,200	1900	c	17,000	c	NA	NA	NA	NA	NA
alpha-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Dieldrin		70	40	c	360	c	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Inorganics, mg/kg											
Aluminum	2088	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA
Arsenic	1	0.8	0.43 /23	c/n	3.8 /610	c/n	**2.2**	1			**3.1**
Barium	8.7	105	5,500	n	140,000	n	NA	NA	NA	NA	NA
Cadmium		75	39	n	1000	n	NA	NA	NA	NA	NA
Calcium	25295	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Chromium	4.6	290	390	n	10,000	n	NA	NA	NA	NA	NA
Copper	4.1	105	3,100	n	82,000	n	NA	NA	NA	NA	NA
Iron	712	23000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Lead	14.5	500	400		400		NA	NA	NA	NA	NA
Magnesium	328	ND	460,468		460,468		NA	NA	NA	NA	NA
Manganese	8.1	1600	1800	n	47,000	n	NA	NA	NA	NA	NA
Mercury	0.07	3.7	23	n	610	n	NA	NA	NA	NA	NA
Sodium	91.4	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Vanadium	3.1	15	550	n	14,000	n	NA	NA	NA	NA	NA
Zinc	17.2	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Radiological, pCi/g											
Gross Alpha	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Alpha, Uncertaint	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta, Uncertainty	ND	ND	ND		ND		NA	NA	NA	NA	NA
General Chemistry, mg/kg											
Total Petroleum Hydroc	ND	350	ND		ND		NA	NA	NA	NA	NA

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier Sampling Date Feet bls	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S02901 9/23/97 0.25	40S02902 9/23/97 0.75	40B02901 9/23/97 1.50	40S03001 9/23/97 0.25	40S03002 9/23/97 0.75
Volatile organics, ug/kg											
Ethylbenzene		240,000	7,800,000	n	200,000,000	n	NA	NA	NA	NA	NA
Toluene		300,000	16,000,000	n	410,000,000	n	NA	NA	NA	NA	NA
Xylene (total)		290,000	160,000,000	n	1,000,000,000	n	NA	NA	NA	NA	NA
Semivolatile organics, ug/kg											
1-Methylnaphthalene		290,000	ND		ND		1800	2500	770	1400	350
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n	3400	2400	790	1400	500
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n	2000	2100	710	1300	420
Acenaphthylene		1,100,000	2,300,000	n	61,000,000	n					
Anthracene		19,000,000	23,000,000	n	610,000,000	n	100	240	80	93	21
Benzo(a)anthracene		1,400	880	c	7,800	c	770	1200	390	380	150
Benzo(a)pyrene		100	88	c	780	c	**930**	**1500**	**540**	**710**	**240**
Benzo(b)fluoranthene		1,400	880	c	7,800	c	900	**1500**	480	720	230
Benzo(g,h,i)perylene		2,300,000	2,300,000	n	61,000,000	n	880	1300	380	860	330
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	480	820	260	410	110
bis(2-Ethylhexyl)phthala		75,000	46,000	c	410,000	c	NA	NA	NA	NA	NA
Chrysene		140,000	88,000	c	780,000	c	1500	1400	480	700	230
Dibenz(a,h)anthracene		100	88	c	780	c					
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n		2900	1300	1300	830
Fluorene		2,100,000	3,100,000	n	82,000,000	n	75	44		54	
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	580	1000	310	600	190
Naphthalene		1,000,000	3,100,000	n	82,000,000	n					
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n	1500	1100	330	510	140
Pyrene		2,200,000	2,300,000	n	61,000,000	n	2200	1900	1000	860	820

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S02901 9/23/97 0.25	40S02902 9/23/97 0.75	40B02901 9/23/97 1.50	40S03001 9/23/97 0.25	40S03002 9/23/97 0.75
Sampling Date											
Feet bls											
Pesticides/PCBs, ug/kg											
4,4'-DDT		3,200	1900	c	17,000	c	NA	NA	NA	NA	NA
alpha-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Dieldrin		70	40	c	360	c	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Inorganics, mg/kg											
Aluminum	2088	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA
Arsenic	1	0.8	0.43 /23	c/n	3.8 /610	c/n	NA	NA	NA	**7.7**	**15**
Barium	8.7	105	5,500	n	140,000	n	NA	NA	NA	NA	NA
Cadmium		75	39	n	1000	n	NA	NA	NA	NA	NA
Calcium	25295	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Chromium	4.6	290	390	n	10,000	n	NA	NA	NA	NA	NA
Copper	4.1	105	3,100	n	82,000	n	NA	NA	NA	NA	NA
Iron	712	23000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Lead	14.5	500	400		400		NA	NA	NA	NA	NA
Magnesium	328	ND	460,468		460,468		NA	NA	NA	NA	NA
Manganese	8.1	1600	1800	n	47,000	n	NA	NA	NA	NA	NA
Mercury	0.07	3.7	23	n	610	n	NA	NA	NA	NA	NA
Sodium	91.4	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Vanadium	3.1	15	550	n	14,000	n	NA	NA	NA	NA	NA
Zinc	17.2	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Radiological, pCi/g											
Gross Alpha	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Alpha, Uncertaint	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta, Uncertainty	ND	ND	ND		ND		NA	NA	NA	NA	NA
General Chemistry, mg/kg											
Total Petroleum Hydroc	ND	350	ND		ND		NA	NA	NA	NA	NA

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40B03003 9/23/97 1.50	40S03101 9/23/97 0.25	40S03102 9/23/97 0.75	40B03101 9/23/97 1.50	40S03301 11/17/98 0-1
Sampling Date											
Feet bls											
Volatile organics, ug/kg											
Ethylbenzene		240,000	7,800,000	n	200,000,000	n	NA	NA	NA	NA	NA
Toluene		300,000	16,000,000	n	410,000,000	n	NA	NA	NA	NA	NA
Xylene (total)		290,000	160,000,000	n	1,000,000,000	n	NA	NA	NA	NA	NA
Semivolatile organics, ug/kg											
1-Methylnaphthalene		290,000	ND		ND				410		
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n			520		
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n	190		530		
Acenaphthylene		1,100,000	2,300,000	n	61,000,000	n					
Anthracene		19,000,000	23,000,000	n	610,000,000	n			53		
Benzo(a)anthracene		1,400	880	c	7,800	c	67	50	140		**2100**
Benzo(a)pyrene		100	88	c	780	c	**150**	**120**	**160**		**2700**
Benzo(b)fluoranthene		1,400	880	c	7,800	c	110	66	140		2200
Benzo(g,h,i)perylene		2,300,000	2,300,000	n	61,000,000	n			160		1800
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	82	19	65		1200
bis(2-Ethylhexyl)phthala		75,000	46,000	c	410,000	c	NA	NA	NA	NA	NA
Chrysene		140,000	88,000	c	780,000	c	120	99	190		2600
Dibenz(a,h)anthracene		100	88	c	780	c					
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	480	280	630	100	4200
Fluorene		2,100,000	3,100,000	n	82,000,000	n					
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	98	54	100		
Naphthalene		1,000,000	3,100,000	n	82,000,000	n					
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n	65	42	200		
Pyrene		2,200,000	2,300,000	n	61,000,000	n	640	500	800	410	4000

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40B03003	40S03101	40S03102	40B03101	40S03301
Sampling Date							9/23/97	9/23/97	9/23/97	9/23/97	11/17/98
Feet bls							1.50	0.25	0.75	1.50	0-1
Pesticides/PCBs, ug/kg											
4,4'-DDT		3,200	1900	c	17,000	c	NA	NA	NA	NA	NA
alpha-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Dieldrin		70	40	c	360	c	NA	NA	NA	NA	NA
gamma-Chlordane		3,000	490	c	4400	c	NA	NA	NA	NA	NA
Inorganics, mg/kg											
Aluminum	2088	72,000	78,000	n	1,000,000	n	NA	NA	NA	NA	NA
Arsenic	1	0.8	0.43 /23	c/n	3.8 /610	c/n	**7**		**1.2**	**2.1**	**7.4**
Barium	8.7	105	5,500	n	140,000	n	NA	NA	NA	NA	NA
Cadmium		75	39	n	1000	n	NA	NA	NA	NA	NA
Calcium	25295	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Chromium	4.6	290	390	n	10,000	n	NA	NA	NA	NA	NA
Copper	4.1	105	3,100	n	82,000	n	NA	NA	NA	NA	NA
Iron	712	23000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Lead	14.5	500	400		400		NA	NA	NA	NA	NA
Magnesium	328	ND	460,468		460,468		NA	NA	NA	NA	NA
Manganese	8.1	1600	1800	n	47,000	n	NA	NA	NA	NA	NA
Mercury	0.07	3.7	23	n	610	n	NA	NA	NA	NA	NA
Sodium	91.4	ND	1,000,000		1,000,000		NA	NA	NA	NA	NA
Vanadium	3.1	15	550	n	14,000	n	NA	NA	NA	NA	NA
Zinc	17.2	23,000	23,000	n	610,000	n	NA	NA	NA	NA	NA
Radiological, pCi/g											
Gross Alpha	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Alpha, Uncertaint	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta	ND	ND	ND		ND		NA	NA	NA	NA	NA
Gross Beta, Uncertainty	ND	ND	ND		ND		NA	NA	NA	NA	NA
General Chemistry, mg/kg											
Total Petroleum Hydroc	ND	350	ND		ND		NA	NA	NA	NA	NA

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S03401	40S03501
Sampling Date							11/17/98	11/17/98
Feet bls							0-1	0-1
Volatile organics, ug/kg								
Ethylbenzene		240,000	7,800,000	n	200,000,000	n	NA	NA
Toluene		300,000	16,000,000	n	410,000,000	n	NA	NA
Xylene (total)		290,000	160,000,000	n	1,000,000,000	n	NA	NA
Semivolatile organics, ug/kg								
1-Methylnaphthalene		290,000	ND		ND		ND	
2-Methylnaphthalene		1,500,000	3,100,000	n	82,000,000	n	ND	
Acenaphthene		2,300,000	4,700,000	n	120,000,000	n	ND	
Acenaphthylene		1,100,000	2,300,000	n	61,000,000	n	ND	
Anthracene		19,000,000	23,000,000	n	610,000,000	n	ND	
Benzo(a)anthracene		1,400	880	c	7,800	c	ND	59
Benzo(a)pyrene		100	88	c	780	c	ND	**120**
Benzo(b)fluoranthene		1,400	880	c	7,800	c	ND	81
Benzo(g,h,i)perylene		2,300,000	2,300,000	n	61,000,000	n	ND	62
Benzo(k)fluoranthene		15,000	8,800	c	78,000	c	ND	51
bis(2-Ethylhexyl)phthala		75,000	46,000	c	410,000	c	ND	NA
Chrysene		140,000	88,000	c	780,000	c	ND	62
Dibenz(a,h)anthracene		100	88	c	780	c	ND	
Fluoranthene		2,800,000	3,100,000	n	82,000,000	n	ND	130
Fluorene		2,100,000	3,100,000	n	82,000,000	n	ND	
Indeno(1,2,3-cd)pyrene		1,500	880	c	7,800	c	ND	47
Naphthalene		1,000,000	3,100,000	n	82,000,000	n	ND	
Phenanthrene		1,900,000	2,300,000	n	61,000,000	n	ND	
Pyrene		2,200,000	2,300,000	n	61,000,000	n	ND	90

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil		RBC [3] for Industrial Soil		40S03401 11/17/98 0-1	40S03501 11/17/98 0-1
Sampling Date								
Feet bls								
Pesticides/PCBs, ug/kg								
4,4'-DDT		3,200	1900	c	17,000	c	NA	NA
alpha-Chlordane		3,000	490	c	4400	c	NA	NA
Dieldrin		70	40	c	360	c	NA	NA
gamma-Chlordane		3,000	490	c	4400	c	NA	NA
Inorganics, mg/kg								
Aluminum	2088	72,000	78,000	n	1,000,000	n	NA	NA
Arsenic	1	0.8	0.43 /23	c/n	3.8 /610	c/n	ND	**2.1**
Barium	8.7	105	5,500	n	140,000	n	NA	NA
Cadmium		75	39	n	1000	n	NA	NA
Calcium	25295	ND	1,000,000		1,000,000		NA	NA
Chromium	4.6	290	390	n	10,000	n	NA	NA
Copper	4.1	105	3,100	n	82,000	n	NA	NA
Iron	712	23000	23,000	n	610,000	n	NA	NA
Lead	14.5	500	400		400		NA	NA
Magnesium	328	ND	460,468		460,468		NA	NA
Manganese	8.1	1600	1800	n	47,000	n	NA	NA
Mercury	0.07	3.7	23	n	610	n	NA	NA
Sodium	91.4	ND	1,000,000		1,000,000		NA	NA
Vanadium	3.1	15	550	n	14,000	n	NA	NA
Zinc	17.2	23,000	23,000	n	610,000	n	NA	NA
Radiological, pCi/g								
Gross Alpha	ND	ND	ND		ND		NA	NA
Gross Alpha, Uncertaint	ND	ND	ND		ND		NA	NA
Gross Beta	ND	ND	ND		ND		NA	NA
Gross Beta, Uncertainty	ND	ND	ND		ND		NA	NA
General Chemistry, mg/kg								
Total Petroleum Hydroc	ND	350	ND		ND		NA	NA

Appendix F
Table F-1. Summary of Detections in Surface Soil
Study Area 40

Naval Training Center
Orlando, Florida

NOTES:

[1] The background screening value is twice the average of detected concentrations for inorganic analytes.

[2] SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
Values indicated are for direct exposure residential scenario (SCTL Residential) and leachability based on groundwater criteria.
Chromium values are for Chromium VI.

[3] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium, potassium and sodium) screening values were derived based on recommended daily allowances (RDAs).
RBCs for phenanthrene and benzo(g,h,i)pyrelene are not available, values are based on pyrene.
RBC for alpha-Chlordane and gamma-Chlordane is based on Chlordane.

n = noncarcinogenic pathway
c = carcinogenic pathway
NA = Not analyzed
ND = Not determined.
DDT = dichlorodiphenyltrichloroethene.
mg/kg = milligrams per kilogram.
ug/kg = micrograms per kilogram.
pCi/g = picocuries per gram.
PCB = polychlorinated biphenyl.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U.S. Environmental Protection Agency.
B = Reported concentration is between the instrument detection limit (IDL) and Contract Required Detection Limit (CRDL).
J = Reported concentration is an estimated quantity.
All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight, radiological parameters in picocuries per gram (pCi/g).
Bold/shaded values indicate exceedance of regulatory guidance (SCGs) and background.
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE F-2

SUMMARY OF DETECTIONS IN SUBSURFACE SOIL - INITIAL INVESTIGATION

Appendix F
Table F-2. Summary of Detections in Subsurface Soil
Study Area 40

Naval Training Center
Orlando, Florida

Identifier	Background Screening [1]	SCTL [2] Residential	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	40B00102	40B00202	40B00301
Depth bls (feet)					10-12	10-12	5-7
Sampling Date					3/19/96	3/19/96	8/29/96
Volatile organics, ug/kg							
Xylene (total)		290,000	160,000,000 n	1,000,000,000 n	1 J		NA
Semivolatile organics, ug/kg							NA
bis(2-Ethylhexyl)phthalate		75,000	46,000 c	410,000 c	560		NA
Pesticides/PCBs, ug/kg							
4,4'-DDD		4,600	2,700 c	24,000 c		1.4 J	NA
4,4'-DDT		3,200	1900 c	17,000 c		9.3	NA
Inorganics, mg/kg							
Aluminum	2088	72,000	78,000 n	1,000,000 n	15.6 BJ	17.1 BJ	NA
Barium	8.7	105	5,500 n	140,000 n	0.46 BJ	0.4 BJ	NA
Calcium	25295	ND	1,000,000	1,000,000	92.5 B	69.7 B	NA
Chromium	4.6	290	390 n	10,000 n	1.5 B	1.8 B	NA
Copper	4.1	105	3,100 n	82,000 n	0.59 B	1 B	NA
Iron	712	23000	23,000 n	610,000 n	142	257	NA
Lead	14.5	500	400	400	0.71 B		NA
Manganese	8.1	1600	1800 n	47,000 n	1.6 B	2 B	NA
Zinc	17.2	23,000	23,000 n	610,000 n	3.3 B	6	NA
Radiological, pCi/g							
Gross Alpha	ND	NA	ND	ND	NA	NA	0.01
Gross Alpha, Uncertainty	ND	NA	ND	ND	NA	NA	0.05
Gross Beta	ND	NA	ND	ND	NA	NA	0.18
Gross Beta, Uncertainty	ND	NA	ND	ND	NA	NA	0.09

Appendix F
Table F-2. Summary of Detections in Subsurface Soil
Study Area 40

Naval Training Center
Orlando, Florida

NOTES:

[1] The background screening value is twice the average of detected concentrations for inorganic analytes.

[2] SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.

Values indicated are for direct exposure residential scenario (SCTL Residential) and leachability based on groundwater criteria. Florida groundwater guidance concentrations in site groundwater.

[3] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium) screening values were derived based on recommended daily allowances (RDAs).

n = noncarcinogenic pathway
c = carcinogenic pathway
NA = Not applicable (for SCGs) or not analyzed.
ND = Not determined.
DDD = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethene
mg/kg = milligrams per kilogram.
ug/kg = micrograms per kilogram.
pCi/g = picocuries per gram.
PCB = polychlorinated biphenyl.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U.S. Environmental Protection Agency.
B = Reported concentration is between the instrument detection limit (IDL) and Contract Required Detection Limit (CRDL).
J = Reported concentration is an estimated quantity.
All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight, radiological parameters in picocuries per gram (pCi/g).
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE F-3

SUMMARY OF DETECTIONS IN GROUNDWATER - INITIAL INVESTIGATION

Appendix F
Table F-3. Summary of Detections in Groundwater
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	Background Screening [1]		FDEPGCTL		FEDMCL	RBC [2] for Tap Water		40G00101		40G00102	40H00102	40G00201		40G00201D
Sampling Date								1-Apr-96		29-Aug-96	29-Aug-96	1-Apr-96		1-Apr-96
Volatile organics, ug/L														
Chloromethane			2.7	c	ND	1.4	c	0.3	J	NA	NA			
Inorganics, ug/L														
Aluminum	4067		200	s	ND	37,000	n	2560	J	NA	NA	342	J	NA
Antimony	4.1		6	p	6	15	n	13.9		NA	NA			NA
Arsenic	5		50	p	50	0.045 /11	n	24.5		NA	NA	2.8	B	NA
Calcium	36830		ND		ND	1,000,000		31400		NA	NA	53600		NA
Copper	5.4		1000	s	ND	1,500	n	5	J	NA	NA			NA
Lead	4		15	p	15	15		1.4	J	NA	NA			NA
Magnesium	4560		ND		ND	118,807		2400	B	NA	NA	4730	B	NA
Mercury	0.12		2	p	2	11	n	0.14	J	NA	NA			NA
Potassium	5400		ND		ND	297,016		27200		NA	NA	1940	B	NA
Sodium	18222		160000	p	ND	396,022		4310	J	NA	NA	1400	J	NA
Vanadium	20.6		49	st	ND	260	n	9.6	B	NA	NA	3.9	B	NA
Radiological, pCi/L														
Gross Alpha	13		15	p	15	ND		3.31		2.56	0.35	2.52		4.32
Gross Alpha, Uncertainty	ND		ND		ND	ND		NA		0.68	0.38	NA		NA
Gross Beta	9.5		ND		ND	ND		31.8		14.9	13.6	5.88		8.12
Gross Beta, Uncertainty	ND		ND		ND	ND		NA		1.75	1.66	NA		NA
Lead-210	ND		ND		ND	ND		NA		0.36	1.1	NA		NA
Lead-210, Uncertainty	ND		ND		ND	ND		NA		0.43	0.43	NA		NA
Polonium-210	ND		ND		ND	ND		NA		0.11	0.09	NA		NA
Polonium-210, Uncertainty	ND		ND		ND	ND		NA		0.02	0.02	NA		NA
Potassium-40	ND		ND		ND	ND		NA		3.81	-14.3	NA		NA
Potassium-40, Uncertainty	ND		ND		ND	ND		NA		11.3	29	NA		NA
Radium-226	ND		ND		ND	ND		NA		0.06	0.22	NA		NA
Radium-226, Uncertainty	ND		ND		ND	ND		NA		0.04	0.04	NA		NA
Thorium-228	ND		ND		ND	ND		NA		0.2	0.16	NA		NA
Thorium-228, Uncertainty	ND		ND		ND	ND		NA		0.04	0.03	NA		NA
Thorium-230	ND		ND		ND	ND		NA		0.59	0.46	NA		NA
Thorium-230, Uncertainty	ND		ND		ND	ND		NA		0.09	0.07	NA		NA
Uranium-234	ND		ND		ND	ND		NA		0.15	0.11	NA		NA
Uranium-234, Uncertainty	ND		ND		ND	ND		NA		0.03	0.02	NA		NA
Uranium-238	ND		ND		ND	ND		NA		0.12	0.06	NA		NA
Uranium-238, Uncertainty	ND		ND		ND	ND		NA		0.03	0.02	NA		NA

Appendix F
Table F-3. Summary of Detections in Groundwater
Study Area 40

Naval Training Center
Orlando, Florida

NOTES:

[1] Groundwater background screening value is twice the average of detected concentrations for inorganic analytes and gross radioactivity.

[2] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1996). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances (RDAs).

p = Primary Standard
s = Secondary Standard.
c = Carcinogen
st = Systemic Toxicant

n = noncarcinogenic pathway
c = carcinogenic pathway
ND = Not determined.
USEPA = U.S. Environmental Protection Agency.
FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.
FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, October 1996.

ug/L = micrograms per liter.
pCi/L = picocuries per liter

NA = Parameter not requested to be analyzed.
B = For inorganics, reported concentration is between the instrument detection limit (IDL) and Contract Required Detection Limit (CRDL).
J = Reported concentration is estimated.

ND = Regulatory guidance not available or not determined.
Blank cell in sample results indicate that the analyte or compound has not been detected at the reporting limit.
Bold/shaded numbers indicate exceedance of groundwater guidance and background. For essential nutrients (calcium, magnesium, sodium, potassium), RBCs are used for comparison.

APPENDIX G

SUMMARY OF ANALYTICAL RESULTS - INITIAL INVESTIGATION

Table G-1 Summary of Surface Soil Analytical Results
Table G-2 Summary of Subsurface Soil Analytical Results
Table G-3 Summary of Groundwater Analytical Results

TABLE G-1

SUMMARY OF SURFACE SOIL ANALYTICAL RESULTS-
INITIAL INVESTIGATION

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00101		40B00201		40S00101		40S00201		40S00301	40S00701	40S01001	40S01801	40S02401	40S02801
Sampling Date	19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96	4-Dec-96	4-Dec-96	4-Dec-96	5-Dec-96	5-Dec-96
Volatile organics, ug/kg														
1,1,1-Trichloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
2-Butanone	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
2-Hexanone	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Acetone	10	U	11	U	16	U	27	U	NA	NA	NA	NA	NA	NA
Benzene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Bromodichloromethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Bromoform	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Bromomethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Carbon disulfide	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Chlorobenzene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Chloroethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Chloroform	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Chloromethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Dibromochloromethane	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Ethylbenzene	10	U	1	J	10	U	2	J	NA	NA	NA	NA	NA	NA
Methylene chloride	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Styrene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Tetrachloroethene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Toluene	10	U	11	U	21		190		NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Trichloroethene	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Vinyl chloride	10	U	11	U	10	U	11	U	NA	NA	NA	NA	NA	NA
Xylene (total)	10	U	3	J	1	J	8	J	NA	NA	NA	NA	NA	NA

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00101		40B00201		40S00101		40S00201		40S00301		40S00701		40S01001		40S01801		40S02401		40S02801	
Sampling Date	19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96		4-Dec-96		4-Dec-96		4-Dec-96		5-Dec-96		5-Dec-96	
Semivolatile organics, ug/kg																				
1,2-Dichlorobenzene	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
1-Methylnaphthalene	NA		NA		NA		NA		NA		5.5		4.5		18		2.5	U	2.5	U
2,2'-oxybis(1-Chloropropane)	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2,4,5-Trichlorophenol	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
2,4,6-Trichlorophenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2,4-Dichlorophenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2,4-Dimethylphenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2,4-Dinitrophenol	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
2-Chloronaphthalene	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2-Chlorophenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene	350	U	360	U	340	U	350	U	NA		9		8		30		4		4	
2-Methylphenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
2-Nitroaniline	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
2-Nitrophenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
3,3'-Dichlorobenzidine	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
3-Nitroaniline	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
4,6-Dinitro-2-methylphenol	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
4-Bromophenyl-phenylether	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
4-Chloro-3-methylphenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
4-Chloroaniline	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
4-Chlorophenyl-phenylether	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
4-Methylphenol	350	U	360	U	340	U	350	U	NA		NA		NA		NA		NA		NA	
4-Nitroaniline	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
4-Nitrophenol	880	U	900	U	860	U	880	U	NA		NA		NA		NA		NA		NA	
Acenaphthene	350	U	360	U	340	U	350	U	NA		3.5		3		2.5	U	2.5	U	2.5	U
Acenaphthylene	74	J	360	U	340	U	350	U	NA		19		29		46		10		38	
Anthracene	350	U	360	U	340	U	350	U	NA		90		100		42		36		50	
Benzo(a)anthracene	210	J	59	J	340	U	46	J	NA		85		160		55		19		38	
Benzo(a)pyrene	200	J	66	J	340	U	49	J	NA		120		270		90		43		75	
Benzo(b)fluoranthene	140	J	63	J	340	U	57	J	NA		55		120		24		24		34	
Benzo(g,h,i)perylene	160	J	66	J	340	U	51	J	NA		43		46		12		24		9.5	

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00101		40B00201		40S00101		40S00201		40S00301	40S00701	40S01001	40S01801	40S02401	40S02801	
Sampling Date	19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96	4-Dec-96	4-Dec-96	4-Dec-96	5-Dec-96	5-Dec-96	
Benzo(k)fluoranthene	210	J	71	J	340	U	43	J	NA	55	120	24	24	34	
bis(2-Chloroethoxy)methane	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
bis(2-Chloroethyl)ether	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	50	J	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Butylbenzylphthalate	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Carbazole	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Chrysene	300	J	92	J	340	U	62	J	NA	100	160	60	23	50	
Di-n-butylphthalate	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Di-n-octylphthalate	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Dibenz(a,h)anthracene	51	J	360	U	340	U	350	U	NA	4	15	4	4	2.5	U
Dibenzofuran	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Diethylphthalate	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Dimethylphthalate	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Fluoranthene	350	J	99	J	340	U	92	J	NA	95	150	42	18	60	
Fluorene	350	U	360	U	340	U	350	U	NA	4	3.5	2.5	3	2.5	
Hexachlorobenzene	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Hexachlorobutadiene	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Hexachlorocyclopentadiene	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Hexachloroethane	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	130	J	52	J	340	U	43	J	NA	34	47	14	18	12	
Isophorone	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
N-Nitroso-di-n-propylamine	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
N-Nitrosodiphenylamine (1)	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Naphthalene	350	U	360	U	340	U	350	U	NA	14	8.5	24	5	4.5	
Pentachlorophenol	880	U	900	U	860	U	880	U	NA	NA	NA	NA	NA	NA	
Phenanthrene	300	J	46	J	340	U	63	J	NA	95	55	27	20	20	
Phenol	350	U	360	U	340	U	350	U	NA	NA	NA	NA	NA	NA	
Pyrene	530		140	J	340	U	91	J	NA	120	220	65	32	100	
Pesticides/PCBs, ug/kg															
4,4'-DDD	17	U	9	U	3.4	U	7	U	NA	NA	NA	NA	NA	NA	
4,4'-DDE	17	U	9	U	3.4	U	7	U	NA	NA	NA	NA	NA	NA	
4,4'-DDT	17	U	5.1	J	3.4	U	7	U	NA	NA	NA	NA	NA	NA	
Aldrin	8.9	U	4.6	U	1.8	U	3.6	U	NA	NA	NA	NA	NA	NA	
alpha-BHC	8.9	U	4.6	U	1.8	U	3.6	U	NA	NA	NA	NA	NA	NA	
alpha-Chlordane	8.9	U	4.6	U	1.8	U	13		NA	NA	NA	NA	NA	NA	

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00101	40B00201	40S00101	40S00201	40S00301	40S00701	40S01001	40S01801	40S02401	40S02801
Sampling Date	19-Mar-96	19-Mar-96	20-Mar-96	20-Mar-96	29-Aug-96	4-Dec-96	4-Dec-96	4-Dec-96	5-Dec-96	5-Dec-96
Aroclor-1016	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
Aroclor-1221	350 U	180 U	69 U	140 U	NA	NA	NA	NA	NA	NA
Aroclor-1232	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
Aroclor-1242	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
Aroclor-1248	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
Aroclor-1254	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
Aroclor-1260	170 U	90 U	34 U	70 U	NA	NA	NA	NA	NA	NA
beta-BHC	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
delta-BHC	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
Dieldrin	17 U	6.3 J	3.4 U	7 U	NA	NA	NA	NA	NA	NA
Endosulfan I	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
Endosulfan II	17 U	9 U	3.4 U	7 U	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	17 U	9 U	3.4 U	7 U	NA	NA	NA	NA	NA	NA
Endrin	17 U	9 U	3.4 U	7 U	NA	NA	NA	NA	NA	NA
Endrin aldehyde	17 U	9 U	3.4 U	7 U	NA	NA	NA	NA	NA	NA
Endrin ketone	17 U	9 U	3.4 U	7 U	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
gamma-Chlordane	8.9 U	4.6 U	1.8 U	8	NA	NA	NA	NA	NA	NA
Heptachlor	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	8.9 U	4.6 U	1.8 U	3.6 U	NA	NA	NA	NA	NA	NA
Methoxychlor	89 U	46 U	18 U	36 U	NA	NA	NA	NA	NA	NA
Toxaphene	890 U	460 U	180 U	360 U	NA	NA	NA	NA	NA	NA
Explosives, ug/g										
1,3,5-Trinitrobenzene	0.09 U	0.09 U	0.09 U	0.09 U	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	0.09 U	0.09 U	0.09 U	0.09 U	NA	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	0.15 U	0.15 U	0.15 U	0.15 U	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	0.06 U	0.06 U	0.06 U	0.06 U	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA	NA	NA	NA	NA
Nitrobenzene	0.09 U	0.09 U	0.09 U	0.09 U	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA	NA	NA	NA	NA
HMX	0.18 U	0.18 U	0.18 U	0.18 U	NA	NA	NA	NA	NA	NA

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00101		40B00201		40S00101		40S00201		40S00301	40S00701	40S01001	40S01801	40S02401	40S02801
Sampling Date	19-Mar-96		19-Mar-96		20-Mar-96		20-Mar-96		29-Aug-96	4-Dec-96	4-Dec-96	4-Dec-96	5-Dec-96	5-Dec-96
RDX	0.17	U	0.17	U	0.17	U	0.17	U	NA	NA	NA	NA	NA	NA
Tetryl (total)	0.1	U	0.1	U	0.1	U	0.1	U	NA	NA	NA	NA	NA	NA
Inorganics, mg/kg														
Aluminum	255	J	764	J	28.6	BJ	1080	J	NA	NA	NA	NA	NA	NA
Antimony	2.3	U	2.4	U	2.2	U	2.3	U	NA	NA	NA	NA	NA	NA
Arsenic	0.51	B	0.9	B	0.27	U	1.1	B	NA	2.2	1	1 U	1 U	3.1
Barium	12.2	B	8.9	BJ	1.8	BJ	8	BJ	NA	NA	NA	NA	NA	NA
Beryllium	0.03	U	0.03	U	0.03	U	0.03	U	NA	NA	NA	NA	NA	NA
Cadmium	0.53	U	0.6	U	0.61	B	0.98	U	NA	NA	NA	NA	NA	NA
Calcium	1930		9430		142	B	2650		NA	NA	NA	NA	NA	NA
Chromium	1.1	B	2.7		0.45	U	2.7		NA	NA	NA	NA	NA	NA
Cobalt	0.32	U	0.33	U	0.31	U	0.32	U	NA	NA	NA	NA	NA	NA
Copper	6.2		4.6	B	0.99	B	3.7	B	NA	NA	NA	NA	NA	NA
Iron	462		400		35.8		740		NA	NA	NA	NA	NA	NA
Lead	242		43.5		4.2		19.1		NA	NA	NA	NA	NA	NA
Magnesium	73	B	114	B	6.4	B	74.9	B	NA	NA	NA	NA	NA	NA
Manganese	14.3		11.3		1.4	B	10.3		NA	NA	NA	NA	NA	NA
Mercury	0.03	U	0.03	B	0.05	B	0.07	B	NA	NA	NA	NA	NA	NA
Nickel	1.6	U	1.7	U	1.6	U	1.6	U	NA	NA	NA	NA	NA	NA
Potassium	161	U	166	U	158	U	162	U	NA	NA	NA	NA	NA	NA
Selenium	0.28	UJ	0.28	UJ	0.27	UJ	0.28	UJ	NA	NA	NA	NA	NA	NA
Silver	0.46	U	0.48	U	0.45	U	0.47	U	NA	NA	NA	NA	NA	NA
Sodium	21.7	U	28.6	B	27.7	U	42.1	U	NA	NA	NA	NA	NA	NA
Thallium	0.18	U	0.19	U	0.18	U	0.18	U	NA	NA	NA	NA	NA	NA
Vanadium	0.86	B	1.2	B	0.33	U	1.1	B	NA	NA	NA	NA	NA	NA
Zinc	42.8		20.4		9.5		46.7		NA	NA	NA	NA	NA	NA
Radiological, pCi/g														
Gross Alpha	NA		NA		NA		NA		0.01	NA	NA	NA	NA	NA
Gross Alpha, Uncertainty	NA		NA		NA		NA		0.05	NA	NA	NA	NA	NA
Gross Beta	NA		NA		NA		NA		0.04	NA	NA	NA	NA	NA
Gross Beta, Uncertainty	NA		NA		NA		NA		0.09	NA	NA	NA	NA	NA
General Chemistry, mg/kg														
Total Petroleum Hydrocarbons	20.3		7.4		1.7	U	10.2		NA	NA	NA	NA	NA	NA

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40S02901		40S02902		40B02901		40S03001		40S03002		40B03003		40S03101		40S03102		40B03101		40S03201	
Lab ID	OR8948-1		OR8948-2		OR8948-3		OR8948-4		OR8948-5		OR8948-6		OR8948-7		OR8948-8		OR8948-9		OR8948-10	
Sampling Date	9/23/97		9/23/97		9/23/97		9/23/97		9/23/97		9/23/97		9/23/97		9/23/97		9/23/97		9/23/97	
Polyaromatic Hydrocarbons, ug/kg																				
1-Methylnaphthalene	1800		2500		770		1400		350		180	U	180	U	410		210	U	NA	
2-Methylnaphthalene	3400		2400		790		1400		500		180	U	180	U	520		210	U	NA	
Acenaphthene	2000		2100		710		1300		420		190		180	U	530		210	U	NA	
Acenaphthylene	360	U	360	U	350	U	390	U	350	U	370	U	360	U	370	U	410	U	NA	
Anthracene	100		240		80		93		21		18	U	18	U	53		21	U	NA	
Benzo(a)anthracene	770		1200		390		380		150		67		50		140		21	U	NA	
Benzo(a)pyrene	930		1500		540		710		240		150		120		160		21	U	NA	
Benzo(b)fluoranthene	900		1500		480		720		230		110		66		140		41	U	NA	
Benzo(g,h,i)perylene	880		1300		380		860		330		37	U	36	U	160		41	U	NA	
Benzo(k)fluoranthene	480		820		260		410		110		82		19		65		21	U	NA	
Chrysene	1500		1400		480		700		230		120		99		190		21	U	NA	
Dibenz(a,h)anthracene	36	U	36	U	35	U	39	U	35	U	37	U	36	U	37	U	41	U	NA	
Fluoranthene	35	U	2900		1300		1300		830		480		280		630		100		NA	
Fluorene	75		44		35	U	54		35	U	37	U	36	U	37	U	41	U	NA	
Indeno(1,2,3-cd)pyrene	580		1000		310		600		190		98		54		100		21	U	NA	
Naphthalene	180	U	180	U	180	U	200	U	180	U	180	U	180	U	180	U	210	U	NA	
Phenanthrene	1500		1100		330		510		140		65		42		200		21	U	NA	
Pyrene	2200		1900		1000		860		820		640		500		800		410		NA	
Inorganics, mg/kg																				
Arsenic	NA		NA		NA		7.7		15		7		0.8	U	1.2		2.1		0.9	U

Appendix G
Table G-1. Summary of Surface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40S03202		40B03201		40S03301		40S03401		40S03501	
Lab ID	OR8948-11		OR8948-12							
Sampling Date	9/23/97		9/23/97		11/17/98		11/17/98		11/17/98	
Polyaromatic Hydrocarbons, u										
1-Methylnaphthalene	NA		NA		10000	U	100	U	220	U
2-Methylnaphthalene	NA		NA		10000	U	100	U	220	U
Acenaphthene	NA		NA		10000	U	100	U	220	U
Acenaphthylene	NA		NA		10000	U	100	U	220	U
Anthracene	NA		NA		10000	U	100	U	220	U
Benzo(a)anthracene	NA		NA		2100		5.1	U	59	
Benzo(a)pyrene	NA		NA		2700		5.1	U	120	
Benzo(b)fluoranthene	NA		NA		2200		5.1	U	81	
Benzo(g,h,i)perylene	NA		NA		1800		10	U	62	
Benzo(k)fluoranthene	NA		NA		1200		1.7	U	51	
Chrysene	NA		NA		2600		5.1	U	62	
Dibenz(a,h)anthracene	NA		NA		520	U	5.1	U	11	U
Fluoranthene	NA		NA		4200		10	U	130	
Fluorene	NA		NA		10000	U	100	U	220	U
Indeno(1,2,3-cd)pyrene	NA		NA		520	U	5.1	U	47	
Naphthalene	NA		NA		10000	U	100	U	220	U
Phenanthrene	NA		NA		10000	U	100	U	220	U
Pyrene	NA		NA		4000		5.1	U	90	
Inorganics, mg/kg										
Arsenic	0.8	U	0.4	U	7.4			U	2.1	

TABLE G-2

SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS-
INITIAL INVESTIGATION

Appendix G
Table G-2. Summary of Subsurface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00102	40B00202	40B00301
Sampling Date	19-Mar-96	19-Mar-96	29-Aug-96
Depth bls (feet)	10-12	10-12	5-7
Volatile Organics, ug/kg			
1,1,1-Trichloroethane	12 U	11 U	NA
1,1,2,2-Tetrachloroethane	12 U	11 U	NA
1,1,2-Trichloroethane	12 U	11 U	NA
1,1-Dichloroethane	12 U	11 U	NA
1,1-Dichloroethene	12 U	11 U	NA
1,2-Dichloroethane	12 U	11 U	NA
1,2-Dichloroethene (total)	12 U	11 U	NA
1,2-Dichloropropane	12 U	11 U	NA
2-Butanone	12 U	11 U	NA
2-Hexanone	12 U	11 U	NA
4-Methyl-2-pentanone	12 U	11 U	NA
Acetone	12 U	11 U	NA
Benzene	12 U	11 U	NA
Bromodichloromethane	12 U	11 U	NA
Bromoform	12 U	11 U	NA
Bromomethane	12 U	11 U	NA
Carbon disulfide	12 U	11 U	NA
Carbon tetrachloride	12 U	11 U	NA
Chlorobenzene	12 U	11 U	NA
Chloroethane	12 U	11 U	NA
Chloroform	12 U	11 U	NA
Chloromethane	12 U	11 U	NA
cis-1,3-Dichloropropene	12 U	11 U	NA
Dibromochloromethane	12 U	11 U	NA
Ethylbenzene	12 U	11 U	NA
Methylene chloride	12 U	11 U	NA
Styrene	12 U	11 U	NA
Tetrachloroethene	12 U	11 U	NA
Toluene	12 U	11 U	NA
trans-1,3-Dichloropropene	12 U	11 U	NA
Trichloroethene	12 U	11 U	NA
Vinyl chloride	12 U	11 U	NA
Xylene (total)	1 J	11 U	NA
Semivolatile organics, ug/kg			
1,2-Dichlorobenzene	400 U	370 U	NA
1,3-Dichlorobenzene	400 U	370 U	NA
1,4-Dichlorobenzene	400 U	370 U	NA
1,2,4-Trichlorobenzene	400 U	370 U	NA
2,2'-oxybis(1-Chloropropane)	400 U	370 U	NA
2,4,5-Trichlorophenol	990 U	920 U	NA
2,4,6-Trichlorophenol	400 U	370 U	NA
2,4-Dichlorophenol	400 U	370 U	NA
2,4-Dimethylphenol	400 U	370 U	NA
2,4-Dinitrophenol	990 U	920 U	NA
2-Chloronaphthalene	400 U	370 U	NA
2-Chlorophenol	400 U	370 U	NA
2-Methylnaphthalene	400 U	370 U	NA
2-Methylphenol	400 U	370 U	NA
2-Nitroaniline	990 U	920 U	NA
2-Nitrophenol	400 U	370 U	NA

Appendix G
Table G-2. Summary of Subsurface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00102	40B00202	40B00301
Sampling Date	19-Mar-96	19-Mar-96	29-Aug-96
3,3'-Dichlorobenzidine	400 U	370 U	NA
3-Nitroaniline	990 U	920 U	NA
4,6-Dinitro-2-methylphenol	990 U	920 U	NA
4-Bromophenyl-phenylether	400 U	370 U	NA
4-Chloro-3-methylphenol	400 U	370 U	NA
4-Chloroaniline	400 U	370 U	NA
4-Chlorophenyl-phenylether	400 U	370 U	NA
4-Methylphenol	400 U	370 U	NA
4-Nitroaniline	990 U	920 U	NA
4-Nitrophenol	990 U	920 U	NA
Acenaphthene	400 U	370 U	NA
Acenaphthylene	400 U	370 U	NA
Anthracene	400 U	370 U	NA
Benzo(a)anthracene	400 U	370 U	NA
Benzo(a)pyrene	400 U	370 U	NA
Benzo(b)fluoranthene	400 U	370 U	NA
Benzo(g,h,i)perylene	400 U	370 U	NA
Benzo(k)fluoranthene	400 U	370 U	NA
bis(2-Chloroethoxy)methane	400 U	370 U	NA
bis(2-Chloroethyl)ether	400 U	370 U	NA
bis(2-Ethylhexyl)phthalate	560	370 U	NA
Butylbenzylphthalate	400 U	370 U	NA
Carbazole	400 U	370 U	NA
Chrysene	400 U	370 U	NA
Di-n-butylphthalate	400 U	370 U	NA
Di-n-octylphthalate	400 U	370 U	NA
Dibenz(a,h)anthracene	400 U	370 U	NA
Dibenzofuran	400 U	370 U	NA
Diethylphthalate	400 U	370 U	NA
Dimethylphthalate	400 U	370 U	NA
Fluoranthene	400 U	370 U	NA
Fluorene	400 U	370 U	NA
Hexachlorobenzene	400 U	370 U	NA
Hexachlorobutadiene	400 U	370 U	NA
Hexachlorocyclopentadiene	400 U	370 U	NA
Hexachloroethane	400 U	370 U	NA
Indeno(1,2,3-cd)pyrene	400 U	370 U	NA
Isophorone	400 U	370 U	NA
N-Nitroso-di-n-propylamine	400 U	370 U	NA
N-Nitrosodiphenylamine (1)	400 U	370 U	NA
Naphthalene	400 U	370 U	NA
Pentachlorophenol	990 U	920 U	NA
Phenanthrene	400 U	370 U	NA
Phenol	400 U	370 U	NA
Pyrene	400 U	370 U	NA
Pesticides/PCBs, ug/kg			
4,4'-DDD	3.9 U	1.4 J	NA
4,4'-DDE	3.9 U	3.7 U	NA
4,4'-DDT	3.9 U	9.3	NA
Aldrin	2 U	1.9 U	NA
alpha-BHC	2 U	1.9 U	NA
alpha-Chlordane	2 U	1.9 U	NA

Appendix G
Table G-2. Summary of Subsurface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00102	40B00202	40B00301
Sampling Date	19-Mar-96	19-Mar-96	29-Aug-96
Aroclor-1016	39 U	37 U	NA
Aroclor-1221	80 U	74 U	NA
Aroclor-1232	39 U	37 U	NA
Aroclor-1242	39 U	37 U	NA
Aroclor-1248	39 U	37 U	NA
Aroclor-1254	39 U	37 U	NA
Aroclor-1260	39 U	37 U	NA
beta-BHC	2 U	1.9 U	NA
delta-BHC	2 U	1.9 U	NA
Dieldrin	3.9 U	3.7 U	NA
Endosulfan I	2 U	1.9 U	NA
Endosulfan II	3.9 U	3.7 U	NA
Endosulfan sulfate	3.9 U	3.7 U	NA
Endrin	3.9 U	3.7 U	NA
Endrin aldehyde	3.9 U	3.7 U	NA
Endrin ketone	3.9 U	3.7 U	NA
gamma-BHC (Lindane)	2 U	1.9 U	NA
gamma-Chlordane	2 U	1.9 U	NA
Heptachlor	2 U	1.9 U	NA
Heptachlor epoxide	2 U	1.9 U	NA
Methoxychlor	20 U	19 U	NA
Toxaphene	200 U	190 U	NA
Explosives, ug/g			
1,3,5-Trinitrobenzene	0.09 U	0.09 U	NA
1,3-Dinitrobenzene	0.08 U	0.08 U	NA
2,4,6-Trinitrotoluene	0.09 U	0.09 U	NA
2-Amino-4,6-Dinitrotoluene	0.08 U	0.08 U	NA
2-Nitrotoluene	0.15 U	0.15 U	NA
2,4-Dinitrotoluene	0.06 U	0.06 U	NA
2,6-Dinitrotoluene	0.08 U	0.08 U	NA
3-Nitrotoluene	0.18 U	0.18 U	NA
4-Amino-2,6-Dinitrotoluene	0.08 U	0.08 U	NA
4-Nitrotoluene	0.18 U	0.18 U	NA
HMX	0.18 U	0.18 U	NA
Nitrobenzene	0.09 U	0.09 U	NA
RDX	0.17 U	0.17 U	NA
Tetryl (total)	0.1 U	0.1 U	NA
Inorganics, mg/kg			
Aluminum	15.6 BJ	17.1 BJ	NA
Antimony	2.8 U	2.4 U	NA
Arsenic	0.34 U	0.29 U	NA
Barium	0.46 BJ	0.4 BJ	NA
Beryllium	0.04 U	0.03 U	NA
Cadmium	0.52 U	0.4 U	NA
Calcium	92.5 B	69.7 B	NA
Chromium	1.5 B	1.8 B	NA
Cobalt	0.39 U	0.34 U	NA
Copper	0.59 B	1 B	NA
Iron	142	257	NA
Lead	0.71 B	0.27 U	NA
Magnesium	5.7 U	5 U	NA
Manganese	1.6 B	2 B	NA

Appendix G
Table G-2. Summary of Subsurface Soil Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40B00102	40B00202	40B00301
Sampling Date	19-Mar-96	19-Mar-96	29-Aug-96
Mercury	0.04 U	0.03 U	NA
Nickel	2 U	1.7 U	NA
Potassium	197 U	171 U	NA
Selenium	0.34 UJ	0.29 UJ	NA
Silver	0.57 U	0.49 U	NA
Sodium	21.3 U	33 U	NA
Thallium	0.22 U	0.19 U	NA
Vanadium	0.41 U	0.36 U	NA
Zinc	3.3 B	6	NA
Radiological, pCi/g			
Gross Alpha	NA	NA	0.01
Gross Alpha, Uncertainty	NA	NA	0.05
Gross Beta	NA	NA	0.18
Gross Beta, Uncertainty	NA	NA	0.09
General Chemistry, mg/kg			
Total Petroleum Hydrocarbons	2.1 U	1.8 U	NA

TABLE G-3

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS-
INITIAL INVESTIGATION

Appendix G
Table G-3. Summary of Groundwater Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40G00101	40G00102	40H00102	40G00201	40G00201D
Sampling Date	1-Apr-96	29-Aug-96	29-Aug-96	1-Apr-96	1-Apr-96
Volatile organics, ug/L					
1,1,1-Trichloroethane	1 U	NA	NA	1 U	NA
1,1,2,2-Tetrachloroethane	1 U	NA	NA	1 U	NA
1,1,2-Trichloroethane	1 U	NA	NA	1 U	NA
1,1-Dichloroethane	1 U	NA	NA	1 U	NA
1,1-Dichloroethene	1 U	NA	NA	1 U	NA
1,2-Dibromo-3-chloropropane	1 U	NA	NA	1 U	NA
1,2-Dibromoethane	1 U	NA	NA	1 U	NA
1,2-Dichlorobenzene	1 U	NA	NA	1 U	NA
1,2-Dichloroethane	1 U	NA	NA	1 U	NA
1,2-Dichloropropane	1 U	NA	NA	1 U	NA
1,3-Dichlorobenzene	1 U	NA	NA	1 U	NA
1,4-Dichlorobenzene	1 U	NA	NA	1 U	NA
2-Butanone	5 UR	NA	NA	5 UR	NA
2-Hexanone	5 U	NA	NA	5 U	NA
4-Methyl-2-pentanone	5 U	NA	NA	5 U	NA
Acetone	5 UR	NA	NA	5 UR	NA
Benzene	1 U	NA	NA	1 U	NA
Bromochloromethane	1 U	NA	NA	1 U	NA
Bromodichloromethane	1 U	NA	NA	1 U	NA
Bromoform	1 U	NA	NA	1 U	NA
Bromomethane	1 U	NA	NA	1 U	NA
Carbon disulfide	1 U	NA	NA	1 U	NA
Carbon tetrachloride	1 U	NA	NA	1 U	NA
Chlorobenzene	1 U	NA	NA	1 U	NA
Chloroethane	1 U	NA	NA	1 U	NA
Chloroform	1 U	NA	NA	1 U	NA
Chloromethane	0.3 J	NA	NA	1 U	NA
cis-1,2-Dichloroethene	1 U	NA	NA	1 U	NA
cis-1,3-Dichloropropene	1 U	NA	NA	1 U	NA
Dibromochloromethane	1 U	NA	NA	1 U	NA
Ethylbenzene	1 U	NA	NA	1 U	NA
Methylene chloride	2 U	NA	NA	2 U	NA
Styrene	1 U	NA	NA	1 U	NA
Tetrachloroethene	1 U	NA	NA	1 U	NA
Toluene	1 U	NA	NA	1 U	NA
trans-1,2-Dichloroethene	1 U	NA	NA	1 U	NA
trans-1,3-Dichloropropene	1 U	NA	NA	1 U	NA
Trichloroethene	1 U	NA	NA	1 U	NA
Vinyl chloride	1 U	NA	NA	1 U	NA
Xylene (total)	1 U	NA	NA	1 U	NA
Semivolatile organics, ug/L		NA			
1,2,4-Trichlorobenzene	10 U	NA	NA	10 U	NA
2,2'-oxybis(1-Chloropropane)	10 U	NA	NA	10 U	NA
2,4,5-Trichlorophenol	25 U	NA	NA	25 U	NA
2,4,6-Trichlorophenol	10 U	NA	NA	10 U	NA
2,4-Dichlorophenol	10 U	NA	NA	10 U	NA
2,4-Dimethylphenol	10 U	NA	NA	10 U	NA
2,4-Dinitrophenol	25 U	NA	NA	25 U	NA
2-Chloronaphthalene	10 U	NA	NA	10 U	NA
2-Chlorophenol	10 U	NA	NA	10 U	NA
2-Methylnaphthalene	10 U	NA	NA	10 U	NA

Appendix G
Table G-3. Summary of Groundwater Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40G00101	40G00102	40H00102	40G00201	40G00201D
Sampling Date	1-Apr-96	29-Aug-96	29-Aug-96	1-Apr-96	1-Apr-96
2-Methylphenol	10 U	NA	NA	10 U	NA
2-Nitroaniline	25 U	NA	NA	25 U	NA
2-Nitrophenol	10 U	NA	NA	10 U	NA
3,3'-Dichlorobenzidine	10 U	NA	NA	10 U	NA
3-Nitroaniline	25 U	NA	NA	25 U	NA
4,6-Dinitro-2-methylphenol	25 U	NA	NA	25 U	NA
4-Bromophenyl-phenylether	10 U	NA	NA	10 U	NA
4-Chloro-3-methylphenol	10 U	NA	NA	10 U	NA
4-Chloroaniline	10 U	NA	NA	10 U	NA
4-Chlorophenyl-phenylether	10 U	NA	NA	10 U	NA
4-Methylphenol	10 U	NA	NA	10 U	NA
4-Nitroaniline	25 U	NA	NA	25 U	NA
4-Nitrophenol	25 U	NA	NA	25 U	NA
Acenaphthene	10 U	NA	NA	10 U	NA
Acenaphthylene	10 U	NA	NA	10 U	NA
Anthracene	10 U	NA	NA	10 U	NA
Benzo(a)anthracene	10 U	NA	NA	10 U	NA
Benzo(a)pyrene	10 U	NA	NA	10 U	NA
Benzo(b)fluoranthene	10 U	NA	NA	10 U	NA
Benzo(g,h,i)perylene	10 U	NA	NA	10 U	NA
Benzo(k)fluoranthene	10 U	NA	NA	10 U	NA
bis(2-Chloroethoxy)methane	10 U	NA	NA	10 U	NA
bis(2-Chloroethyl)ether	10 U	NA	NA	10 U	NA
bis(2-Ethylhexyl)phthalate	10 U	NA	NA	10 U	NA
Butylbenzylphthalate	10 U	NA	NA	10 U	NA
Carbazole	10 U	NA	NA	10 U	NA
Chrysene	10 U	NA	NA	10 U	NA
Di-n-butylphthalate	10 U	NA	NA	10 U	NA
Di-n-octylphthalate	10 U	NA	NA	10 U	NA
Dibenz(a,h)anthracene	10 U	NA	NA	10 U	NA
Dibenzofuran	10 U	NA	NA	10 U	NA
Diethylphthalate	10 U	NA	NA	10 U	NA
Dimethylphthalate	10 U	NA	NA	10 U	NA
Fluoranthene	10 U	NA	NA	10 U	NA
Fluorene	10 U	NA	NA	10 U	NA
Hexachlorobenzene	10 U	NA	NA	10 U	NA
Hexachlorobutadiene	10 U	NA	NA	10 U	NA
Hexachlorocyclopentadiene	10 U	NA	NA	10 U	NA
Hexachloroethane	10 U	NA	NA	10 U	NA
Indeno(1,2,3-cd)pyrene	10 U	NA	NA	10 U	NA
Isophorone	10 U	NA	NA	10 U	NA
N-Nitroso-di-n-propylamine	10 U	NA	NA	10 U	NA
N-Nitrosodiphenylamine (1)	10 U	NA	NA	10 U	NA
Naphthalene	10 U	NA	NA	10 U	NA
Pentachlorophenol	25 U	NA	NA	25 U	NA
Phenanthrene	10 U	NA	NA	10 U	NA
Phenol	10 U	NA	NA	10 U	NA
Pyrene	10 U	NA	NA	10 U	NA
Pesticides/PCBs, ug/L		NA			
4,4'-DDD	0.1 U	NA	NA	0.1 U	NA
4,4'-DDE	0.1 U	NA	NA	0.1 U	NA
4,4'-DDT	0.1 U	NA	NA	0.1 U	NA

Appendix G
Table G-3. Summary of Groundwater Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40G00101	40G00102	40H00102	40G00201	40G00201D
Sampling Date	1-Apr-96	29-Aug-96	29-Aug-96	1-Apr-96	1-Apr-96
Aldrin	0.05 U	NA	NA	0.05 U	NA
alpha-BHC	0.05 UJ	NA	NA	0.05 UJ	NA
alpha-Chlordane	0.05 U	NA	NA	0.05 U	NA
Aroclor-1016	0.5 U	NA	NA	0.5 U	NA
Aroclor-1221	0.5 U	NA	NA	0.5 U	NA
Aroclor-1232	0.5 U	NA	NA	0.5 U	NA
Aroclor-1242	0.5 U	NA	NA	0.5 U	NA
Aroclor-1248	0.5 U	NA	NA	0.5 U	NA
Aroclor-1254	0.5 U	NA	NA	0.5 U	NA
Aroclor-1260	0.5 U	NA	NA	0.5 U	NA
beta-BHC	0.05 U	NA	NA	0.05 U	NA
delta-BHC	0.05 U	NA	NA	0.05 U	NA
Dieldrin	0.1 U	NA	NA	0.1 U	NA
Endosulfan I	0.05 U	NA	NA	0.05 U	NA
Endosulfan II	0.1 U	NA	NA	0.1 U	NA
Endosulfan sulfate	0.1 U	NA	NA	0.1 U	NA
Endrin	0.1 U	NA	NA	0.1 U	NA
Endrin aldehyde	0.1 U	NA	NA	0.1 U	NA
Endrin ketone	0.1 U	NA	NA	0.1 U	NA
gamma-BHC (Lindane)	0.05 U	NA	NA	0.05 U	NA
gamma-Chlordane	0.05 U	NA	NA	0.05 U	NA
Heptachlor	0.05 U	NA	NA	0.05 U	NA
Heptachlor epoxide	0.05 U	NA	NA	0.05 U	NA
Methoxychlor	0.5 UJ	NA	NA	0.5 UJ	NA
Toxaphene	5 U	NA	NA	5 U	NA
Explosives, ug/L					
1,3,5-Trinitrobenzene	0.04 U	NA	NA	0.04 U	NA
1,3-Dinitrobenzene	0.04 U	NA	NA	0.04 U	NA
2,4,6-Trinitrotoluene	0.04 U	NA	NA	0.04 U	NA
2-Amino-4,6-Dinitrotoluene	0.04 U	NA	NA	0.04 U	NA
2-Nitrotoluene	0.08 U	NA	NA	0.08 U	NA
2,4-Dinitrotoluene	0.03 U	NA	NA	0.03 U	NA
2,6-Dinitrotoluene	0.04 U	NA	NA	0.04 U	NA
3-Nitrotoluene	0.09 U	NA	NA	0.09 U	NA
4-Amino-2,6-Dinitrotoluene	0.04 U	NA	NA	0.04 U	NA
4-Nitrotoluene	0.09 U	NA	NA	0.09 U	NA
HMX	0.09 U	NA	NA	0.09 U	NA
Nitrobenzene	0.04 U	NA	NA	0.04 U	NA
RDX	0.09 U	NA	NA	0.09 U	NA
Tetryl (total)	0.05 U	NA	NA	0.05 U	NA
Inorganics, ug/L					
Aluminum	2560 J	NA	NA	342 J	NA
Antimony	13.9	NA	NA	4.2 U	NA
Arsenic	24.5	NA	NA	2.8 B	NA
Barium	14.3 U	NA	NA	6 U	NA
Beryllium	0.2 U	NA	NA	0.2 U	NA
Cadmium	1.8 UJ	NA	NA	1.8 UJ	NA
Calcium	31400	NA	NA	53600	NA
Chromium	4.8 U	NA	NA	2.3 U	NA
Cobalt	2.3 U	NA	NA	2.2 U	NA
Copper	5 J	NA	NA	2 UJ	NA
Iron	84.2 U	NA	NA	32.6 U	NA

Appendix G
Table G-3. Summary of Groundwater Analytical Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample ID	40G00101	40G00102	40H00102	40G00201	40G00201D
Sampling Date	1-Apr-96	29-Aug-96	29-Aug-96	1-Apr-96	1-Apr-96
Lead	1.4 J	NA	NA	1.2 UJ	NA
Magnesium	2400 B	NA	NA	4730 B	NA
Manganese	2.5 U	NA	NA	1 U	NA
Mercury	0.14 J	NA	NA	0.1 UJ	NA
Nickel	7.7 U	NA	NA	7.7 U	NA
Potassium	27200	NA	NA	1940 B	NA
Selenium	1.3 UJ	NA	NA	1.3 UJ	NA
Silver	2.2 UJ	NA	NA	2.2 UJ	NA
Sodium	4310 J	NA	NA	1400 J	NA
Thallium	0.86 UJ	NA	NA	0.86 U	NA
Vanadium	9.6 B	NA	NA	3.9 B	NA
Zinc	3.2 U	NA	NA	3 U	NA
Radiological, pCi/L					
Gross Alpha	3.31	2.56	0.35	2.52	4.32
Gross Alpha, Uncertainty	NA	0.68	0.38	NA	NA
Gross Beta	31.8	14.9	13.6	5.88	8.12
Gross Beta, Uncertainty	NA	1.75	1.66	NA	NA
Lead-210	NA	0.36	1.1	NA	NA
Lead-210, Uncertainty	NA	0.43	0.43	NA	NA
Polonium-210	NA	0.11	0.09	NA	NA
Polonium-210, Uncertainty	NA	0.02	0.02	NA	NA
Potassium-40	NA	3.81	-14.3	NA	NA
Potassium-40, Uncertainty	NA	11.3	29	NA	NA
Radium-226	NA	0.06	0.22	NA	NA
Radium-226, Uncertainty	NA	0.04	0.04	NA	NA
Thorium-228	NA	0.2	0.16	NA	NA
Thorium-228, Uncertainty	NA	0.04	0.03	NA	NA
Thorium-230	NA	0.59	0.46	NA	NA
Thorium-230, Uncertainty	NA	0.09	0.07	NA	NA
Uranium-234	NA	0.15	0.11	NA	NA
Uranium-234, Uncertainty	NA	0.03	0.02	NA	NA
Uranium-238	NA	0.12	0.06	NA	NA
Uranium-238, Uncertainty	NA	0.03	0.02	NA	NA
General Chemistry, mg/L					
Total Petroleum Hydrocarbons	0.05 U	NA	NA	0.05 U	NA
Total Suspended Solids	4 U	NA	NA	4 U	NA

Notes for Analytical Results Tables
Study Area 40

Naval Training Center
Orlando, Florida

NA = Identified parameter not analyzed.
Sample ID = Sample Identifier
Lab ID = Laboratory identifier

Units:

mg/kg	milligram per kilogram
ug/kg	microgram per kilogram
mg/L	milligram per liter
ug/L	microgram per liter
pCi/g	picocuries per gram
pCi/L	picocuries per liter
%	percent by weight basis

The following standard analytical data qualifiers have the following definitions:

U	The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit The number preceding the U qualifier is the reported sample quantitation limit.
J	The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.
B	The inorganic analyte was positively identified and the associated numerical value is an estimated concentration because the detection was below the contract required detection limit (CRDL) and above the instrument detection limit.
UJ	The analyte/compound was not detected above the reported sample quantitation limit. The reported quantitation limit, however, is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte/compound in the sample.
R	The sample results are rejected during data validation because of serious deficiencies in meeting quality control criteria.
NJ	Presumptive evidence of the presence of a compound at an estimated concentration.

APPENDIX H

EVALUATION OF PAHs AND ARSENIC IN SURFACE SOIL BY IMMUNOASSAY TESTING AND LABORATORY CONFIRMATION

Table H-1 PAH Immunoassay Surface Soil Screening Results
Table H-2 Analytical Results for Arsenic in Surface Soil and Comparison of On Site PAH Screening Results Using Immunoassay Compared to Off Site Confirmation Results

TABLE H-1

PAH IMMUNOASSAY SURFACE SOIL SCREENING RESULTS

Appendix H
Table H-1. PAH Immunoassay Soil Screening Results
Study Area 40

Naval Training Center
Orlando, Florida

Sample Identifier	Location		Optical Density Absorbance (unitless)	PAH Concentration (mg/kg)	Remarks
	Easting	Northing			
40S004	1000	1700	0.41	0.32	
40S005	1000	1800	0.32	0.45	
40S006	1000	1900	0.00	>1	Dilution >100
40S007	1000	2000	0.31	0.46	Duplicate sample with PAH concentration of 0.460 ppm
40S008	1100	1900	0.00	>1	Dilution >100
40S009	1100	1800	0.01	>1	Dilution >100
40S010	1100	1700	0.04	>1	Dilution >100
40S011	1200	1900	0.01	>1	Dilution >100
40S012	1200	1800	0.11	>1	Dilution >100
40S013	1200	1700	0.21	0.68	
40S014	1300	1700	0.31	0.46	
40S015	1300	1800	0.33	0.43	
40S016	1300	1900	0.01	>1	Dilution >100
40S017	1400	1700	0.35	0.53	
40S018	1600	1700	0.25	0.77	
40S019	1400	1800	0.29	0.66	
40S020	1400	1900	0.10	>1	Dilution >100
40S021	1500	1900	0.44	0.39	
40S022	1500	1800	0.10	>1	Dilution >100
40S023	1500	1700	0.09	>1	Dilution >100
40S024	1200	2000	0.68	0.14	
40S025	1100	2000	0.17	>1	Dilution >100
40S026	1300	2000	0.09	>1	Dilution >100
40S027	1400	2000	0.43	0.41	
40S028	1500	2000	0.04	>1	Dilution >100

Note: All results expressed in milligrams per kilogram (mg/kg).

PAH = polynuclear aromatic hydrocarbons.
mg/kg = milligrams per kilogram.
ppm = parts per million.
> = greater than.

TABLE H-2

ANALYTICAL RESULTS FOR ARSENIC IN SURFACE SOIL AND COMPARISON OF ON SITE PAH SCREENING RESULTS USING IMMUNOASSAY COMPARED TO OFF SITE CONFIRMATION RESULTS

Appendix H

Table H-2. Analytical Results for Arsenic in Surface Soil and Comparison of Onsite PAH Screening Results Using Immunoassay versus Off-Site Confirmation Results

Study Area 40

Naval Training Center
Orlando, Florida

Sample Identifier	Arsenic Results (mg/kg)[1]	Onsite Immunoassay Total PAH Results (mg/kg)[1]	Off-Site Confirmation Total PAH Results (8270M)[2] (mg/kg)[1]	Remarks
40S007	2.2	0.46	0.94	Both > Screening Value (0.1 mg/kg)[3]
40S010	1	>1	1.51	Both > Screening Value (0.1 mg/kg)[3]
40S018	ND	0.77	0.53	Both > Screening Value (0.1 mg/kg)[3]
40S024	ND	0.14	.31	Both > Screening Value (0.1 mg/kg)[3]
40S028	3.1	>1	.53	Both > Screening Value (0.1 mg/kg)[3]

Notes: [1] All results expressed in mg/kg soil dry weight.
Correlation coefficient with immunoassay results >1 mg/kg excluded from calculation: r = 0.65.
[2] Gas Chromatography/Mass Spectrometry with Selective Ion Monitoring.
[3] Screening Value is set conservatively at 0.1 mg/kg, representing Florida Department of Environmental Protection's residential soil cleanup target level for carcinogenic PAH compounds, benzo(a)pyrene and dibenz(a,h)anthracene.

ND = not detected
PAH = polynuclear aromatic hydrocarbons.
mg/kg = milligrams per kilogram.
> = less than.
< = greater than.

APPENDIX I

COMPLETION REPORT OF INTERIM REMEDIAL ACTION BY ENVIRONMENTAL DETACHMENT CHARLESTON

STUDY AREA 40

1. INTRODUCTION

1.1 STUDY AREA 40

SA 40 is located on the Main Base, Naval Training Center, Orlando (Figure 1). It consists of a open field between Maguire Boulevard and Nautilus Street (Figure 2).

1.2 SA 40 INTERIM REMEDIAL ACTION

SOUTHDIV tasked the DET to perform an IRA for this site. The objective of the IRA was to excavate and dispose of soil contaminated with PAHs and arsenic. The excavation was to continue until the sampling program indicated with reasonable confidence that the concentrations of contaminants at the site were less than the residential limits specified by FDEP SCG, dated 30 April 1998 or USEPA Region III, dated 01 October 1998, whichever specifies the stricter criteria.

1.2.1 SA 40 Interim Remedial Action Execution Summary

The execution of this IRA consisted of excavating an irregular shaped area approximately 250′ x 300′ to a depth of 2′ (Figure 3) and a area 10′ x 10′ to a depth of 2′ at sample location 40S028 (Figure 4). Soil removed from the site was characterized as non-hazardous and was sent to a permitted Subtitle D landfill. Confirmation samples were collected from each sidewall upon completion of the large excavation and tested for PAHs and arsenic. The results of these samples were either less than the RGOs or were less than three times the RGOs. Upon completion of excavation of sample location 40S028, a confirmation sample was taken from each sidewall and tested for arsenic. The results of these samples were all less than the RGOs.

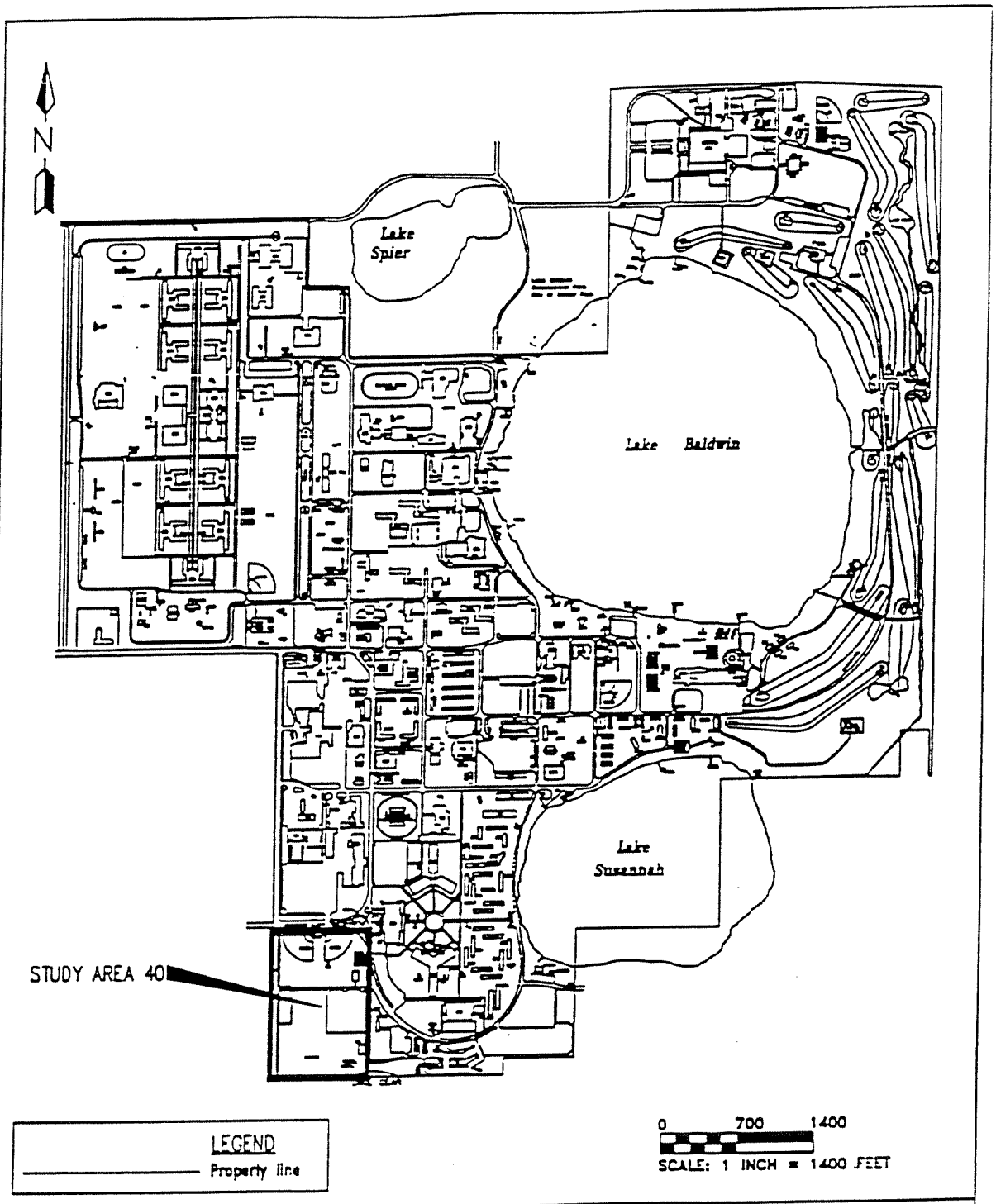
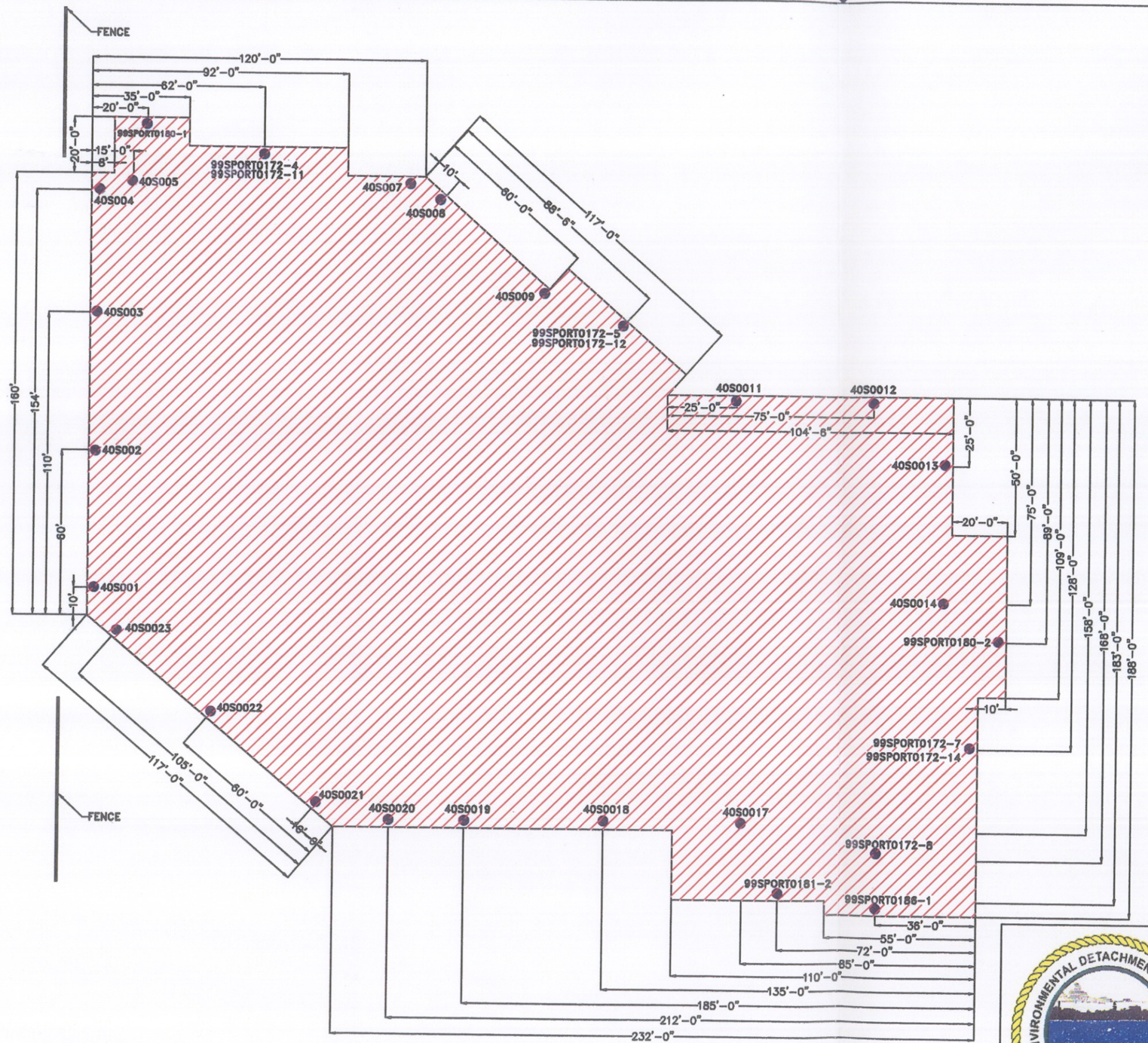


FIGURE 1
LOCATION OF STUDY AREA 40

BASE REALIGNMENT AND CLOSURE
WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA



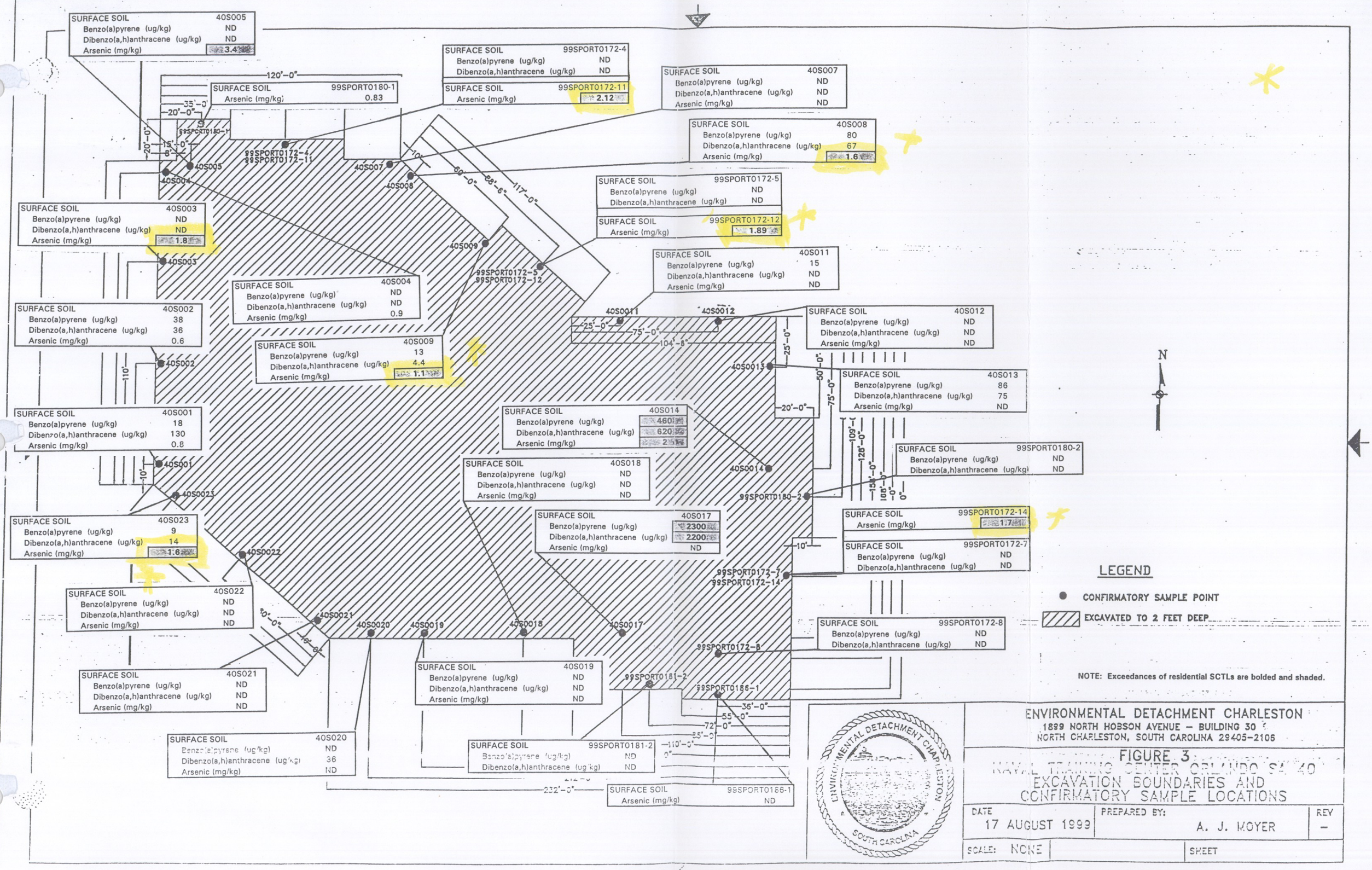
LEGEND

- CONFIRMATORY SAMPLE POINT
- EXCAVATED TO 2 FEET DEEP

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 3
NAVAL TRAINING CENTER ORLANDO SA 40
EXCAVATION BOUNDARIES AND CONFIRMATORY SAMPLE LOCATIONS

DATE	PREPARED BY:	REV
17 AUGUST 1999	A. J. MOYER	–
SCALE: NONE		SHEET


SURFACE SOIL 40S005
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) 3.4
SURFACE SOIL 99SPORT0172-4
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 99SPORT0172-11
Arsenic (mg/kg) 2.12
SURFACE SOIL 40S007
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 99SPORT0180-1
Arsenic (mg/kg) 0.83
SURFACE SOIL 40S008
Benzo(a)pyrene (ug/kg) 80
Dibenzo(a,h)anthracene (ug/kg) 67
Arsenic (mg/kg) 1.6
SURFACE SOIL 99SPORT0172-5
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 99SPORT0172-12
Arsenic (mg/kg) 1.89
SURFACE SOIL 40S003
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) 1.8
SURFACE SOIL 40S011
Benzo(a)pyrene (ug/kg) 15
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 40S004
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) 0.9
SURFACE SOIL 40S012
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 40S002
Benzo(a)pyrene (ug/kg) 38
Dibenzo(a,h)anthracene (ug/kg) 36
Arsenic (mg/kg) 0.6
SURFACE SOIL 40S009
Benzo(a)pyrene (ug/kg) 13
Dibenzo(a,h)anthracene (ug/kg) 4.4
Arsenic (mg/kg) 1.1
SURFACE SOIL 40S013
Benzo(a)pyrene (ug/kg) 86
Dibenzo(a,h)anthracene (ug/kg) 75
Arsenic (mg/kg) ND
SURFACE SOIL 40S001
Benzo(a)pyrene (ug/kg) 18
Dibenzo(a,h)anthracene (ug/kg) 130
Arsenic (mg/kg) 0.8
SURFACE SOIL 40S014
Benzo(a)pyrene (ug/kg) 460
Dibenzo(a,h)anthracene (ug/kg) 620
Arsenic (mg/kg) 2.5
SURFACE SOIL 99SPORT0180-2
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 40S018
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 40S023
Benzo(a)pyrene (ug/kg) 9
Dibenzo(a,h)anthracene (ug/kg) 14
Arsenic (mg/kg) 1.6
SURFACE SOIL 40S017
Benzo(a)pyrene (ug/kg) 2300
Dibenzo(a,h)anthracene (ug/kg) 2200
Arsenic (mg/kg) ND
SURFACE SOIL 99SPORT0172-14
Arsenic (mg/kg) 1.7
SURFACE SOIL 99SPORT0172-7
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 40S022
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 99SPORT0172-8
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 40S021
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 40S019
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
Arsenic (mg/kg) ND
SURFACE SOIL 40S020
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) 36
Arsenic (mg/kg) ND
SURFACE SOIL 99SPORT0181-2
Benzo(a)pyrene (ug/kg) ND
Dibenzo(a,h)anthracene (ug/kg) ND
SURFACE SOIL 99SPORT0186-1
Arsenic (mg/kg) ND
40S001
40S002
40S003
40S004
40S005
40S007
40S008
40S009
40S011
40S012
40S013
40S014
40S017
40S018
40S019
40S020
40S021
40S022
40S023
99SPORT0172-4
99SPORT0172-11
99SPORT0172-5
99SPORT0172-12
99SPORT0172-7
99SPORT0172-14
99SPORT0172-8
99SPORT0180-1
99SPORT0180-2
99SPORT0181-2
99SPORT0186-1
120'-0"
35'-0"
20'-0"
15'-0"
8'
10'
60'-0"
28'-6"
117'-0"
25'-0"
75'-0"
104'-8"
50'-0"
109'-1"
128'-0"
15'-0"
165'-0"
110'
40'-0"
36'-0"
55'-0"
72'-0"
232'-0"
N
LEGEND
CONFIRMATORY SAMPLE POINT
EXCAVATED TO 2 FEET DEEP
NOTE: Exceedances of residential SCTLs are bolded and shaded.
ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106
FIGURE 3
NAVAL TRAINING CENTER ORLANDO SITE 40
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS
DATE 17 AUGUST 1999
PREPARED BY: A. J. MOYER
REV –
SCALE: NONE
SHEET
ENVIRONMENTAL DETACHMENT CHARLESTON SOUTH CAROLINA

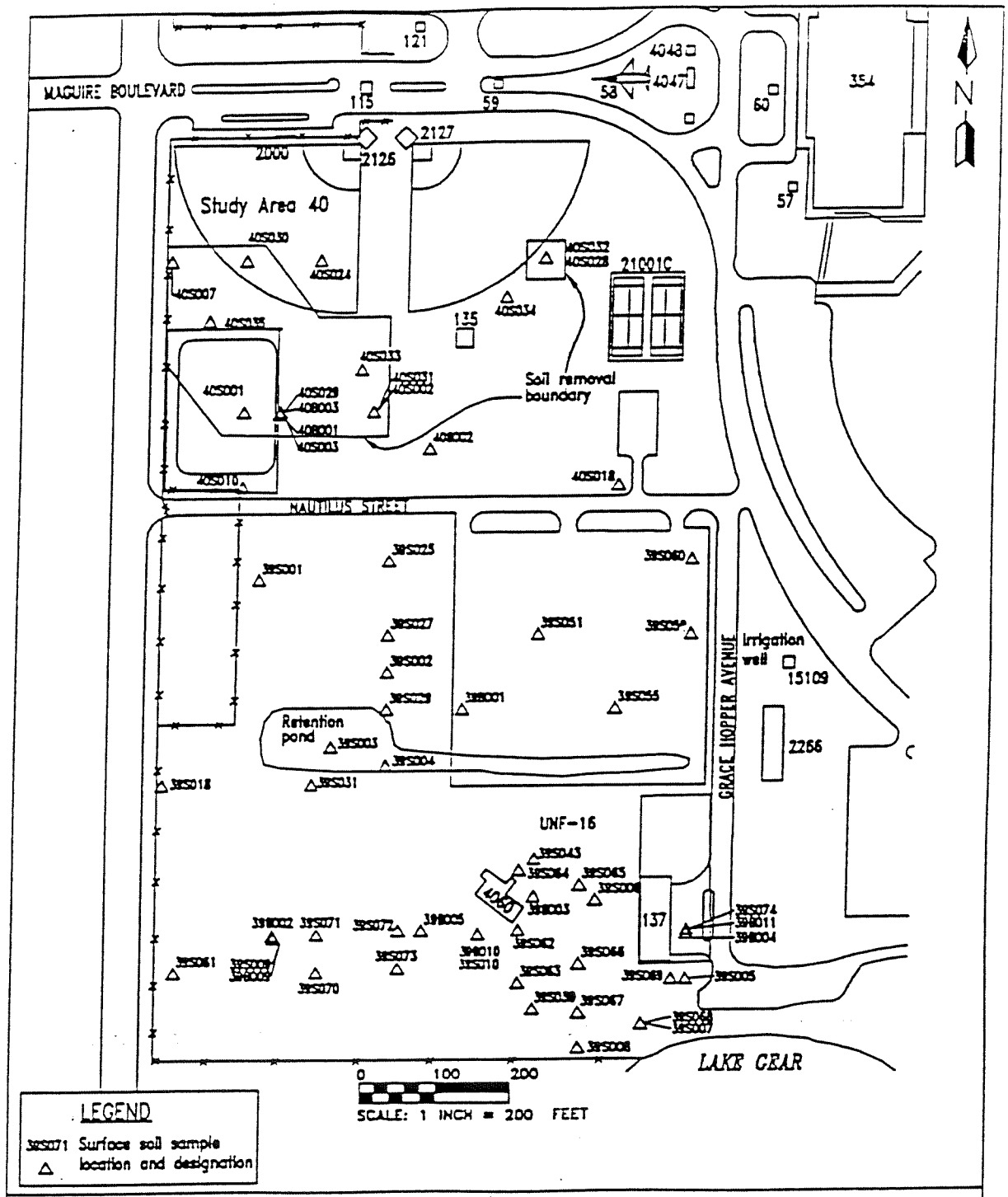
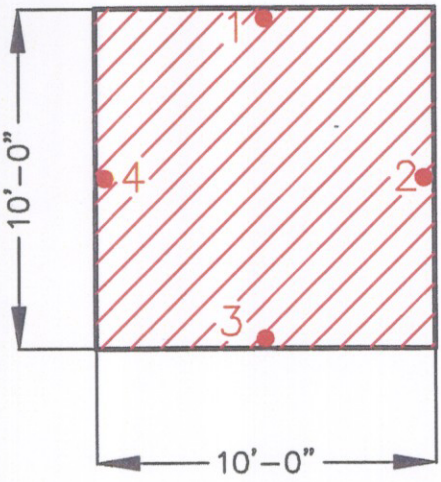


FIGURE 4
SURFACE SOIL SAMPLE LOCATIONS
AND SOIL REMOVAL BOUNDARY

BASE REALIGNMENT AND CLOSURE
WORK PLAN FOR INTERIM REMEDIAL
ACTION, STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA



LEGEND

1 ●	CONFIRMATORY SAMPLE ID SA40S032
2 ●	CONFIRMATORY SAMPLE ID SA40S033
3 ●	CONFIRMATORY SAMPLE ID SA40S034
4 ●	CONFIRMATORY SAMPLE ID SA40S035
▨	EXCAVATED TO 2 FEET DEEP

N

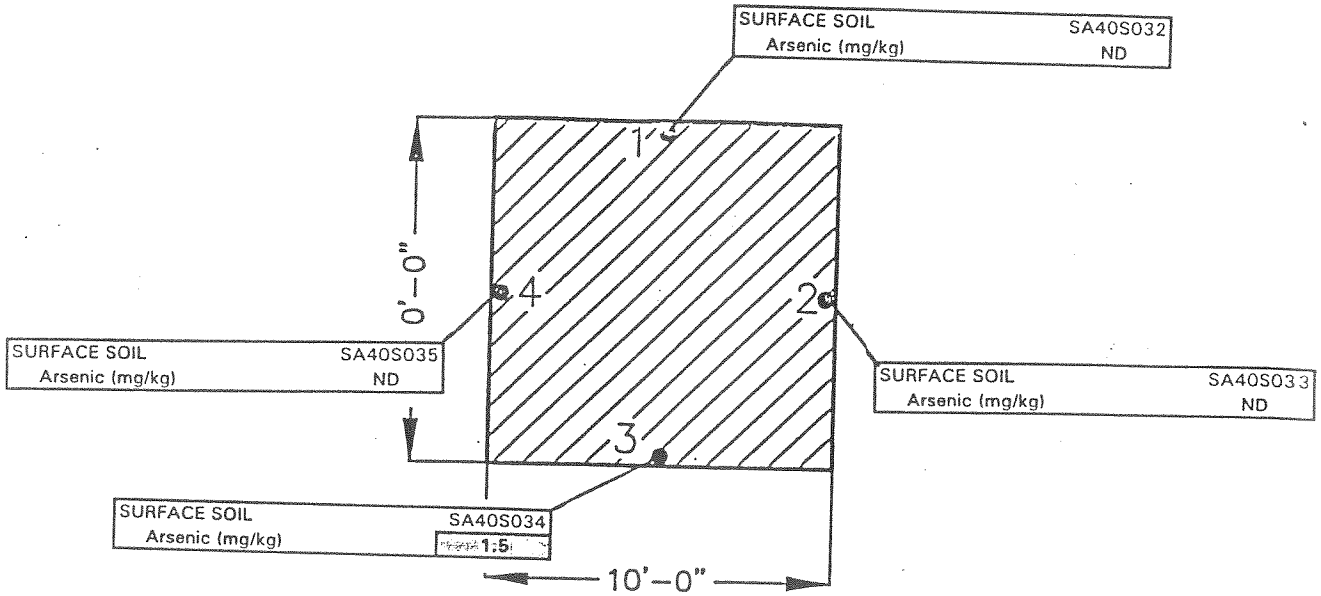
ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405–2106

FIGURE 4
NAVAL TRAINING CENTER CENTER ORLANDO SA 40
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

DATE:	PREPARED BY:	REV
20 JULY 1999	A. J. MOYER	–

SCALE: NONE | SHEET: –

ANUU9F R13Y



NOTE: Exceedances of residential SCTLs are bolded and shaded.

LEGEND

1 ● CONFIRMATORY SAMPLE ID SA40S032
2 ● CONFIRMATORY SAMPLE ID SA40S033
3 ● CONFIRMATORY SAMPLE ID SA40S034
4 ● CONFIRMATORY SAMPLE ID SA40S035

EXCAVATED TO 2 FEET DEEP

N

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 4
NAVAL TRAINING CENTER CENTER ORLANDO SA 40
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

DATE:	PREPARED BY:	REV
20 JULY 1999	A. J. MOYER	–

SCALE: NONE

SHEET: –

2.0 INTERIM REMEDIAL ACTION EXCECUTION

2.1 ACTIONS PERFORMED BY THE INTERIM REMEDIAL ACTION WORK PLAN

Actions performed are listed below

- Collection of a waste characterization samples
- Removal of fencing
- Installation of 800 feet of silt fencing
- Excavation and disposal of approximately 7,916 tons of soil
- Collection of confirmatory samples from each sidewall for analysis of PAHs and/or arsenic
- Restoration of site by backfilling, grading to surrounding area, and hydroseeding

2.2 OBSERVATIONS NOTES

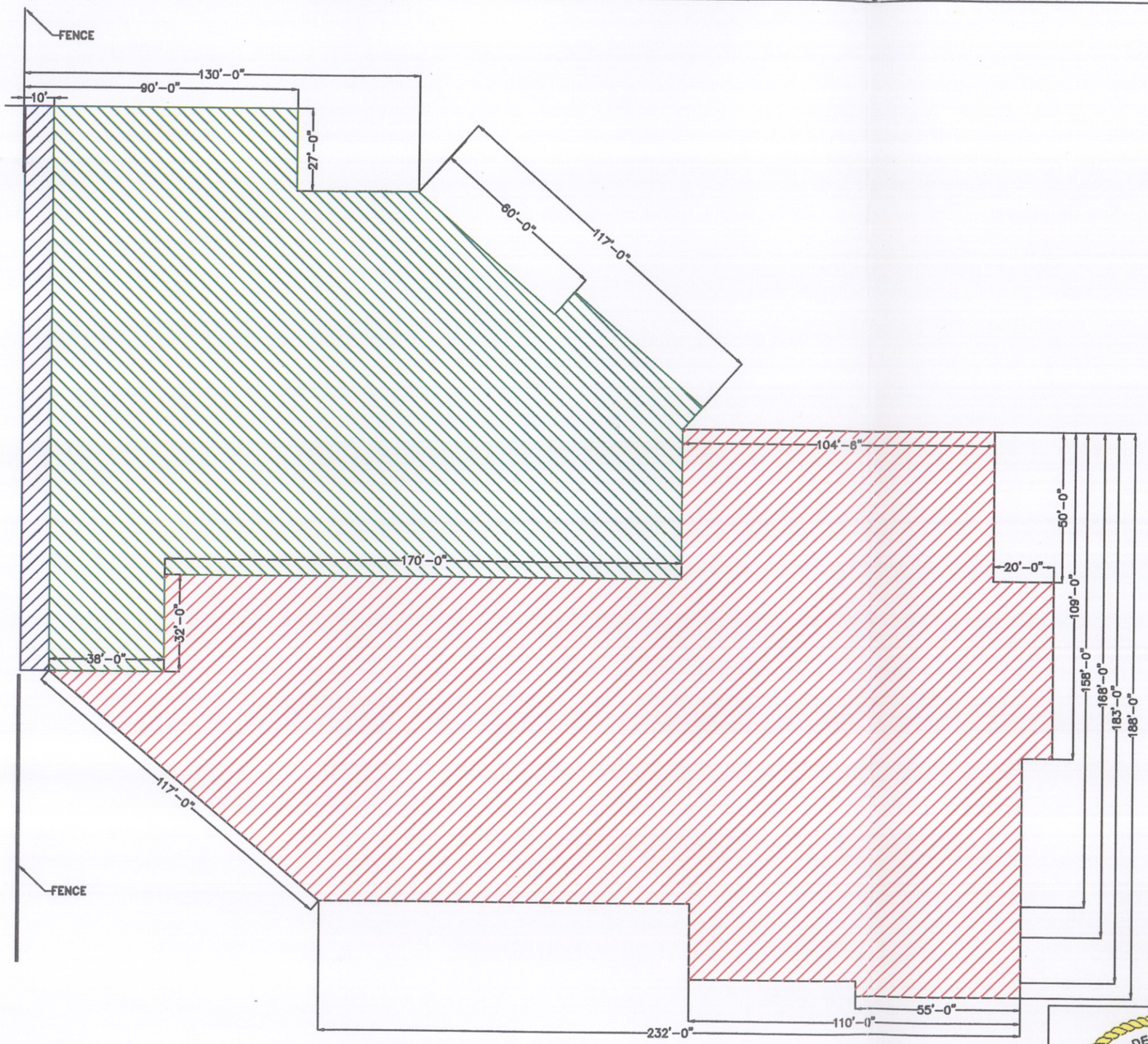
2.2.1 Soil Conditions

From ground surface to the bottom of the excavation the soil was white sugar sand.

2.3 PLAN MODIFICATIONS AND JUSTIFICATION

- Original scope of work intended the soils from SA 40 to be reused at Operable Unit (OU) 2 at the McCoy Annex. Upon the start of excavation the DET unearthed some debris. The DET trenched approximately 40 openings on a 50′ grid throughout excavation area to allow for visual inspections. The OPT was informed and conducted a site visit. The OPT informed the DET that the soils from SA 40 were not suitable for reuse at OU2 and that the soils should be disposed of. All soils from SA 40 were disposed of to a permitted Subtitle D landfill.

- The OPT instructed the DET to excavate areas with any visual debris remaining on any sidewall and to provide a drawing of the debris area. The excavated debris area is shown in Figure 5.



N

LEGEND

- DEBRIS AREA EXCAVATED 1 FOOT DEEP
- DEBRIS AREA OF PAH AND ARSENIC EXCAVATION 2 FOOT DEEP
- NON-DEBRIS AREA OF PAH AND ARSENIC EXCAVATION 2 FOOT DEEP

ENVIRONMENTAL DETACHMENT CHARLESTON
SOUTH CAROLINA

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 5
NAVAL TRAINING CENTER ORLANDO SA 40
DEBRIS AREA BOUNDARIES

DATE	PREPARED BY:	REV
17 AUGUST 1999	A. J. MOYER	–
SCALE: NONE		SHEET

3.0 INTERIM REMEDIAL ACTION OUTCOME

3.1 SITE CONDITIONS FOLLOWING COMPLETION OF WORK

Following completion of work, the DET had removed 7,916 tons of PAH/arsenic contaminated soil. The site was backfilled, graded to surrounding area and hydroseeded. Site photographs are included in Appendix F1.

4.0 SAMPLING

4.1 CONFIRMATION SAMPLING

Upon completion of work in the large area, confirmation samples were taken on each sidewall and tested for PAHs and arsenic (Figure 3). Upon completion of work at sample location 40S028, a confirmation sample was taken on each sidewall and tested for arsenic (Figure 4). See appendix F2 for sampling documentation.

4.2 WASTE CHARACTERIZATION SAMPLING

Waste characterization samples (samples SA40S025 thru 31 were taken and analyzed for TCLP metals and samples SA40S36 thru 49 were taken and analyzed for VOC 8021). Hydraulic oil removed from lift pits was analyzed for PCBs. See appendix F2 for sampling documentation.

5.0 WASTE GENERATION

5.1 Non-Hazardous Waste

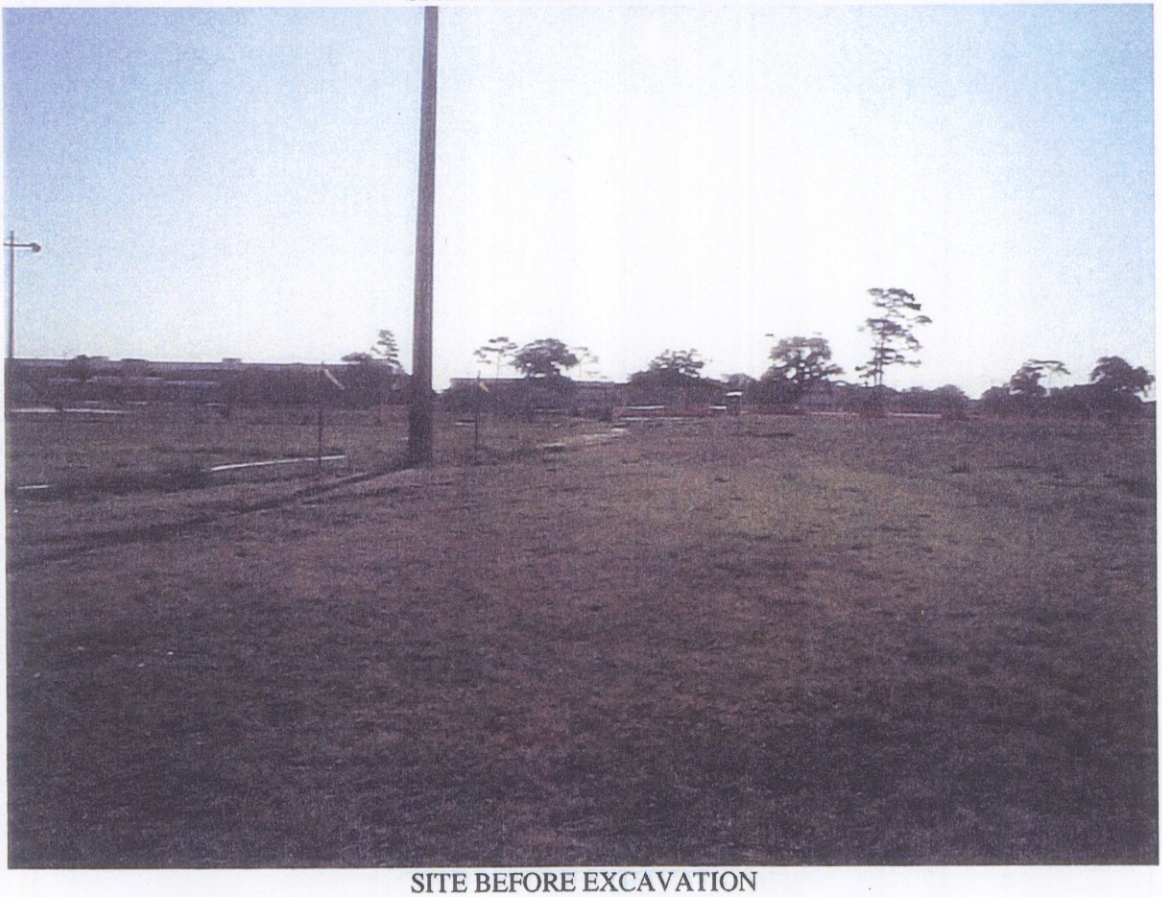
A total of 7,916 tons of non-hazardous PAH and arsenic contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix F3.

SITE BEFORE EXCAVATION AT SAMPLE POINT 40S028

SITE AFTER EXCAVATION AT SAMPLE POINT 40S028

ANNUVERSARY

SITE BEFORE EXCAVATION



SITE BEFORE EXCAVATION

SITE BEFORE EXCAVATION

SITE DURING EXCAVATION

SITE DURING EXCAVATION

SITE DURING EXCAVATION

EXCAVATED DEBRIS

EXCAVATING DEBRIS AREA

LOADING HAUL TRUCKS DURING EXCAVATION

BACKFILLING SITE

SITE DURING BACKFILLING

SILT FENCING

SITE AFTER BACKFILLING

SITE AFTER BACKFILLING

SITE AFTER BACKFILLING

SITE HYDROSEEDED

CONFIRMATION SAMPLES

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave
Charleston, SC 29405-2106

Report #: OR6368
Date Submitted: 26-Apr-99
Date Reported: 5-May-99
Project #: SA-40
Project Name: NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-1	40S001	4/24/99 10:05	8310	Naphthalene	17	U	1	µg/Kg	17	6.9
OR6368-1	40S001	4/24/99 10:05	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-1	40S001	4/24/99 10:05	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-1	40S001	4/24/99 10:05	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.9
OR6368-1	40S001	4/24/99 10:05	8310	Acenaphthene	17	U	1	µg/Kg	17	6.9
OR6368-1	40S001	4/24/99 10:05	8310	Fluorene	8.6		1	µg/Kg	3.4	1.4
OR6368-1	40S001	4/24/99 10:05	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-1	40S001	4/24/99 10:05	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-1	40S001	4/24/99 10:05	8310	Fluoranthene	27		1	µg/Kg	3.4	1.4
OR6368-1	40S001	4/24/99 10:05	8310	Pyrene	2	I	1	µg/Kg	1.7	1.4
OR6368-1	40S001	4/24/99 10:05	8310	Benzo(a)anthracene	4.4		1	µg/Kg	1.7	0.69
OR6368-1	40S001	4/24/99 10:05	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-1	40S001	4/24/99 10:05	8310	Benzo(b)fluoranthene	37		1	µg/Kg	3	2
OR6368-1	40S001	4/24/99 10:05	8310	Benzo(k)fluoranthene	37		1	µg/Kg	2	1
OR6368-1	40S001	4/24/99 10:05	8310	Benzo(a)pyrene	18		1	µg/Kg	2	1
OR6368-1	40S001	4/24/99 10:05	8310	Dibenzo(a,h)anthracene	130		1	µg/Kg	3.4	2.4
OR6368-1	40S001	4/24/99 10:05	8310	Benzo(g,h,i)perylene	11		1	µg/Kg	3.4	2.4
OR6368-1	40S001	4/24/99 10:05	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-1	40S001	4/24/99 10:05	8310	p-Terphenyl	98		†	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-1	40S001	4/24/99 10:05	6010	Arsenic	0.8	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-1	40S001	4/24/99 10:05	SM2540G	Percent Solids	97			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-2	40S002	4/24/99 10:10	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-2	40S002	4/24/99 10:10	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-2	40S002	4/24/99 10:10	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.3
OR6368-2	40S002	4/24/99 10:10	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-2	40S002	4/24/99 10:10	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-2	40S002	4/24/99 10:10	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-2	40S002	4/24/99 10:10	8310	Phenanthrene	34	U	1	µg/Kg	34	1.3
OR6368-2	40S002	4/24/99 10:10	8310	Anthracene	2	I	1	µg/Kg	2	1
OR6368-2	40S002	4/24/99 10:10	8310	Fluoranthene	33		1	µg/Kg	3.4	1.3
OR6368-2	40S002	4/24/99 10:10	8310	Pyrene	27		1	µg/Kg	1.7	1.3
OR6368-2	40S002	4/24/99 10:10	8310	Benzo(a)anthracene	19		1	µg/Kg	1.7	0.68
OR6368-2	40S002	4/24/99 10:10	8310	Chrysene	28		1	µg/Kg	1.7	0.68
OR6368-2	40S002	4/24/99 10:10	8310	Benzo(b)fluoranthene	27		1	µg/Kg	3	2
OR6368-2	40S002	4/24/99 10:10	8310	Benzo(k)fluoranthene	19		1	µg/Kg	2	1
OR6368-2	40S002	4/24/99 10:10	8310	Benzo(a)pyrene	38		1	µg/Kg	2	1
OR6368-2	40S002	4/24/99 10:10	8310	Dibenzo(a,h)anthracene	36		1	µg/Kg	3.4	2.4
OR6368-2	40S002	4/24/99 10:10	8310	Benzo(g,h,i)perylene	24		1	µg/Kg	3.4	2.4
OR6368-2	40S002	4/24/99 10:10	8310	Indeno(1,2,3-cd)pyrene	26		1	µg/Kg	1.7	0.68
OR6368-2	40S002	4/24/99 10:10	8310	p-Terphenyl	113		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-2	40S002	4/24/99 10:10	6010	Arsenic	0.6	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-2	40S002	4/24/99 10:10	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-3	40S003	4/24/99 10:14	8310	Naphthalene	17	U	1	µg/Kg	17	7
OR6368-3	40S003	4/24/99 10:14	8310	Acenaphthylene	35	U	1	µg/Kg	35	3.4
OR6368-3	40S003	4/24/99 10:14	8310	1-Methylnaphthalene	35	U	1	µg/Kg	35	3.4
OR6368-3	40S003	4/24/99 10:14	8310	2-Methylnaphthalene	35	U	1	µg/Kg	35	7
OR6368-3	40S003	4/24/99 10:14	8310	Acenaphthene	17	U	1	µg/Kg	17	7
OR6368-3	40S003	4/24/99 10:14	8310	Fluorene	3.5	U	1	µg/Kg	3.5	1.4
OR6368-3	40S003	4/24/99 10:14	8310	Phenanthrene	35	U	1	µg/Kg	35	1.4
OR6368-3	40S003	4/24/99 10:14	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-3	40S003	4/24/99 10:14	8310	Fluoranthene	5	I	1	µg/Kg	3.5	1.4
OR6368-3	40S003	4/24/99 10:14	8310	Pyrene	2.4	I	1	µg/Kg	1.7	1.4
OR6368-3	40S003	4/24/99 10:14	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.7
OR6368-3	40S003	4/24/99 10:14	8310	Chrysene	2.8		1	µg/Kg	1.7	0.7
OR6368-3	40S003	4/24/99 10:14	8310	Benzo(b)fluoranthene	3	I	1	µg/Kg	3	2
OR6368-3	40S003	4/24/99 10:14	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-3	40S003	4/24/99 10:14	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-3	40S003	4/24/99 10:14	8310	Dibenzo(a,h)anthracene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-3	40S003	4/24/99 10:14	8310	Benzo(g,h,i)perylene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-3	40S003	4/24/99 10:14	8310	Indeno(1,2,3-cd)pyrene	3.4		1	µg/Kg	1.7	0.7
OR6368-3	40S003	4/24/99 10:14	8310	p-Terphenyl	110		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-3	40S003	4/24/99 10:14	6010	Arsenic	1.8		1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-3	40S003	4/24/99 10:14	SM2540G	Percent Solids	96			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-4	40S004	4/24/99 10:20	8310	Naphthalene	18	U	1	µg/Kg	18	7
OR6368-4	40S004	4/24/99 10:20	8310	Acenaphthylene	35	U	1	µg/Kg	35	3.5
OR6368-4	40S004	4/24/99 10:20	8310	1-Methylnaphthalene	35	U	1	µg/Kg	35	3.5
OR6368-4	40S004	4/24/99 10:20	8310	2-Methylnaphthalene	35	U	1	µg/Kg	35	7
OR6368-4	40S004	4/24/99 10:20	8310	Acenaphthene	18	U	1	µg/Kg	18	7
OR6368-4	40S004	4/24/99 10:20	8310	Fluorene	3.5	U	1	µg/Kg	3.5	1.4
OR6368-4	40S004	4/24/99 10:20	8310	Phenanthrene	35	U	1	µg/Kg	35	1.4
OR6368-4	40S004	4/24/99 10:20	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-4	40S004	4/24/99 10:20	8310	Fluoranthene	3.5	U	1	µg/Kg	3.5	1.4
OR6368-4	40S004	4/24/99 10:20	8310	Pyrene	2.8	I	1	µg/Kg	1.8	1.4
OR6368-4	40S004	4/24/99 10:20	8310	Benzo(a)anthracene	1.8	U	1	µg/Kg	1.8	0.7
OR6368-4	40S004	4/24/99 10:20	8310	Chrysene	1.8	I	1	µg/Kg	1.8	0.7
OR6368-4	40S004	4/24/99 10:20	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-4	40S004	4/24/99 10:20	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-4	40S004	4/24/99 10:20	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-4	40S004	4/24/99 10:20	8310	Dibenzo(a,h)anthracene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-4	40S004	4/24/99 10:20	8310	Benzo(g,h,i)perylene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-4	40S004	4/24/99 10:20	8310	Indeno(1,2,3-cd)pyrene	1.8	U	1	µg/Kg	1.8	0.7
OR6368-4	40S004	4/24/99 10:20	8310	p-Terphenyl	96		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-4	40S004	4/24/99 10:20	6010	Arsenic	0.9	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-4	40S004	4/24/99 10:20	SM2540G	Percent Solids	95			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-5	40S005	4/24/99 10:30	8310	Naphthalene	18	U	1	µg/Kg	18	7
OR6368-5	40S005	4/24/99 10:30	8310	Acenaphthylene	35	U	1	µg/Kg	35	3.5
OR6368-5	40S005	4/24/99 10:30	8310	1-Methylnaphthalene	35	U	1	µg/Kg	35	3.5
OR6368-5	40S005	4/24/99 10:30	8310	2-Methylnaphthalene	35	U	1	µg/Kg	35	7
OR6368-5	40S005	4/24/99 10:30	8310	Acenaphthene	45		1	µg/Kg	18	7
OR6368-5	40S005	4/24/99 10:30	8310	Fluorene	3.5	U	1	µg/Kg	3.5	1.4
OR6368-5	40S005	4/24/99 10:30	8310	Phenanthrene	35	U	1	µg/Kg	35	1.4
OR6368-5	40S005	4/24/99 10:30	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-5	40S005	4/24/99 10:30	8310	Fluoranthene	3.5	U	1	µg/Kg	3.5	1.4
OR6368-5	40S005	4/24/99 10:30	8310	Pyrene	1.8	U	1	µg/Kg	1.8	1.4
OR6368-5	40S005	4/24/99 10:30	8310	Benzo(a)anthracene	1.8	U	1	µg/Kg	1.8	0.7
OR6368-5	40S005	4/24/99 10:30	8310	Chrysene	5.6		1	µg/Kg	1.8	0.7
OR6368-5	40S005	4/24/99 10:30	8310	Benzo(b)fluoranthene	3	I	1	µg/Kg	3	2
OR6368-5	40S005	4/24/99 10:30	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-5	40S005	4/24/99 10:30	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-5	40S005	4/24/99 10:30	8310	Dibenzo(a,h)anthracene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-5	40S005	4/24/99 10:30	8310	Benzo(g,h,i)perylene	3.5	U	1	µg/Kg	3.5	2.4
OR6368-5	40S005	4/24/99 10:30	8310	Indeno(1,2,3-cd)pyrene	3.5		1	µg/Kg	1.8	0.7
OR6368-5	40S005	4/24/99 10:30	8310	p-Terphenyl	92		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-5	40S005	4/24/99 10:30	6010	Arsenic	3.4		1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-5	40S005	4/24/99 10:30	SM2540G	Percent Solids	95			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-7	40S007	4/24/99 10:44	8310	Naphthalene	17	U	1	µg/Kg	17	6.9
OR6368-7	40S007	4/24/99 10:44	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-7	40S007	4/24/99 10:44	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-7	40S007	4/24/99 10:44	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.9
OR6368-7	40S007	4/24/99 10:44	8310	Acenaphthene	17	U	1	µg/Kg	17	6.9
OR6368-7	40S007	4/24/99 10:44	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-7	40S007	4/24/99 10:44	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-7	40S007	4/24/99 10:44	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-7	40S007	4/24/99 10:44	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-7	40S007	4/24/99 10:44	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.4
OR6368-7	40S007	4/24/99 10:44	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-7	40S007	4/24/99 10:44	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-7	40S007	4/24/99 10:44	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-7	40S007	4/24/99 10:44	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-7	40S007	4/24/99 10:44	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-7	40S007	4/24/99 10:44	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-7	40S007	4/24/99 10:44	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-7	40S007	4/24/99 10:44	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-7	40S007	4/24/99 10:44	8310	p-Terphenyl	94		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-7	40S007	4/24/99 10:44	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-7	40S007	4/24/99 10:44	SM2540G	Percent Solids	97			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-8	40S008	4/24/99 10:50	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-8	40S008	4/24/99 10:50	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-8	40S008	4/24/99 10:50	8310	1-Methylnaphthalene	100		1	µg/Kg	34	3.3
OR6368-8	40S008	4/24/99 10:50	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-8	40S008	4/24/99 10:50	8310	Acenaphthene	100		1	µg/Kg	17	6.8
OR6368-8	40S008	4/24/99 10:50	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-8	40S008	4/24/99 10:50	8310	Phenanthrene	43		1	µg/Kg	34	1.3
OR6368-8	40S008	4/24/99 10:50	8310	Anthracene	8		1	µg/Kg	2	1
OR6368-8	40S008	4/24/99 10:50	8310	Fluoranthene	130		1	µg/Kg	3.4	1.3
OR6368-8	40S008	4/24/99 10:50	8310	Pyrene	130		1	µg/Kg	1.7	1.3
OR6368-8	40S008	4/24/99 10:50	8310	Benzo(a)anthracene	52		1	µg/Kg	1.7	0.68
OR6368-8	40S008	4/24/99 10:50	8310	Chrysene	68		1	µg/Kg	1.7	0.68
OR6368-8	40S008	4/24/99 10:50	8310	Benzo(b)fluoranthene	71		1	µg/Kg	3	2
OR6368-8	40S008	4/24/99 10:50	8310	Benzo(k)fluoranthene	50		1	µg/Kg	2	1
OR6368-8	40S008	4/24/99 10:50	8310	Benzo(a)pyrene	80		1	µg/Kg	2	1
OR6368-8	40S008	4/24/99 10:50	8310	Dibenzo(a,h)anthracene	67		1	µg/Kg	3.4	2.4
OR6368-8	40S008	4/24/99 10:50	8310	Benzo(g,h,i)perylene	58		1	µg/Kg	3.4	2.4
OR6368-8	40S008	4/24/99 10:50	8310	Indeno(1,2,3-cd)pyrene	58		1	µg/Kg	1.7	0.68
OR6368-8	40S008	4/24/99 10:50	8310	p-Terphenyl	122		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-8	40S008	4/24/99 10:50	6010	Arsenic	1.6	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-8	40S008	4/24/99 10:50	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-9	40S009	4/24/99 10:55	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-9	40S009	4/24/99 10:55	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-9	40S009	4/24/99 10:55	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-9	40S009	4/24/99 10:55	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-9	40S009	4/24/99 10:55	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-9	40S009	4/24/99 10:55	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-9	40S009	4/24/99 10:55	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-9	40S009	4/24/99 10:55	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-9	40S009	4/24/99 10:55	8310	Fluoranthene	19		1	µg/Kg	3.4	1.4
OR6368-9	40S009	4/24/99 10:55	8310	Pyrene	15		1	µg/Kg	1.7	1.4
OR6368-9	40S009	4/24/99 10:55	8310	Benzo(a)anthracene	8		1	µg/Kg	1.7	0.68
OR6368-9	40S009	4/24/99 10:55	8310	Chrysene	11		1	µg/Kg	1.7	0.68
OR6368-9	40S009	4/24/99 10:55	8310	Benzo(b)fluoranthene	14		1	µg/Kg	3	2
OR6368-9	40S009	4/24/99 10:55	8310	Benzo(k)fluoranthene	9		1	µg/Kg	2	1
OR6368-9	40S009	4/24/99 10:55	8310	Benzo(a)pyrene	13		1	µg/Kg	2	1
OR6368-9	40S009	4/24/99 10:55	8310	Dibenzo(a,h)anthracene	4.4	I	1	µg/Kg	3.4	2.4
OR6368-9	40S009	4/24/99 10:55	8310	Benzo(g,h,i)perylene	9	I	1	µg/Kg	3.4	2.4
OR6368-9	40S009	4/24/99 10:55	8310	Indeno(1,2,3-cd)pyrene	12		1	µg/Kg	1.7	0.68
OR6368-9	40S009	4/24/99 10:55	8310	p-Terphenyl	85		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-9	40S009	4/24/99 10:55	6010	Arsenic	1.1	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-9	40S009	4/24/99 10:55	SM2540G	Percent Solids	98			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-11	40S011	4/24/99 11:10	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-11	40S011	4/24/99 11:10	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-11	40S011	4/24/99 11:10	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.3
OR6368-11	40S011	4/24/99 11:10	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-11	40S011	4/24/99 11:10	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-11	40S011	4/24/99 11:10	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-11	40S011	4/24/99 11:10	8310	Phenanthrene	34	U	1	µg/Kg	34	1.3
OR6368-11	40S011	4/24/99 11:10	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-11	40S011	4/24/99 11:10	8310	Fluoranthene	22		1	µg/Kg	3.4	1.3
OR6368-11	40S011	4/24/99 11:10	8310	Pyrene	16		1	µg/Kg	1.7	1.3
OR6368-11	40S011	4/24/99 11:10	8310	Benzo(a)anthracene	7		1	µg/Kg	1.7	0.68
OR6368-11	40S011	4/24/99 11:10	8310	Chrysene	12		1	µg/Kg	1.7	0.68
OR6368-11	40S011	4/24/99 11:10	8310	Benzo(b)fluoranthene	13		1	µg/Kg	3	2
OR6368-11	40S011	4/24/99 11:10	8310	Benzo(k)fluoranthene	10		1	µg/Kg	2	1
OR6368-11	40S011	4/24/99 11:10	8310	Benzo(a)pyrene	15		1	µg/Kg	2	1
OR6368-11	40S011	4/24/99 11:10	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-11	40S011	4/24/99 11:10	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-11	40S011	4/24/99 11:10	8310	Indeno(1,2,3-cd)pyrene	8		1	µg/Kg	1.7	0.68
OR6368-11	40S011	4/24/99 11:10	8310	p-Terphenyl	95		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-11	40S011	4/24/99 11:10	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-11	40S011	4/24/99 11:10	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-12	40S012	4/24/99 11:20	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-12	40S012	4/24/99 11:20	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-12	40S012	4/24/99 11:20	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.3
OR6368-12	40S012	4/24/99 11:20	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-12	40S012	4/24/99 11:20	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-12	40S012	4/24/99 11:20	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-12	40S012	4/24/99 11:20	8310	Phenanthrene	34	U	1	µg/Kg	34	1.3
OR6368-12	40S012	4/24/99 11:20	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-12	40S012	4/24/99 11:20	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-12	40S012	4/24/99 11:20	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.3
OR6368-12	40S012	4/24/99 11:20	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-12	40S012	4/24/99 11:20	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-12	40S012	4/24/99 11:20	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-12	40S012	4/24/99 11:20	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-12	40S012	4/24/99 11:20	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-12	40S012	4/24/99 11:20	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-12	40S012	4/24/99 11:20	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-12	40S012	4/24/99 11:20	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-12	40S012	4/24/99 11:20	8310	p-Terphenyl	88		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-12	40S012	4/24/99 11:20	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-12	40S012	4/24/99 11:20	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-13	40S013	4/24/99 11:45	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-13	40S013	4/24/99 11:45	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-13	40S013	4/24/99 11:45	8310	1-Methylnaphthalene	63		1	µg/Kg	34	3.3
OR6368-13	40S013	4/24/99 11:45	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-13	40S013	4/24/99 11:45	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-13	40S013	4/24/99 11:45	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-13	40S013	4/24/99 11:45	8310	Phenanthrene	34	U	1	µg/Kg	34	1.3
OR6368-13	40S013	4/24/99 11:45	8310	Anthracene	4		1	µg/Kg	2	1
OR6368-13	40S013	4/24/99 11:45	8310	Fluoranthene	91		1	µg/Kg	3.4	1.3
OR6368-13	40S013	4/24/99 11:45	8310	Pyrene	75		1	µg/Kg	1.7	1.3
OR6368-13	40S013	4/24/99 11:45	8310	Benzo(a)anthracene	43		1	µg/Kg	1.7	0.68
OR6368-13	40S013	4/24/99 11:45	8310	Chrysene	98		1	µg/Kg	1.7	0.68
OR6368-13	40S013	4/24/99 11:45	8310	Benzo(b)fluoranthene	62		1	µg/Kg	3	2
OR6368-13	40S013	4/24/99 11:45	8310	Benzo(k)fluoranthene	33		1	µg/Kg	2	1
OR6368-13	40S013	4/24/99 11:45	8310	Benzo(a)pyrene	86		1	µg/Kg	2	1
OR6368-13	40S013	4/24/99 11:45	8310	Dibenzo(a,h)anthracene	75		1	µg/Kg	3.4	2.4
OR6368-13	40S013	4/24/99 11:45	8310	Benzo(g,h,i)perylene	47		1	µg/Kg	3.4	2.4
OR6368-13	40S013	4/24/99 11:45	8310	Indeno(1,2,3-cd)pyrene	43		1	µg/Kg	1.7	0.68
OR6368-13	40S013	4/24/99 11:45	8310	p-Terphenyl	117		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-13	40S013	4/24/99 11:45	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-13	40S013	4/24/99 11:45	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-14	40S014	4/24/99 12:00	8310	Naphthalene	340	U	20	µg/Kg	340	140
OR6368-14	40S014	4/24/99 12:00	8310	Acenaphthylene	690	U	20	µg/Kg	690	68
OR6368-14	40S014	4/24/99 12:00	8310	1-Methylnaphthalene	880		20	µg/Kg	690	68
OR6368-14	40S014	4/24/99 12:00	8310	2-Methylnaphthalene	690	U	20	µg/Kg	690	140
OR6368-14	40S014	4/24/99 12:00	8310	Acenaphthene	860		20	µg/Kg	340	140
OR6368-14	40S014	4/24/99 12:00	8310	Fluorene	69	U	20	µg/Kg	69	27
OR6368-14	40S014	4/24/99 12:00	8310	Phenanthrene	690	U	20	µg/Kg	690	27
OR6368-14	40S014	4/24/99 12:00	8310	Anthracene	55	I	20	µg/Kg	34	21
OR6368-14	40S014	4/24/99 12:00	8310	Fluoranthene	1300		20	µg/Kg	69	27
OR6368-14	40S014	4/24/99 12:00	8310	Pyrene	1500		20	µg/Kg	34	27
OR6368-14	40S014	4/24/99 12:00	8310	Benzo(a)anthracene	520		20	µg/Kg	34	14
OR6368-14	40S014	4/24/99 12:00	8310	Chrysene	920		20	µg/Kg	34	14
OR6368-14	40S014	4/24/99 12:00	8310	Benzo(b)fluoranthene	650		20	µg/Kg	69	41
OR6368-14	40S014	4/24/99 12:00	8310	Benzo(k)fluoranthene	310		20	µg/Kg	34	21
OR6368-14	40S014	4/24/99 12:00	8310	Benzo(a)pyrene	460		20	µg/Kg	34	21
OR6368-14	40S014	4/24/99 12:00	8310	Dibenzo(a,h)anthracene	620		20	µg/Kg	69	48
OR6368-14	40S014	4/24/99 12:00	8310	Benzo(g,h,i)perylene	380		20	µg/Kg	69	48
OR6368-14	40S014	4/24/99 12:00	8310	Indeno(1,2,3-cd)pyrene	460		20	µg/Kg	34	14
OR6368-14	40S014	4/24/99 12:00	8310	p-Terphenyl	*		20	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-14	40S014	4/24/99 12:00	6010	Arsenic	2		1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-14	40S014	4/24/99 12:00	SM2540G	Percent Solids	97			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-17	40S017	4/24/99 12:24	8310	Naphthalene	1700	U	100	µg/Kg	1700	680
OR6368-17	40S017	4/24/99 12:24	8310	Acenaphthylene	3400	U	100	µg/Kg	3400	330
OR6368-17	40S017	4/24/99 12:24	8310	1-Methylnaphthalene	3400	U	100	µg/Kg	3400	330
OR6368-17	40S017	4/24/99 12:24	8310	2-Methylnaphthalene	10000		100	µg/Kg	3400	680
OR6368-17	40S017	4/24/99 12:24	8310	Acenaphthene	1700	U	100	µg/Kg	1700	680
OR6368-17	40S017	4/24/99 12:24	8310	Fluorene	340	U	100	µg/Kg	340	130
OR6368-17	40S017	4/24/99 12:24	8310	Phenanthrene	3700		100	µg/Kg	3400	130
OR6368-17	40S017	4/24/99 12:24	8310	Anthracene	480		100	µg/Kg	170	100
OR6368-17	40S017	4/24/99 12:24	8310	Fluoranthene	10000		100	µg/Kg	340	130
OR6368-17	40S017	4/24/99 12:24	8310	Pyrene	170	U	100	µg/Kg	170	130
OR6368-17	40S017	4/24/99 12:24	8310	Benzo(a)anthracene	2700		100	µg/Kg	170	68
OR6368-17	40S017	4/24/99 12:24	8310	Chrysene	4600		100	µg/Kg	170	68
OR6368-17	40S017	4/24/99 12:24	8310	Benzo(b)fluoranthene	1800		100	µg/Kg	340	200
OR6368-17	40S017	4/24/99 12:24	8310	Benzo(k)fluoranthene	880		100	µg/Kg	170	100
OR6368-17	40S017	4/24/99 12:24	8310	Benzo(a)pyrene	2300		100	µg/Kg	170	100
OR6368-17	40S017	4/24/99 12:24	8310	Dibenzo(a,h)anthracene	2200		100	µg/Kg	340	240
OR6368-17	40S017	4/24/99 12:24	8310	Benzo(g,h,i)perylene	1300		100	µg/Kg	340	240
OR6368-17	40S017	4/24/99 12:24	8310	Indeno(1,2,3-cd)pyrene	1400		100	µg/Kg	170	68
OR6368-17	40S017	4/24/99 12:24	8310	p-Terphenyl	*		100	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-17	40S017	4/24/99 12:24	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-17	40S017	4/24/99 12:24	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-18	40S018	4/24/99 12:31	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-18	40S018	4/24/99 12:31	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-18	40S018	4/24/99 12:31	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-18	40S018	4/24/99 12:31	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-18	40S018	4/24/99 12:31	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-18	40S018	4/24/99 12:31	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-18	40S018	4/24/99 12:31	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-18	40S018	4/24/99 12:31	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-18	40S018	4/24/99 12:31	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-18	40S018	4/24/99 12:31	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.4
OR6368-18	40S018	4/24/99 12:31	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-18	40S018	4/24/99 12:31	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-18	40S018	4/24/99 12:31	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-18	40S018	4/24/99 12:31	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-18	40S018	4/24/99 12:31	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-18	40S018	4/24/99 12:31	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-18	40S018	4/24/99 12:31	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-18	40S018	4/24/99 12:31	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-18	40S018	4/24/99 12:31	8310	p-Terphenyl	97		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-18	40S018	4/24/99 12:31	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-18	40S018	4/24/99 12:31	SM2540G	Percent Solids	98			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-19	40S019	4/24/99 12:40	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-19	40S019	4/24/99 12:40	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-19	40S019	4/24/99 12:40	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-19	40S019	4/24/99 12:40	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-19	40S019	4/24/99 12:40	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-19	40S019	4/24/99 12:40	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-19	40S019	4/24/99 12:40	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-19	40S019	4/24/99 12:40	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-19	40S019	4/24/99 12:40	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-19	40S019	4/24/99 12:40	8310	Pyrene	3	I	1	µg/Kg	1.7	1.4
OR6368-19	40S019	4/24/99 12:40	8310	Benzo(a)anthracene	2	I	1	µg/Kg	1.7	0.68
OR6368-19	40S019	4/24/99 12:40	8310	Chrysene	5.4		1	µg/Kg	1.7	0.68
OR6368-19	40S019	4/24/99 12:40	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-19	40S019	4/24/99 12:40	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-19	40S019	4/24/99 12:40	8310	Benzo(a)pyrene	2	I	1	µg/Kg	2	1
OR6368-19	40S019	4/24/99 12:40	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-19	40S019	4/24/99 12:40	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-19	40S019	4/24/99 12:40	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-19	40S019	4/24/99 12:40	8310	p-Terphenyl	90		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-19	40S019	4/24/99 12:40	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-19	40S019	4/24/99 12:40	SM2540G	Percent Solids	98			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave Charleston, SC 29405-2106

Report #: OR6368
Date Submitted: 26-Apr-99
Date Reported: 5-May-99
Project #: SA-40
Project Name: NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-20	40S020	4/24/99 12:48	8310	Naphthalene	17	U	1	µg/Kg	17	6.9
OR6368-20	40S020	4/24/99 12:48	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-20	40S020	4/24/99 12:48	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-20	40S020	4/24/99 12:48	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.9
OR6368-20	40S020	4/24/99 12:48	8310	Acenaphthene	17	U	1	µg/Kg	17	6.9
OR6368-20	40S020	4/24/99 12:48	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-20	40S020	4/24/99 12:48	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-20	40S020	4/24/99 12:48	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-20	40S020	4/24/99 12:48	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-20	40S020	4/24/99 12:48	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.4
OR6368-20	40S020	4/24/99 12:48	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-20	40S020	4/24/99 12:48	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-20	40S020	4/24/99 12:48	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-20	40S020	4/24/99 12:48	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-20	40S020	4/24/99 12:48	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-20	40S020	4/24/99 12:48	8310	Dibenzo(a,h)anthracene	36		1	µg/Kg	3.4	2.4
OR6368-20	40S020	4/24/99 12:48	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-20	40S020	4/24/99 12:48	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-20	40S020	4/24/99 12:48	8310	p-Terphenyl	90		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-20	40S020	4/24/99 12:48	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-20	40S020	4/24/99 12:48	SM2540G	Percent Solids	97			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave Charleston, SC 29405-2106

Report #: OR6368
Date Submitted: 26-Apr-99
Date Reported: 5-May-99
Project #: SA-40
Project Name: NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-21	40S021	4/24/99 13:00	8310	Naphthalene	17	U	1	µg/Kg	17	6.9
OR6368-21	40S021	4/24/99 13:00	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-21	40S021	4/24/99 13:00	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-21	40S021	4/24/99 13:00	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.9
OR6368-21	40S021	4/24/99 13:00	8310	Acenaphthene	17	U	1	µg/Kg	17	6.9
OR6368-21	40S021	4/24/99 13:00	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-21	40S021	4/24/99 13:00	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-21	40S021	4/24/99 13:00	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-21	40S021	4/24/99 13:00	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-21	40S021	4/24/99 13:00	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.4
OR6368-21	40S021	4/24/99 13:00	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-21	40S021	4/24/99 13:00	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-21	40S021	4/24/99 13:00	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-21	40S021	4/24/99 13:00	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-21	40S021	4/24/99 13:00	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-21	40S021	4/24/99 13:00	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-21	40S021	4/24/99 13:00	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-21	40S021	4/24/99 13:00	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.69
OR6368-21	40S021	4/24/99 13:00	8310	p-Terphenyl	84		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-21	40S021	4/24/99 13:00	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-21	40S021	4/24/99 13:00	SM2540G	Percent Solids	97			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave Charleston, SC 29405-2106

Report #: OR6368
Date Submitted: 26-Apr-99
Date Reported: 5-May-99
Project #: SA-40
Project Name: NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-22	40S022	4/24/99 13:10	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-22	40S022	4/24/99 13:10	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.4
OR6368-22	40S022	4/24/99 13:10	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.4
OR6368-22	40S022	4/24/99 13:10	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-22	40S022	4/24/99 13:10	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-22	40S022	4/24/99 13:10	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-22	40S022	4/24/99 13:10	8310	Phenanthrene	34	U	1	µg/Kg	34	1.4
OR6368-22	40S022	4/24/99 13:10	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-22	40S022	4/24/99 13:10	8310	Fluoranthene	3.4	U	1	µg/Kg	3.4	1.4
OR6368-22	40S022	4/24/99 13:10	8310	Pyrene	1.7	U	1	µg/Kg	1.7	1.4
OR6368-22	40S022	4/24/99 13:10	8310	Benzo(a)anthracene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-22	40S022	4/24/99 13:10	8310	Chrysene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-22	40S022	4/24/99 13:10	8310	Benzo(b)fluoranthene	3	U	1	µg/Kg	3	2
OR6368-22	40S022	4/24/99 13:10	8310	Benzo(k)fluoranthene	2	U	1	µg/Kg	2	1
OR6368-22	40S022	4/24/99 13:10	8310	Benzo(a)pyrene	2	U	1	µg/Kg	2	1
OR6368-22	40S022	4/24/99 13:10	8310	Dibenzo(a,h)anthracene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-22	40S022	4/24/99 13:10	8310	Benzo(g,h,i)perylene	3.4	U	1	µg/Kg	3.4	2.4
OR6368-22	40S022	4/24/99 13:10	8310	Indeno(1,2,3-cd)pyrene	1.7	U	1	µg/Kg	1.7	0.68
OR6368-22	40S022	4/24/99 13:10	8310	p-Terphenyl	96		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-22	40S022	4/24/99 13:10	6010	Arsenic	0.5	U	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-22	40S022	4/24/99 13:10	SM2540G	Percent Solids	98			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6368
		Date Submitted:	26-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC-Orlando SCA

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-23	40S023	4/24/99 13:15	8310	Naphthalene	17	U	1	µg/Kg	17	6.8
OR6368-23	40S023	4/24/99 13:15	8310	Acenaphthylene	34	U	1	µg/Kg	34	3.3
OR6368-23	40S023	4/24/99 13:15	8310	1-Methylnaphthalene	34	U	1	µg/Kg	34	3.3
OR6368-23	40S023	4/24/99 13:15	8310	2-Methylnaphthalene	34	U	1	µg/Kg	34	6.8
OR6368-23	40S023	4/24/99 13:15	8310	Acenaphthene	17	U	1	µg/Kg	17	6.8
OR6368-23	40S023	4/24/99 13:15	8310	Fluorene	3.4	U	1	µg/Kg	3.4	1.3
OR6368-23	40S023	4/24/99 13:15	8310	Phenanthrene	34	U	1	µg/Kg	34	1.3
OR6368-23	40S023	4/24/99 13:15	8310	Anthracene	2	U	1	µg/Kg	2	1
OR6368-23	40S023	4/24/99 13:15	8310	Fluoranthene	17		1	µg/Kg	3.4	1.3
OR6368-23	40S023	4/24/99 13:15	8310	Pyrene	8.8		1	µg/Kg	1.7	1.3
OR6368-23	40S023	4/24/99 13:15	8310	Benzo(a)anthracene	3		1	µg/Kg	1.7	0.68
OR6368-23	40S023	4/24/99 13:15	8310	Chrysene	8		1	µg/Kg	1.7	0.68
OR6368-23	40S023	4/24/99 13:15	8310	Benzo(b)fluoranthene	8		1	µg/Kg	3	2
OR6368-23	40S023	4/24/99 13:15	8310	Benzo(k)fluoranthene	5		1	µg/Kg	2	1
OR6368-23	40S023	4/24/99 13:15	8310	Benzo(a)pyrene	9		1	µg/Kg	2	1
OR6368-23	40S023	4/24/99 13:15	8310	Dibenzo(a,h)anthracene	14		1	µg/Kg	3.4	2.4
OR6368-23	40S023	4/24/99 13:15	8310	Benzo(g,h,i)perylene	6.4	I	1	µg/Kg	3.4	2.4
OR6368-23	40S023	4/24/99 13:15	8310	Indeno(1,2,3-cd)pyrene	6.8		1	µg/Kg	1.7	0.68
				p-Terphenyl	88		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-23	40S023	4/24/99 13:15	6010	Arsenic	1.6	I	1	mg/Kg	0.5	0.4

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6368-23	40S023	4/24/99 13:15	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = analyte detected; value is beween the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

QS # _____

ENVIRONMEI .L CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC Orlando | PROJECT NO.: SA-40 | P.O. NUMBER:
PROJECT LOC. (State): FL. | SAMPLER(s) NAME: Rusty Cope | PHONE: 496-2173 | FAX: 1-843-743-2801
CLIENT NAME: ENV. Detachment CHASN | CLIENT PROJECT MANAGER: A. Moyer
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave, N. Charleston SC 29405

PAGE 1 OF 2

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due 4/30/99

STATION	SAMPLE DATE	SAMPLE TIME	GRAB	COMP	SAMPLE IDENTIFICATION	MATRIX: SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	REQUIRED ANALYSIS: ARSENIC	PAH	NUMBER OF CONTAINERS SUBMITTED	REMARKS
1	4/24/99	1005	X		40S001					X					X	X		
2		1010	X		40S002					X					X	X		
3		1014	X		40S003					X					X	X		
4		1020	X		40S004					X					X	X		
5		1030	X		40S005					X					X	X		
6		1036	X		40S006					X					X	X		
7		1044	X		40S007					X					X	X		
8		1050	X		40S008					X					X	X		
9		1055	X		40S009					X					X	X		
10		1104	X		40S010					X					X	X		
11		1110	X		40S011					X					X	X		
12		1120	X		40S012					X					X	X		
13		1145	X		40S013					X					X	X		
14		1200	X		40S014					X					X	X		

	DATE	TIME		DATE	TIME		DATE	TIME
SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE) R W Cope	4/27/99	0900	RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY: (SIGNATURE)	4/27/99	0900	RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☐ Jacksonville ☐ Orlando	4-26-99	1:10	☐ YES ☐ NO	OR6364	

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

PROJECT REFERENCE: NTC Orlando	PROJECT NO.	P.O. NUMBER	
PROJECT LOC (State): FL.	SAMPLER(S) NAME: Rusty Cope	PHONE: 496-2173	FAX
CLIENT NAME: Env. Det Chasn	CLIENT PROJECT MANAGER: A. Moyer		
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N. Chas., SC 29405			

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: 4/30/99

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	MATRIX TYPE: SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	REQUIRED ANALYSIS: Arsenic	PAH	NUMBER OF CONTAINERS SUBMITTED	REMARKS
1	4/24/99	1210	X		40S015					X					X	X		
2	4/24/99	1217	X		40S016					X					X	X		
3	4/24/99	1224	X		40S017					X					X	X		
4	4/24/99	1231	X		40S018					X					X	X		
5		1240	X		40S019					X					X	X		
6		1248	X		40S020					X					X	X		
7		1300	X		40S021					X					X	X		Split RWC
8		1310	X		40S022					X					X	X		Split RWC Split
9		1315	X		40S023					X					X	X		
10		1300	X		40C024					X					X	X		Duplicate of 40S021
11																		
12																		
13																		
14																		

SAMPLE KIT PREPARED BY: ☐ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
RELINQUISHED BY: (SIGNATURE) K W Cope	DATE 4/27/99	TIME 0900	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE / TIME
RECEIVED BY: (SIGNATURE)	DATE 4/27/99	TIME 0900	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
RECEIVED FOR LABORATORY BY: (SIGNATURE) K. Armstrong ☐ Jacksonville ☐ Orlando	DATE 4/26/99	TIME 11:10	CUSTODY INTACT ☐ YES ☐ NO	ENCO LOG NO. OR6364		REMARKS	

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 18, 1999

Sample ID	: 99SPORT0180-1
Lab ID	: 9905413-01
Matrix	: Soil
Date Collected	: 05/12/99
Date Received	: 05/13/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		830	433	476	ug/kg	2.0	MBL	05/15/99	1456	149142	1
The following prep procedures were performed:											
TRACE							FGD	05/14/99	1200	149142	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

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

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

9905413-01

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 18, 1999

Sample ID	: 99SPORT0180-2
Lab ID	: 9905413-02
Matrix	: Soil
Date Collected	: 05/12/99
Date Received	: 05/13/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
tractable Organics											
lynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	ND	157	330	ug/kg	1.0	JPA	05/17/99	1822	149112	1
Acenaphthylene	U	ND	144	330	ug/kg	1.0					
Anthracene	U	ND	85.3	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	65.6	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.2	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	141	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	78.7	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	131	330	ug/kg	1.0					
Chrysene	U	ND	52.5	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.0	330	ug/kg	1.0					
Fluoranthene	U	ND	65.6	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	78.7	330	ug/kg	1.0					
Naphthalene	U	ND	154	330	ug/kg	1.0					
Phenanthrene	U	ND	59.0	330	ug/kg	1.0					
Pyrene	U	ND	72.2	330	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds RDH 05/17/99 1300 149112 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
Fluorobiphenyl	M610	51.1	(44.7 - 110.)
robenzene-d5	M610	43.3	(42.4 - 107.)
p-Terphenyl-d14	M610	74.0	(45.5 - 104.)

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905413-02

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874.
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 18, 1999

Sample ID : 99SPORT0180-2

Surrogate Recovery	Test	Percent%	Acceptable Limits

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

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

N00014 5 DAY TURN AROUND

CHAIN OF CUSTODY RECORD

9905413 %

Page 1 of 1

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC ORLANDO

Collected by/Company: ENV DET CHAS

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify, Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	ARSENIC ICP	PAH 8270	Remarks
01 99SPORT0180-1	5/12/99	1750		X		X	1																X		SA400565 .1
02 99SPORT0180-2	5/12/99	1755		X		X	1																	X	SA400568 .2
03 99SPORT0180-3	5/12/99	1800		X		X	1																X		SA400571 .1
04 99SPORT0180-4	5/12/99	1805		X		X	1																X		SA400574 .1

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40223

Relinquished by:	Date:	Time:	Received by:
Alan J Mayo	5/14/99	1900	
Relinquished by:	Date:	Time:	Received by lab by:

Relinquished by:	Date:	Time:	Received by:
	5/12/99	930	

Remarks:

White = sample collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID	: 99SPORT0172-4
Lab ID	: 9905240-04
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
lynuclear Aromatic Hydrocarbons - 16 items											
cenaphthene	U	ND	157	330	ug/kg	1.0	MKP	05/11/99	0504	148656	1
Acenaphthylene	U	ND	144	330	ug/kg	1.0					
Anthracene	U	ND	85.3	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	65.6	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.2	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	141	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	78.7	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	131	330	ug/kg	1.0					
Chrysene	U	ND	52.5	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.0	330	ug/kg	1.0					
Fluoranthene	U	ND	65.6	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	78.7	330	ug/kg	1.0					
Naphthalene	U	ND	154	330	ug/kg	1.0					
Phenanthrene	U	ND	59.0	330	ug/kg	1.0					
Pyrene	U	ND	72.2	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 05/10/99 0900 148656 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	50.0	(44.7 - 110.)
obenzene-d5	M610	49.8	(42.4 - 107.)
erphenyl-d14	M610	62.2	(45.5 - 104.)

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905240-04

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID : 99SPORT0172-4

Surrogate Recovery	Test	Percent %	Acceptable Limits

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

es:

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905240-04

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID	: 99SPORT0172-5
Lab ID	: 9905240-05
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	ND	157	330	ug/kg	1.0	MKP	05/11/99	0533	148656	1
Acenaphthylene	U	ND	144	330	ug/kg	1.0					
Anthracene	U	ND	85.3	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	65.6	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.2	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	141	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	78.7	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	131	330	ug/kg	1.0					
Chrysene	U	ND	52.5	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.0	330	ug/kg	1.0					
Fluoranthene	U	ND	65.6	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	J	102	78.7	330	ug/kg	1.0					
Naphthalene	U	ND	154	330	ug/kg	1.0					
Phenanthrene	J	75.9	59.0	330	ug/kg	1.0					
Pyrene	J	111	72.2	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 05/10/99 0900 148656 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	53.8	(44.7 - 110.)
Nitrobenzene-d5	M610	55.0	(42.4 - 107.)
Terphenyl-d14	M610	70.7	(45.5 - 104.)

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

9905240-05

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID : 99SPORT0172-5

Surrogate Recovery	Test	Percent%	Acceptable Limits

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

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905240-05

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID	: 99SPORT0172-8
Lab ID	: 9905240-08
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
olynuclear Aromatic Hydrocarbons - 16 items											
cenaphthene	U	ND	630	1310	ug/kg	4.0	MKP	05/11/99	0700	148656	1
Acenaphthylene	U	ND	577	1310	ug/kg	4.0					
Anthracene	U	ND	341	1310	ug/kg	4.0					
Benzo(a)anthracene	U	ND	262	1310	ug/kg	4.0					
Benzo(a)pyrene	U	ND	289	1310	ug/kg	4.0					
Benzo(b)fluoranthene	U	ND	564	1310	ug/kg	4.0					
Benzo(ghi)perylene	U	ND	315	1310	ug/kg	4.0					
Benzo(k)fluoranthene	U	ND	525	1310	ug/kg	4.0					
Chrysene	J	314	210	1310	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	ND	328	1310	ug/kg	4.0					
Fluoranthene	J	334	262	1310	ug/kg	4.0					
Fluorene	U	ND	446	1310	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	J	455	315	1310	ug/kg	4.0					
Naphthalene	U	ND	617	1310	ug/kg	4.0					
Phenanthrene	U	ND	236	1310	ug/kg	4.0					
Pyrene	J	582	289	1310	ug/kg	4.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

RDH 05/10/99 0900 148656 2

Comments:
Surrogate recovery fails due to sample dilution.

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

9905240-08

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID : 99SPORT0172-8

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(44.7 - 110.)
Nitrobenzene-d5	M610	0.00*	(42.4 - 107.)
Terphenyl-d14	M610	57.5	(45.5 - 104.)

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

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID	: 99SPORT0172-11
Lab ID	: 9905240-11
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		2120	450	495	ug/kg	2.0	MBL	05/10/99	1419	148650	1
The following prep procedures were performed:											
TRACE							FGD	05/10/99	1000	148650	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

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

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled

9905240-11

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TX	02934	02934

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

cc: NPWC00197

Report Date: May 11, 1999

Sample ID	: 99SPORT0172-12
Lab ID	: 9905240-12
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		1890	450	495	ug/kg	2.0	MBL	05/10/99	1425	148650	
The following prep procedures were performed:											
TRACE							FGD	05/10/99	1000	148650	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

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

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905240-12

1/PWC00197

CHAIN OF CUSTODY RECORD

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 2

9905240/

Client Name/Facility Name: NTC Orlando

Collected by/Company: Env Det Chas

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide 8081	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic 7060	PAH 8270	Remarks
-01	99Sport0172-1	5/6/99	1350		X		X	1								X										SA9-11 .1
-02	99Sport0172-2	5/6/99	1352		X		X	1																X		SA9-12 1 .2
-03	99Sport0172-3	5/6/99	1615		X		X	1																	X	SA40S050 .3
-04	99Sport0172-4	5/6/99	1620		X		X	1																	X	SA40S051 .3
-05	99Sport0172-5	5/6/99	1625		X		X	1																	X	SA40S052 .3
-06	99Sport0172-6	5/6/99	1632		X		X	1																	X	SA40S053 .3
-07	99Sport0172-7	5/6/99	1640		X		X	1																	X	SA40S054 .3
-08	99Sport0172-8	5/6/99	1645		X		X	1																	X	SA40S055 .3
-09	99Sport0172-9	5/6/99	1652		X		X	1																	X	SA40S056 .3
-10	99Sport0172-10	5/6/99	1617		X		X	1																X		SA40S057 .2
-11	99Sport0172-11	5/6/99	1622		X		X	1																X		SA40S058 .2
-12	99Sport0172-12	5/6/99	1627		X		X	1																X		SA40S059 .2
-13	99Sport0172-13	5/6/99	1634		X		X	1																X		SA40S060 .2

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

3 Day Turnaround 40090

Relinquished by:	Date:	Time:	Received by:
KW Cope	5/6/99	1845	
Relinquished by:	Date:	Time:	Received by lab by:

Relinquished by:	Date:	Time:	Received by:
Date:	Time:	Remarks:	
5-7-99	10:30		

White = sample collector Yellow = file Pink = with report

DWC00197

General Engineering Lab[illegible]ries, Inc.
2040 Savage Road
Charleston, South Carol[illegible]407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9905240%

Page 2 of 2

Client Name/Facility Name: NTC Orlando

Collected by/Company: Env Det Chas

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify, Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic ICP	Remarks
-14	99Sport0172-14	5/6/99	1643		X		X	1																X	SA40S061 .2
-15	99Sport0172-15	5/6/99	1648		X		X	1																X	SA40S0621 .2
-16	99Sport0172-16	5/6/99	1655		X		X	1																X	SA40S063 .2

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or method

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40090

3 DAY TURNAROUND

Remarks

Relinquished by:	Date:	Time:	Received by:
K W Cope	5/6/99	1845	
Relinquished by:	Date:	Time:	Received by lab by:
			P. Power

Relinquished by:	Date:	Time:	Received by:
Date: 5-7-99	Time: 10:30	Remarks:	

White [illegible]ple collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 18, 1999

Sample ID	: 99SPORT0181-2
Lab ID	: 9905414-02
Matrix	: Soil
Date Collected	: 05/12/99
Date Received	: 05/13/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
olynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	ND	157	330	ug/kg	1.0	EH1	05/14/99	2003	149112	1
Acenaphthylene	U	ND	144	330	ug/kg	1.0					
Anthracene	U	ND	85.3	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	65.6	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.2	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	141	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	78.7	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	131	330	ug/kg	1.0					
Chrysene	U	ND	52.5	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.0	330	ug/kg	1.0					
Fluoranthene	U	ND	65.6	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	78.7	330	ug/kg	1.0					
Naphthalene	U	ND	154	330	ug/kg	1.0					
Phenanthrene	U	ND	59.0	330	ug/kg	1.0					
Pyrene	U	ND	72.2	330	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 05/14/99 1300 149112 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	61.5	(44.7 - 110.)
Nitrobenzene-d5	M610	64.8	(42.4 - 107.)
p-Terphenyl-d14	M610	72.5	(45.5 - 104.)

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

9905414-02

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 18, 1999

Sample ID : 99SPORT0181-2

Surrogate Recovery	Test	Percent %	Acceptable Limits

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

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

VPLOC00197 3 DAY TURN AROUND

CHAIN OF CUSTODY RECORD

9905414%

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1

Client Name/Facility Name: NTC ORLANDO

Collected by/Company: ENV DET CHASN

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	ARSENIC ICP	PAH 8270	Remarks
-01	99SPORTO181-1	5/12/99	1810		X		X																	X		SA40056 .1
-02	99SPORTO181-2	5/12/99	1815		X		X																		X	SA40569 1 .2
-03	99SPORTO181-3	5/12/99	1820		X		X																	X		SA40072 .1
-04	99SPORTO181-4	5/12/99	1825		X		X																	X		SA40075 .1

40334

Remarks

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
Alan J Moya	5/12/99	1900					
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	
				5/13/99	930		

White - Sample collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

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

cc: NPWC00197

Report Date: May 21, 1999

Sample ID	: 99SPORT0186-1
Lab ID	: 9905646-01
Matrix	: Soil
Date Collected	: 05/18/99
Date Received	: 05/19/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	446	490	ug/kg	2.0	MBL	05/20/99	1919	149491	

The following prep procedures were performed:

TRACE

AJM 05/19/99 1715 149491 2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

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

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

9905646-01

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1

CHAIN OF CUSTODY RECORD

9905646 %

Client Name/Facility Name: NTC Orlando

Collected by/Company: ENV DET Chasn

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify, Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic ICP	Remarks
01	99Sport0186-1	5/18/99	0950		X		X	1																X	SA40SO76@20'
02	99Sport0186-2	5/18/99	0955		X		X	1																X	SA40SO77@25'

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

10343

3 DAY

Remarks

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
KW Cope	5/18/99	1500					
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	
			Brown	5/19/99	1000		

White = sample collector Yellow = file Pink = with report

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC Orlando | PROJECT NO: SA-40 | P.O. NUMBER:
PROJECT LOC (State): FL | SAMPLER(s) NAME: Rusty Cope | PHONE: 496-2173 | FAX:
CLIENT NAME: Environmental Detachment Chas. | CLIENT PROJECT MANAGER: A.J. Moyer
CLIENT ADDRESS (CITY, STATE ZIP): 1899 N Hobson Ave N. Chas. S.C. 29405

PAGE ____ OF ____

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	MATRIX TYPE: SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (w/ solvent, etc.)	AIR	SLUDGE	OTHER	REQUIRED ANALYSIS: TCLP metals	VOC 8021	Arsenic	NUMBER OF CONTAINERS SUBMITTED	REMARKS
1	5/3/99	1240		X	SA40S025					X					1				Profiles for Land Disposal
2	5/3/99	1220		X	SA40S026					X					1				
3	5/3/99	1200		X	SA40S027					X					1				
4	5/3/99	1140		X	SA40S028					X					1				
5	5/3/99	1130		X	SA40S029					X					1				
6	5/3/99	1115		X	SA40S030					X					1				
7	5/3/99	1050		X	SA40S031					X					1				
8 ✓	5/2/99	1110	X		SA40S032					X						1			
9 ✓	5/2/99	1115	X		SA40S033					X						1			
10 ✓	5/2/99	1120	X		SA40S034					X						1			
11 ✓	5/2/99	1125	X		SA40S035					X						1			
12	5/3/99	1233	X		SA40S036										1				
13	5/3/99	1235	X		SA40S037										1				
14	5/3/99	1220	X		SA40S038										1				

SAMPLE KIT PREPARED BY: ☐ JACKSONVILLE ☐ ORLANDO — DATE — TIME

RELINQUISHED BY (SIGNATURE): K W Cope — DATE: 5/3/99 — TIME: 1415

RECEIVED BY (SIGNATURE): James W. Gregory — DATE: 5/3/99 — TIME: 1415

RELINQUISHED BY (SIGNATURE) — DATE — TIME

RECEIVED BY (SIGNATURE) — DATE — TIME

RELINQUISHED BY (SIGNATURE) — DATE — TIME

RECEIVED BY (SIGNATURE) — DATE — TIME

RECEIVED FOR LABORATORY BY (SIGNATURE): K.M. Foose — ☐ Jacksonville ☐ Orlando — DATE: 5-3-99 — TIME: 3:30

CUSTODY INTACT: ☐ YES ☐ NO

ENCO LOG NO: 0R64

REMARKS

WASTE CHARACTERIZATION

Environmental Conservation Laboratories
10207 General Drive
rlando, Florida 32824-8529
J7 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Environmental Detachment
ADDRESS: Charleston
1899 N. Hobson Ave
Charleston, SC 29405-2106

REPORT # : OR6461
DATE SUBMITTED: May 3, 1999
DATE REPORTED : May 6, 1999

ATTENTION: Rusty Cope

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: SA-40

NTC Orlando

#1	-	SA40SO25 @ 12:40	(05/03/99)
#2	-	SA40SO26 @ 12:20	(05/03/99)
#3	-	SA40SO27 @ 12:00	(05/03/99)
#4	-	SA40S028 @ 11:40	(05/03/99)
#5	-	SA40SO29 @ 11:30	(05/03/99)
#6	-	SA40SO30 @ 11:15	(05/03/99)
#7	-	SA40SO31 @ 10:50	(05/03/99)
#8	-	SA40SO32 @ 11:10	(05/02/99)
#9	-	SA40SO33 @ 11:15	(05/02/99)
#10	-	SA40SO34 @ 11:20	(05/02/99)
#11	-	SA40SO35 @ 11:25	(05/02/99)
#12	-	SA40SO36 @ 12:33	(05/03/99)
#13	-	SA40SO37 @ 12:35	(05/03/99)
#14	-	SA40SO38 @ 12:20	(05/03/99)

ECT MANAGER _____
David Vesey

Environmental Conservation Laboratories
10207 General Drive
rlando, Florida 32824-8529
07 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-1	SA40SO25	5/3/99 12:40	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-1	SA40SO25	5/3/99 12:40	1311/7080	TCLP Barium	2	U		mg/L	2	2
OR6461-1	SA40SO25	5/3/99 12:40	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-1	SA40SO25	5/3/99 12:40	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-1	SA40SO25	5/3/99 12:40	1311/7420	TCLP Lead	0.5	U		mg/L	0.5	0.1
OR6461-1	SA40SO25	5/3/99 12:40	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-1	SA40SO25	5/3/99 12:40	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-1	SA40SO25	5/3/99 12:40	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-2	SA40SO26	5/3/99 12:20	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-2	SA40SO26	5/3/99 12:20	1311/7080	TCLP Barium	2	I		mg/L	2	2
OR6461-2	SA40SO26	5/3/99 12:20	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-2	SA40SO26	5/3/99 12:20	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-2	SA40SO26	5/3/99 12:20	1311/7420	TCLP Lead	0.5	U		mg/L	0.5	0.1
OR6461-2	SA40SO26	5/3/99 12:20	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-2	SA40SO26	5/3/99 12:20	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-2	SA40SO26	5/3/99 12:20	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.
I = Analyte deteched; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-3	SA40SO27	5/3/99 12:00	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-3	SA40SO27	5/3/99 12:00	1311/7080	TCLP Barium	2	U		mg/L	2	2
OR6461-3	SA40SO27	5/3/99 12:00	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-3	SA40SO27	5/3/99 12:00	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-3	SA40SO27	5/3/99 12:00	1311/7420	TCLP Lead	0.5			mg/L	0.5	0.1
OR6461-3	SA40SO27	5/3/99 12:00	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-3	SA40SO27	5/3/99 12:00	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-3	SA40SO27	5/3/99 12:00	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-4	SA40S028	5/3/99 11:40	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-4	SA40S028	5/3/99 11:40	1311/7080	TCLP Barium	3	I		mg/L	2	2
OR6461-4	SA40S028	5/3/99 11:40	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-4	SA40S028	5/3/99 11:40	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-4	SA40S028	5/3/99 11:40	1311/7420	TCLP Lead	0.5	U		mg/L	0.5	0.1
OR6461-4	SA40S028	5/3/99 11:40	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-4	SA40S028	5/3/99 11:40	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-4	SA40S028	5/3/99 11:40	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.
I = Analyte deteched; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7080	TCLP Barium	2	U		mg/L	2	2
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7420	TCLP Lead	0.5	U		mg/L	0.5	0.1
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-5	SA40SO29	5/3/99 11:30	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-6	SA40SO30	5/3/99 11:15	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-6	SA40SO30	5/3/99 11:15	1311/7080	TCLP Barium	2	U		mg/L	2	2
OR6461-6	SA40SO30	5/3/99 11:15	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-6	SA40SO30	5/3/99 11:15	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-6	SA40SO30	5/3/99 11:15	1311/7420	TCLP Lead	0.5	U		mg/L	0.5	0.1
OR6461-6	SA40SO30	5/3/99 11:15	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-6	SA40SO30	5/3/99 11:15	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-6	SA40SO30	5/3/99 11:15	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-7	SA40SO31	5/3/99 10:50	1311/7060	TCLP Arsenic	0.05	U		mg/L	0.05	0.005
OR6461-7	SA40SO31	5/3/99 10:50	1311/7080	TCLP Barium	2	U		mg/L	2	2
OR6461-7	SA40SO31	5/3/99 10:50	1311/7130	TCLP Cadmium	0.1	U		mg/L	0.1	0.015
OR6461-7	SA40SO31	5/3/99 10:50	1311/7190	TCLP Chromium	0.5	U		mg/L	0.5	0.1
OR6461-7	SA40SO31	5/3/99 10:50	1311/7420	TCLP Lead	0.5			mg/L	0.5	0.1
OR6461-7	SA40SO31	5/3/99 10:50	1311/7470	TCLP Mercury	0.005	U		mg/L	0.005	0.001
OR6461-7	SA40SO31	5/3/99 10:50	1311/7740	TCLP Selenium	0.05	U		mg/L	0.05	0.015
OR6461-7	SA40SO31	5/3/99 10:50	1311/7760	TCLP Silver	0.2	U		mg/L	0.2	0.1

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
Address:	1899 N. Hobson Ave	Date Reported:	6-May-99
	Charleston, SC 29405-2106	Project #:	SA-40
		Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-8	SA40SO32	5/2/99 11:10	7060	Arsenic	0.4	U		mg/Kg	0.4	0.05
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-8	SA40SO32	5/2/99 11:10	SM2540G	Percent Solids	93			%		

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
Address:	1899 N. Hobson Ave	Date Reported:	6-May-99
	Charleston, SC 29405-2106	Project #:	SA-40
		Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-9	SA40SO33	5/2/99 11:15	7060	Arsenic	0.5	U		mg/Kg	0.5	0.06
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-9	SA40SO33	5/2/99 11:15	SM2540G	Percent Solids	86			%		

U = Compound was analyzed for but not detected to the level shown

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
Address:	1899 N. Hobson Ave	Date Reported:	6-May-99
	Charleston, SC 29405-2106	Project #:	SA-40
		Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-10	SA40SO34	5/2/99 11:20	7060	Arsenic	1.5			mg/Kg	0.4	0.05
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-10	SA40SO34	5/2/99 11:20	SM2540G	Percent Solids	93			%		

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
Address:	1899 N. Hobson Ave	Date Reported:	6-May-99
	Charleston, SC 29405-2106	Project #:	SA-40
		Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-11	SA40SO35	5/2/99 11:25	7060	Arsenic	0.4	U		mg/Kg	0.4	0.05
SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-11	SA40SO35	5/2/99 11:25	SM2540G	Percent Solids	96			%		

U = Compound was analyzed for but not detected to the level shown

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-12	SA40SO36	5/3/99 12:33	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6461-12	SA40SO36	5/3/99 12:33	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6461-12	SA40SO36	5/3/99 12:33	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6461-12	SA40SO36	5/3/99 12:33	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Bromofluorobenzene	40		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-12	SA40SO36	5/3/99 12:33	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6461-12	SA40SO36	5/3/99 12:33	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Methylene Chloride	10	VJ4	1	µg/Kg	3	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6461-12	SA40SO36	5/3/99 12:33	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6461-12	SA40SO36	5/3/99 12:33	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-12	SA40SO36	5/3/99 12:33	8021	Bromofluorobenzene	73	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-12	SA40SO36	5/3/99 12:33	SM2540G	Percent Solids	96			%		

NOTE: Analyte values are reported on a dry weight basis.

V = Analyte detected in laboratory method blank.
J4 = Matrix interferences confirmed by duplicate analysis (see narrative).
U = Compound was analyzed for but not detected to the level shown.

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave Charleston, SC 29405-2106

Report #: OR6461
Date Submitted: 3-May-99
Date Reported: 6-May-99
Project #: SA-40
Project Name: NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-13	SA40SO37	5/3/99 12:35	8021	Methyl tert-butyl ether	2	UJ4	1	µg/Kg	2	2
OR6461-13	SA40SO37	5/3/99 12:35	8021	Benzene	1	UJ4	1	µg/Kg	1	0.8
OR6461-13	SA40SO37	5/3/99 12:35	8021	Toluene	5	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	Ethylbenzene	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	m-Xylene & p-Xylene	2	UJ4	1	µg/Kg	2	2
OR6461-13	SA40SO37	5/3/99 12:35	8021	o-Xylene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Bromofluorobenzene	36	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-13	SA40SO37	5/3/99 12:35	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6461-13	SA40SO37	5/3/99 12:35	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Methylene Chloride	19	VJ4	1	µg/Kg	3	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6461-13	SA40SO37	5/3/99 12:35	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6461-13	SA40SO37	5/3/99 12:35	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-13	SA40SO37	5/3/99 12:35	8021	Bromofluorobenzene	60	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-13	SA40SO37	5/3/99 12:35	SM2540G	Percent Solids	99			%		

NOTE: Analyte values are reported on a dry weight basis.

V = Analyte detected in laboratory method blank.
J4 = Matrix interferences confirmed by duplicate analysis (see narrative).
U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6461
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-14	SA40SO38	5/3/99 12:20	8021	Methyl tert-butyl ether	2	IJ4	1	µg/Kg	2	2
OR6461-14	SA40SO38	5/3/99 12:20	8021	Benzene	1	UJ4	1	µg/Kg	1	0.9
OR6461-14	SA40SO38	5/3/99 12:20	8021	Toluene	5	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Ethylbenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	m-Xylene & p-Xylene	2	UJ4	1	µg/Kg	2	2
OR6461-14	SA40SO38	5/3/99 12:20	8021	o-Xylene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Bromofluorobenzene	28	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER				UNITS	RDL	MDL
OR6461-14	SA40SO38	5/3/99 12:20	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.8
OR6461-14	SA40SO38	5/3/99 12:20	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Chloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Methylene Chloride	47	VJ4	1	µg/Kg	3	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.8
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Chloroform	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6461-14	SA40SO38	5/3/99 12:20	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.9
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.8
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6461-14	SA40SO38	5/3/99 12:20	8021	Bromofluorobenzene	34	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6461-14	SA40SO38	5/3/99 12:20	SM2540G	Percent Solids	92			%		

NOTE: Analyte values are reported on a dry weight basis.

V = Analyte detected in laboratory method blank.
J4 = Matrix interferences confirmed by duplicate analysis (see narrative).
U = Compound was analyzed for but not detected to the level shown.

ENVIRONMENTAL CONSERVATION LABORATORIES

C[illegible]RF #_____

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
NTC Orlando	SA-40	

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Rusty Cope	496-2173	

CLIENT NAME	CLIENT PROJECT MANAGER
Environmental Detachment Chas.	A.J. Moyer

CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N Hobson Ave N. Chas. S.C. 29405

PAGE ____ OF ____

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: _____

SAMPLE STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	MATRIX TYPE: SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	REQUIRED ANALYSIS: TCLP metals	VOC 8021	Arsenic	REMARKS
						NUMBER OF CONTAINERS SUBMITTED												
1	5/3/99	1240		X	SA40S025					X					1			Profiles for Land Disposal
2	5/3/99	1220		X	SA40S026					X					1			
3	5/3/99	1200		X	SA40S027					X					1			
4	5/3/99	1140		X	SA40S028					X					1			
5	5/3/99	1130		X	SA40S029					X					1			
6	5/3/99	1115		X	SA40S030					X					1			
7	5/3/99	1050		X	SA40S031					X					1			
8 ✓	5/2/99	1110	X		SA40S032					X						1		
9 ✓	5/2/99	1115	X		SA40S033					X						1		
10 ✓	5/2/99	1120	X		SA40S034					X						1		
11 ✓	5/2/99	1125	X		SA40S035					X						1		
12	5/3/99	1233	X		SA40S036										1			
13	5/3/99	1235	X		SA40S037										1			
14	5/3/99	1220	X		SA40S038										1			

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			K W Cope	5/3/99	1415	James W. Gregory	5/3/99	1415
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☐ Jacksonville ☐ Orlando	DATE	TIME	CUSTODY INTACT ☐ YES ☐ NO	ENCO LOG NO	REMARKS
K.F Strong	5-3-99	3:30		Orl. el	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
07 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Environmental Detachment
ADDRESS: Charleston
1899 N. Hobson Ave
Charleston, SC 29405-2106

REPORT # : OR6462
DATE SUBMITTED: May 3, 1999
DATE REPORTED : May 7, 1999

ATTENTION: Rusty Cope

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: SA-40

NTC Orlando

05/03/99

#1 - SA40SO39 @ 12:15
#2 - SA40SO40 @ 12:05
#3 - SA40SO41 @ 12:08
#4 - SA40SO42 @ 11:35
#5 - SA40SO43 @ 11:40
#6 - SA40SO44 @ 11:15
#7 - SA40SO45 @ 11:20
#8 - SA40SO46 @ 11:05
#9 - SA40SO47 @ 11:00
#10 - SA40SO48 @ 10:44
#11 - SA40SO49 @ 10:40

JECT MANAGER Marcia C. Terlep

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
07 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-1	SA40SO39	5/3/99 12:15	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-1	SA40SO39	5/3/99 12:15	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-1	SA40SO39	5/3/99 12:15	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-1	SA40SO39	5/3/99 12:15	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Bromofluorobenzene	97		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-1	SA40SO39	5/3/99 12:15	8021	Dichlorodifluoromethane	1	U	1	µg/Kg	1	0.7
OR6462-1	SA40SO39	5/3/99 12:15	8021	Chloromethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Vinyl Chloride	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Bromomethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Chloroethane	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	Trichlorofluoromethane	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,1-Dichloroethene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Methylene Chloride	3	IV	1	µg/Kg	3	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	t-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.7
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,1-Dichloroethane	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	Chloroform	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	c-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,1,1-Trichloroethane	1	U	1	µg/Kg	1	0.8
OR6462-1	SA40SO39	5/3/99 12:15	8021	Carbon Tetrachloride	1	U	1	µg/Kg	1	0.8
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,2-Dichloroethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Trichloroethene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,2-Dichloropropane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Bromodichloromethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	c-1,3-Dichloropropene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	t-1,3-Dichloropropene	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,1,2-Trichloroethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Tetrachloroethene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Dibromochloromethane	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-1	SA40SO39	5/3/99 12:15	8021	Bromoform	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,1,2,2-Tetrachloroethane	2	U	1	µg/Kg	2	2
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	0.7
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-1	SA40SO39	5/3/99 12:15	8021	Bromofluorobenzene	97		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-1	SA40SO39	5/3/99 12:15	SM2540G	Percent Solids	99			%		

V = Analyte detected in laboratory method blank.
U = Compound was analyzed for but not detected to the level shown.
I = Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-2	SA40SO40	5/3/99 12:05	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-2	SA40SO40	5/3/99 12:05	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-2	SA40SO40	5/3/99 12:05	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-2	SA40SO40	5/3/99 12:05	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Bromofluorobenzene	87		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-2	SA40SO40	5/3/99 12:05	8021	Dichlorodifluoromethane	1	U	1	µg/Kg	1	0.7
OR6462-2	SA40SO40	5/3/99 12:05	8021	Chloromethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Vinyl Chloride	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Bromomethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Chloroethane	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	Trichlorofluoromethane	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,1-Dichloroethene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Methylene Chloride	4	IV	1	µg/Kg	3	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	t-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.7
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,1-Dichloroethane	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	Chloroform	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	c-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,1,1-Trichloroethane	1	U	1	µg/Kg	1	0.8
OR6462-2	SA40SO40	5/3/99 12:05	8021	Carbon Tetrachloride	1	U	1	µg/Kg	1	0.8
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,2-Dichloroethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Trichloroethene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,2-Dichloropropane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Bromodichloromethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	c-1,3-Dichloropropene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	t-1,3-Dichloropropene	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,1,2-Trichloroethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Tetrachloroethene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Dibromochloromethane	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-2	SA40SO40	5/3/99 12:05	8021	Bromoform	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,1,2,2-Tetrachloroethane	2	U	1	µg/Kg	2	2
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	0.7
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-2	SA40SO40	5/3/99 12:05	8021	Bromofluorobenzene	124		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-2	SA40SO40	5/3/99 12:05	SM2540G	Percent Solids	100			%		

V = Analyte detected in laboratory method blank.
U = Compound was analyzed for but not detected to the level shown
I = Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-3	SA40SO41	5/3/99 12:08	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-3	SA40SO41	5/3/99 12:08	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-3	SA40SO41	5/3/99 12:08	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-3	SA40SO41	5/3/99 12:08	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Bromofluorobenzene	117		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-3	SA40SO41	5/3/99 12:08	8021	Dichlorodifluoromethane	1	U	1	µg/Kg	1	0.7
OR6462-3	SA40SO41	5/3/99 12:08	8021	Chloromethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Vinyl Chloride	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Bromomethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Chloroethane	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	Trichlorofluoromethane	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,1-Dichloroethene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Methylene Chloride	4	IV	1	µg/Kg	3	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	t-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.7
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,1-Dichloroethane	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	Chloroform	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	c-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,1,1-Trichloroethane	1	U	1	µg/Kg	1	0.8
OR6462-3	SA40SO41	5/3/99 12:08	8021	Carbon Tetrachloride	1	U	1	µg/Kg	1	0.8
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,2-Dichloroethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Trichloroethene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,2-Dichloropropane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Bromodichloromethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	c-1,3-Dichloropropene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	t-1,3-Dichloropropene	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,1,2-Trichloroethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Tetrachloroethene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Dibromochloromethane	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-3	SA40SO41	5/3/99 12:08	8021	Bromoform	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,1,2,2-Tetrachloroethane	2	U	1	µg/Kg	2	2
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	0.7
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-3	SA40SO41	5/3/99 12:08	8021	Bromofluorobenzene	116		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-3	SA40SO41	5/3/99 12:08	SM2540G	Percent Solids	99			%		

V = Analyte detected in laboratory method blank.
U = Compound was analyzed for but not detected to the level shown.
I = Analyte detected, value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-4	SA40SO42	5/3/99 11:35	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-4	SA40SO42	5/3/99 11:35	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-4	SA40SO42	5/3/99 11:35	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-4	SA40SO42	5/3/99 11:35	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Bromofluorobenzene	48		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-4	SA40SO42	5/3/99 11:35	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-4	SA40SO42	5/3/99 11:35	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Methylene Chloride	7	VJ4	1	µg/Kg	3	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-4	SA40SO42	5/3/99 11:35	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6462-4	SA40SO42	5/3/99 11:35	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-4	SA40SO42	5/3/99 11:35	8021	Bromofluorobenzene	88	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-4	SA40SO42	5/3/99 11:35	SM2540G	Percent Solids	98			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative)
U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-5	SA40SO43	5/3/99 11:40	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-5	SA40SO43	5/3/99 11:40	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-5	SA40SO43	5/3/99 11:40	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-5	SA40SO43	5/3/99 11:40	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Bromofluorobenzene	81		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-5	SA40SO43	5/3/99 11:40	8021	Dichlorodifluoromethane	1	U	1	µg/Kg	1	0.7
OR6462-5	SA40SO43	5/3/99 11:40	8021	Chloromethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Vinyl Chloride	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Bromomethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Chloroethane	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	Trichlorofluoromethane	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,1-Dichloroethene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Methylene Chloride	4	IV	1	µg/Kg	3	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	t-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.7
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,1-Dichloroethane	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	Chloroform	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	c-1,2-Dichloroethene	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,1,1-Trichloroethane	1	U	1	µg/Kg	1	0.8
OR6462-5	SA40SO43	5/3/99 11:40	8021	Carbon Tetrachloride	1	U	1	µg/Kg	1	0.8
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,2-Dichloroethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Trichloroethene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,2-Dichloropropane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Bromodichloromethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	c-1,3-Dichloropropene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	t-1,3-Dichloropropene	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,1,2-Trichloroethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Tetrachloroethene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Dibromochloromethane	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-5	SA40SO43	5/3/99 11:40	8021	Bromoform	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,1,2,2-Tetrachloroethane	2	U	1	µg/Kg	2	2
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	0.7
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-5	SA40SO43	5/3/99 11:40	8021	Bromofluorobenzene	94		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-5	SA40SO43	5/3/99 11:40	SM2540G	Percent Solids	96			%		

V = Analyte detected in laboratory method blank.
U = Compound was analyzed for but not detected to the level shown
I = Analyte detected: value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-6	SA40SO44	5/3/99 11:15	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-6	SA40SO44	5/3/99 11:15	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-6	SA40SO44	5/3/99 11:15	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-6	SA40SO44	5/3/99 11:15	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Bromofluorobenzene	90		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-6	SA40SO44	5/3/99 11:15	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-6	SA40SO44	5/3/99 11:15	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Methylene Chloride	4	VJ4	1	µg/Kg	3	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-6	SA40SO44	5/3/99 11:15	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6462-6	SA40SO44	5/3/99 11:15	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-6	SA40SO44	5/3/99 11:15	8021	Bromofluorobenzene	115	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-6	SA40SO44	5/3/99 11:15	SM2540G	Percent Solids	100			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative)
U = Compound was analyzed for but not detected to the level shown

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-7	SA40SO45	5/3/99 11:20	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-7	SA40SO45	5/3/99 11:20	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-7	SA40SO45	5/3/99 11:20	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-7	SA40SO45	5/3/99 11:20	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Bromofluorobenzene	66		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-7	SA40SO45	5/3/99 11:20	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-7	SA40SO45	5/3/99 11:20	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Methylene Chloride	6	VJ4	1	µg/Kg	3	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-7	SA40SO45	5/3/99 11:20	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6462-7	SA40SO45	5/3/99 11:20	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-7	SA40SO45	5/3/99 11:20	8021	Bromofluorobenzene	88	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-7	SA40SO45	5/3/99 11:20	SM2540G	Percent Solids	95			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative).
U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-8	SA40SO46	5/3/99 11:05	8021	Methyl tert-butyl ether	2	UJ4	1	µg/Kg	2	2
OR6462-8	SA40SO46	5/3/99 11:05	8021	Benzene	1	UJ4	1	µg/Kg	1	0.8
OR6462-8	SA40SO46	5/3/99 11:05	8021	Toluene	5	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Ethylbenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	m-Xylene & p-Xylene	2	UJ4	1	µg/Kg	2	2
OR6462-8	SA40SO46	5/3/99 11:05	8021	o-Xylene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Bromofluorobenzene	52	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-8	SA40SO46	5/3/99 11:05	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-8	SA40SO46	5/3/99 11:05	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Chloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Methylene Chloride	5	VJ4	1	µg/Kg	3	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Chloroform	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-8	SA40SO46	5/3/99 11:05	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-8	SA40SO46	5/3/99 11:05	8021	Bromofluorobenzene	73	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-8	SA40SO46	5/3/99 11:05	SM2540G	Percent Solids	94			%		

V = Analyte deteched in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative)
U = Compound was analyzed for but not detected to the level shown

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-9	SA40SO47	5/3/99 11:00	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-9	SA40SO47	5/3/99 11:00	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-9	SA40SO47	5/3/99 11:00	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-9	SA40SO47	5/3/99 11:00	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Bromofluorobenzene	58		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-9	SA40SO47	5/3/99 11:00	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-9	SA40SO47	5/3/99 11:00	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Methylene Chloride	5	VJ4	1	µg/Kg	3	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-9	SA40SO47	5/3/99 11:00	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6462-9	SA40SO47	5/3/99 11:00	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-9	SA40SO47	5/3/99 11:00	8021	Bromofluorobenzene	80	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-9	SA40SO47	5/3/99 11:00	SM2540G	Percent Solids	98			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative)
U = Compound was analyzed for but not detected to the level shown

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-10	SA40SO48	5/3/99 10:44	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-10	SA40SO48	5/3/99 10:44	8021	Benzene	1	U	1	µg/Kg	1	0.9
OR6462-10	SA40SO48	5/3/99 10:44	8021	Toluene	5	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Chlorobenzene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Ethylbenzene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-10	SA40SO48	5/3/99 10:44	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Bromofluorobenzene	49		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-10	SA40SO48	5/3/99 10:44	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-10	SA40SO48	5/3/99 10:44	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Chloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Methylene Chloride	6	VJ4	1	µg/Kg	3	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.8
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Chloroform	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-10	SA40SO48	5/3/99 10:44	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.9
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.8
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-10	SA40SO48	5/3/99 10:44	8021	Bromofluorobenzene	72	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-10	SA40SO48	5/3/99 10:44	SM2540G	Percent Solids	93			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative).
U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6462
		Date Submitted:	3-May-99
		Date Reported:	7-May-99
Address:	1899 N. Hobson Ave	Project #:	SA-40
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-11	SA40SO49	5/3/99 10:40	8021	Methyl tert-butyl ether	2	U	1	µg/Kg	2	2
OR6462-11	SA40SO49	5/3/99 10:40	8021	Benzene	1	U	1	µg/Kg	1	0.8
OR6462-11	SA40SO49	5/3/99 10:40	8021	Toluene	5	U	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	Chlorobenzene	1	U	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	Ethylbenzene	1	U	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	m-Xylene & p-Xylene	2	U	1	µg/Kg	2	2
OR6462-11	SA40SO49	5/3/99 10:40	8021	o-Xylene	1	U	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,3-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,4-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,2-Dichlorobenzene	1	U	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Bromofluorobenzene	46		1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-11	SA40SO49	5/3/99 10:40	8021	Dichlorodifluoromethane	1	UJ4	1	µg/Kg	1	0.7
OR6462-11	SA40SO49	5/3/99 10:40	8021	Chloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Vinyl Chloride	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Bromomethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Chloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	Trichlorofluoromethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,1-Dichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Methylene Chloride	10	VJ4	1	µg/Kg	3	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	t-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.7
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,1-Dichloroethane	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	Chloroform	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	c-1,2-Dichloroethene	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,1,1-Trichloroethane	1	UJ4	1	µg/Kg	1	0.8
OR6462-11	SA40SO49	5/3/99 10:40	8021	Carbon Tetrachloride	1	UJ4	1	µg/Kg	1	0.8
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,2-Dichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Trichloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,2-Dichloropropane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Bromodichloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	c-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	t-1,3-Dichloropropene	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,1,2-Trichloroethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Tetrachloroethene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Dibromochloromethane	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Chlorobenzene	1	UJ4	1	µg/Kg	1	0.9
OR6462-11	SA40SO49	5/3/99 10:40	8021	Bromoform	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,1,2,2-Tetrachloroethane	2	UJ4	1	µg/Kg	2	2
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,3-Dichlorobenzene	1	UJ4	1	µg/Kg	1	0.7
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,4-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	1,2-Dichlorobenzene	1	UJ4	1	µg/Kg	1	1
OR6462-11	SA40SO49	5/3/99 10:40	8021	Bromofluorobenzene	94	J4	1	%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6462-11	SA40SO49	5/3/99 10:40	SM2540G	Percent Solids	95			%		

V = Analyte detected in laboratory method blank.
J4 = Matrix interference confirmed by duplicate analysis (see narrative)
U = Compound was analyzed for but not detected to the level shown.

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
NTC Orlando	SA-40	

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Rusty Cope	496-2173	

CLIENT NAME	CLIENT PROJECT MANAGER
Env Det Chas	A.J. Moyer

CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave, N. Chas SC 2946~~3~~

PAGE ____ OF ____

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: _____

SAMPLE						MATRIX TYPE										REQUIRED ANALYSIS	NUMBER OF CONTAINERS SUBMITTED	REMARKS
STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER		VOC 8021		
1	5/3/99	1215	X		SA40S039					X						X		
2	5/3/99	1205	X		SA40S040					X						X		
3	5/3/99	1208	X		SA40S041					X						X		
4	5/3/99	1135	X		SA40S042					X						X		
5	5/3/99	1140	X		SA40S043					X						X		
6	5/3/99	1115	X		SA40S044					X						X		
7	5/3/99	1120	X		SA40S045					X						X		
8	5/3/99	1105	X		SA40S046					X						X		
9	5/3/99	1100	X		SA40S047					X						X		
10	5/3/99	1044	X		SA40S048					X						X		
11	5/3/99	1040	X		SA40S049					X						X		
12					~~SA40S0~~													
13																		
14																		

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			KW Cope	5/3/99	1415	James W. Gregory	5/3/99	1415
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO	REMARKS
Kim ☐ Jackson - ☒ Orlando	5/3/99	3:30pm	☐ YES ☒ NO	ORL61	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
07 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Environmental Detachment
ADDRESS: Charleston
1899 N. Hobson Ave
Charleston, SC 29405-2106

REPORT # : OR6417
DATE SUBMITTED: April 29, 1999
DATE REPORTED : May 6, 1999

ATTENTION: Rusty Cope

SAMPLE IDENTIFICATION

Sample submitted and
identified by client as:

PROJECT #: SA-35

NTC Orlando

04/28/99

#1 - SA-35 HYDRAULIC @ 16:00

JECT MANAGER Marcia C. Terlep
Marcia C. Terlep

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
07 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave
Charleston, SC 29405-2106

Report #: OR6417
Date Submitted: 29-Apr-99
Date Reported: 6-May-99
Project #: SA-35
Project Name: NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1016/1242	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1221	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1232	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1248	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1254	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	PCB-1260	100	U		µg/Kg	100	10
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	2,4,5,6-TCMX	124			%		
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	8082	DBC	*			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6417-1	SA-35 HYDRAULIC	4/28/99 16:00	5050/9252	Total Halides	500	U		mg/Kg	500	500

* = Matrix interference; unable to obtain surrogate recovery
U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6417
DATE REPORTED: May 6, 1999
REFERENCE : SA-35
PROJECT NAME : NTC Orlando

RESULTS OF ANALYSIS

EPA METHOD 8082 - Aroclors	**LAB BLANK**	**Units**
PCB-1016/1242	100 U	µg/Kg
PCB-1221	100 U	µg/Kg
PCB-1232	100 U	µg/Kg
PCB-1248	100 U	µg/Kg
PCB-1254	100 U	µg/Kg
PCB-1260	100 U	µg/Kg
Surrogate:	**% RECOV**	**LIMITS**
2,4,5,6-TCMX	100	30-150
DBC	100	37-128
Date Extracted	04/29/99	
Date Analyzed	05/01/99	

MISCELLANEOUS	**METHOD**	**LAB BLANK**	**Units**
Total Halides	5050/9253	500 U	mg/Kg
Date Analyzed		05/06/99	

Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6417
DATE REPORTED: May 6, 1999
REFERENCE : SA-35
PROJECT NAME : NTC Orlando

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8082				
PCB-1260	105/143/129	57-167	31	13
MISCELLANEOUS				
Total Halides, 5050/9253	NA/ NA/105	-	NA	

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

ENVIRONMENTAL CONSERVATION LABORATORIES

COC RF # _____

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC Orlando
PROJECT NO.: SA-35
P.O. NUMBER:
PROJECT LOC (State): FL
SAMPLER(S) NAME: Rusty Cope
PHONE: 496-2173
FAX:
CLIENT NAME: Env Det Chasn
CLIENT PROJECT MANAGER: A. Moyer
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N Hobson Ave, N. Chas. 29405

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: 5-5-99

SAMPLE STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	MATRIX TYPE: SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	REQUIRED ANALYSIS: Oil (Hydraulic)	PCB's 8082	TOX	NUMBER OF CONTAINERS SUBMITTED	REMARKS
1	4/28/99	1600	X		SA-35 Hydraulic						X				1	X			Oil (Hydraulic) from Reservoirs to hydraulic Lifts
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE): R W Cope	4/29/99	1100	RECEIVED BY (SIGNATURE): James W. Gregory	4/29/99	1100	RELINQUISHED BY (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO	REMARKS
Kim ☐ Jackson J ☒ Orlando	4/29/99	1:30PM	☐ YES ☒ NO	OR64	

APPENDIX J

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION LETTERS

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

February 16, 2000

Mr. Wayne Hansel
Code 18B7
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-0068

RE: Final Draft, Environmental Site Screening Report, Study Area 40, Naval Training Center, Orlando, Florida

Dear Mr. Hansel:

I have completed my review of the Final Draft Environmental Site Screening Report for Study Area 40, dated November 1999 (received November 5, 1999), prepared and submitted by Harding Lawson Associates. I cannot concur that the property be reclassified to 4/Dark Green or that the property is suitable for transfer for its intended use at this time. I have the following comments on the report as well as subsequent discussions held concerning this site:

(1) Based upon analyses of confirmatory samples taken at the edge of the soil excavation conducted by the Charleston Environmental Detachment, soils were left on site that exceed FDEP's Soil Cleanup Target Level (SCTL) for arsenic for residential use of the property. Confirmatory samples 40S023, 40S003, 99SPORT0172-11, 40S008, 40S009, 99SPORT0172-12, 99SPORT0172-14 and SA40S034 contained arsenic at concentrations of 1.6, 1.8, 2.12, 1.6, 1.1, 1.89, 1.7, and 1.5 mg/kg, respectively. This exceeds the reference concentration of 1.0 mg/kg for arsenic at the Main Base. Sample 40S001 exceeded the residential SCTL for dibenzo(a,h)anthracene.

(2) The Interim Remedial Action Workplans, Fact Sheets and Final Decision Documents all specify that soils were to be removed that had concentrations greater than residential SCTLs for PAHs and the reference concentration for arsenic. My review comments to the Interim Remedial Action Workplan, dated April 20, 1999, also support this decision. Apparently, the work plan objectives were not attained.

(3) Discussions have occurred at Orlando Partnering Team (OPT) meetings since the issuance of the Draft Environmental Site

Screening Report for Study Area 40. Options have been proposed by the Navy in order to avoid further investigative or remediation work on the site.

(4) The first option proposed was calculating the 95% Upper Confidence Level on the mean concentration of arsenic at the site. This method was determined by FDEP as inappropriate for this site using the data collected during initial site screening and during comfirmation sampling after excavation, because the calculation assumed a residential exposure over the entire eight to ten acreas of the study area. This is contrary to draft guidance provided to the OPT which states that for the residential exposure scenario, exposure areas should not be greater than 0.5 acres.

(5) The second option proposed was calculating a site specific SCTL based upon the OPTs understanding that the property was to be used for multi-family housing. A renter scenario was calculated by Tetra Tech NUS to be 3.0 mg/kg for arsenic based upon an 8 year exposure duration. This calculation was reviewed by FDEP contracted risk assessors and found to be incorrect. Their calculation has 2.1 mg/kg arsenic to be protective for the renter scenario. The use of this SCTL would be predicated upon restricting the area to having rental units only, and that rental agreements be no more than 8 years in duration. This option presupposes that the developer, Orlando Partners, will accept the property with those restrictions. FDEP's concurrence that the property is suitable for transfer would be conditional upon acceptable language being incorporated into the deed implementing those restrictions and the Navy's resolve in enforcing them.

(6) The third option proposed by the Navy is to acknowledge that FDEP does not concur that the property is suitable for transfer, then transfer the property despite FDEP objections. This option essentially disregards FDEP's role in the partnering and BRAC process. As a non-National Priority List site, it is my understanding that the Navy is required to obtain state concurrence that the property is suitable for its intended use prior to property transfer.

(7) I propose that further site investigation and remediation take place at Study Area 40 to remediate the site to the concentration levels as previously agreed to by the OPT in work plans, fact sheets and decision documents. The remedial goal would be to remediate soils with arsenic concentrations greater than 1.0 mg/kg and PAH concentrations greater than their respective residential SCTLs.

(8) There appears to be an error on Figure 3-1 of the report. The chem box for sample 40S01001 is associated with sample

location 40S00101. Sample location 40S01001 is located approximately 100 feet south of sample location 40S00101. The summary of analytical results in Appendix F lists sample 40S01001 as containing benzo(a)pyrene at a level exceeding its residential SCTL. However, sample location 40S00101 is shown as being excavated by the Charleston Environmental Detachment and sample location 40S01001 as having not been excavated. There is a question as to whether soil in the vicinity of 40S01001 contains PAHs that were inadvertently left out of the interim remedial action work conducted by the Charleston Environmental Detachment. This discrepancy needs to be resolved.

If I can be of any further assistance with this matter, please contact me at (850)488-3693.

Sincerely,

David P. Grabka
Remedial Project Manager

cc: Barbara Nwokike, Navy SouthDiv
Nancy Rodriguez, USEPA Region 4
Richard Allen, HLA, Jacksonville
~~Steve McCoy~~, TetraTech NUS, Oak Ridge
Steve Tsangaris, CH2M Hill, Tampa
Bill Bostwick, FDEP Central District

TJB _____ JJC _____ ESN ESN

FLORIDA

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

October 8, 2001

David Twedell
Nodarse & Associates, Inc.
1030 North Orlando Avenue
Suite A
Winter Park, Florida 32789

RE: Post Soil Remediation Activities Report, Study Areas 39 and 40, Former Naval Training Center, Orlando, Florida

Dear Mr. Twedell:

I have completed the review of the Post Soil Remediation Activities Report for Study Areas 39 and 40, Former Naval Training Center, Orlando, dated August 15, 2001 (received August 28, 2001). The report adequately describes the removal of contaminated soil from Study Areas 39 and 40 to levels below the Department's residential Soil Cleanup Target Levels. Therefore, land use restrictions will not be required at either of these sites. However, as contaminated groundwater still exists on the southern portion of Study Area 39, groundwater use in this area must be restricted until attainment of the Department's groundwater cleanup target levels.

The report also contains the final land elevation survey at the North Grinder Landfill, Operable Unit 1, Parcel 4, that completes the work specified in the April 19, 2000 Work Plan for the Grinder Landfill Located at the Former Orlando Naval Training Center. The land elevation survey confirms that the specified two feet of cover over landfill material has been attained post demolition activities and transport and application of approximately 17,500 cubic yards of contaminated soil from Study Areas 39 and 40 to the landfill. This letter confirms that the work specified in the approved Work Plan has been satisfactorily accomplished and documented.

If I can be of any further assistance with this matter, please contact me at (850)921-9991.

Sincerely,

David P. Grabka
Remedial Project Manager

cc: Barbara Nwokike, Navy SouthDiv
Greg Fraley, USEPA Region 4
Bill Bostwick, FDEP Central District

TJB _____ JJC _____ ESN _____

APPENDIX K

SUMMARY OF ANALYTICAL RESULTS-
CURRENT INVESTIGATION

TABLE K-1

ANALYTICAL RESULTS
STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Sample Location	Sample Number	Date	Arsenic Concentrations[(a)(b)(c)] mg/kg
36A	NTC40S036A01	4/17/2000	0.27
37A	NTC40S037A01	4/17/2000	0.64
38A	NTC40S038A01	4/17/2000	1.1
38B	NTC40S038B01	4/17/2000	1.3
38C	NTC40S038C01	4/17/2000	0.7
39A	NTC40S039A01	4/17/2000	0.51
40	NTC40S04001-D	4/17/2000	0.27 U
40A	NTC40S040A01	4/17/2000	0.42
40B	NTC40S040B01	4/17/2000	0.65
41A	NTC40S041A01	4/17/2000	5.4
41B	NTC40S041B01	4/17/2000	3.1
41C	NTC40S041C01	4/17/2000	4.6
41D	NTC40S041D01	4/17/2000	4.2
41E	NTC40S41E01	6/21/2000	0.43
42E	NTC40S42E01	6/21/2000	5.1
42F	NTC40S42F01	6/21/2000	9.4
42G	NTC40S42G01	6/21/2000	3.3
42H	NTC40S42H01	6/21/2000	5.6
43F	NTC40S43F01	6/21/2000	1.8
43G	NTC40S43G01	6/21/2000	0.61
43E	NTC40S43E01	6/21/2000	3.6
42I	NTC40S42I01	7/15/2000	2
42J	NTC40S42J01	7/15/2000	1.5
42K	NTC40S42K01	7/15/2000	0.75
42L	NTC40S42L01	7/15/2000	3.4
50	NTC40S05001	8/9/2000	0.77 U
51	NTC40S05101	8/9/2000	0.63 U
52	NTC40S05201	8/9/2000	1.9 J
53	NTC40S05301	8/9/2000	8.7 J
54	NTC40S05401	8/9/2000	1.3 U
55	NTC40S05501	8/9/2000	2.1 J
56	NTC40S05601	8/9/2000	2 J
57	NTC40S05701	8/9/2000	1.8 J
58	NTC40S05801	8/9/2000	0.67 U
59	NTC40S05901	8/9/2000	0.7 U
60	NTC40S06001	8/9/2000	0.57 U
61	NTC40S06101	8/9/2000	1.2 U
61-D	NTC40S06101-D	8/9/2000	1.5 U
62	NTC40S06201	8/9/2000	0.82 U
63	NTC40S06301	8/9/2000	3 J
64	NTC40S06401	8/9/2000	2.4 J
65	NTC40S06501	8/9/2000	0.93 U
66	NTC40S06601	8/9/2000	1.2 U
67	NTC40S06701	8/9/2000	2.3 J
67-D	NTC40S06701-D	8/9/2000	2.1 J
68	NTC40S06801	8/9/2000	2.2 J
69	NTC40S06901	8/10/2000	2.5 J
70	NTC40S07001	8/10/2000	1.4 J

TABLE K-1

ANALYTICAL RESULTS
STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Sample Location	Sample Number	Date	Arsenic Concentrations[(a)(b)(c)] mg/kg
71	NTC40S07101	8/10/2000	2.2 J
72	NTC40S07201	8/10/2000	0.5 J
73	NTC40S07301	8/10/2000	2.8 J
74	NTC40S07401	8/10/2000	2.9 J
75	NTC40S07501	8/10/2000	2.2 J
76	NTC40S07601	8/10/2000	0.38 UJ
77	NTC40S07701	8/10/2000	1.2 J
78	NTC40S07801	8/10/2000	1.4 J
79	NTC40S07901	8/10/2000	1.3 J
80	NTC40S08001	8/10/2000	5.7 J
81	NTC40S08101	8/10/2000	0.53 J
81-D	NTC40S08101-D	8/10/2000	0.5 J
82	NTC40S08201	8/10/2000	0.97 J
83	NTC40S08301	8/10/2000	0.93 J
84	NTC40S08401	8/10/2000	0.71 J
85	NTC40S08501	8/10/2000	6.4 J
86	NTC40S08601	8/10/2000	1.1 J
87	NTC40S08701	8/10/2000	13.5 J
88	NTC40S08801	8/10/2000	5.5 J
89	NTC40S08901	8/10/2000	1.4 J
89-D	NTC40S08901-D	8/10/2000	2 J
90	NTC40S09001	8/23/2000	0.5 U
91	NTC40S09101	8/23/2000	0.5 U
	NTC40D3000	8/23/2000	0.5 U
92	NTC40S09201	8/23/2000	0.5 U
93	NTC40S09301	8/23/2000	0.5 U
	NTC40D4000	8/23/2000	0.5 U
94	NTC40S09401	8/23/2000	0.5 U
95	NTC40S09501	8/23/2000	0.5 U
	NTC40D5000	8/23/2000	0.5 U
96	NTC40S09601	8/23/2000	0.5 U
97	NTC40S09701	8/23/2000	0.5 U
98	NTC40S09801	8/23/2000	0.5 U
99	NTC40S09901	8/23/2000	0.5 U
100	NTC40S010001	8/23/2000	0.5 U
101	NTC40S010101	8/23/2000	0.5 U
102	NTC40S010201	8/23/2000	0.5 U
103	NTC40S010301	8/23/2000	0.5 U
104	NTC40S010401	8/23/2000	0.5 U
105	NTC40S010501	8/23/2000	0.5 U
106	NTC40S010601	8/23/2000	0.5 U
107	NTC40S010701	8/23/2000	0.5 U
108	NTC40S010801	8/23/2000	0.5 U
109	NTC40S010901	8/23/2000	0.5 U
110	NTC40S011001	8/23/2000	0.5 U
111	NTC40S011101	8/23/2000	0.5 U

TABLE K-1

ANALYTICAL RESULTS
STUDY AREA 40

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Sample Location	Sample Number	Date	Arsenic Concentrations[(a)(b)(c)] mg/kg
41A	NTC40C041A01	9/7/2000	1.9
52	NTC40C05201	9/7/2000	2
53	NTC40C05301	9/7/2000	2.6
54	NTC40C05401	9/7/2000	2
55	NTC40C05501	9/7/2000	1.7
56	NTC40C05601	9/7/2000	7
57	NTC40C05701	9/7/2000	3.4
61	NTC40C06101	9/7/2000	1.4
63	NTC40C06301	9/7/2000	2.4
64	NTC40C06401	9/7/2000	2.5
66	NTC40C06601	9/7/2000	0.89
66-D	NTC40C06601-D	9/7/2000	1.2
67	NTC40C06701	9/7/2000	3.6
68	NTC40C06801	9/7/2000	4.2
69	NTC40C06901	9/7/2000	2.4
70	NTC40C07001	9/7/2000	1.1
71	NTC40C07101	9/7/2000	1.3
73	NTC40C07301	9/7/2000	2.1
74	NTC40C07401	9/7/2000	2.1
75	NTC40C07501	9/7/2000	2.9
77	NTC40C07701	9/7/2000	0.95
78	NTC40C07801	9/7/2000	2.4
78-D	NTC40C07801-D	9/7/2000	2.7
79	NTC40C07901	9/7/2000	3
80	NTC40C08001	9/7/2000	1.9
85	NTC40C08501	9/7/2000	1.5
87	NTC40C08701	9/7/2000	2.7
88	NTC40C08801	9/7/2000	2.9
89	NTC40C08901	9/7/2000	0.86
89-D	NTC40C08901-D	9/7/2000	0.74

APPENDIX L

COMPLETION REPORT OF SOIL REMEDIATION ACTIVITIES BY NODARSE & ASSOCIATES

NODARSE & ASSOCIATES

1.0 INTRODUCTION

Nodarse & Associates, Inc. (N&A) was contracted with Orlando NTC Partners to complete the remediation of arsenic and polynuclear aromatics (PAHs) contaminated soils located within Study Areas 39 and 40 at the Main Base of the former Naval Training Center in Orlando, Florida. The activities undertaken, were accomplished following guidelines established under Amendment No. 6 of the Memorandum of Agreement (MOA No. 6) between the City of Orlando and the U.S. Navy. Provisions within MOA No. 6 required that a Work Plan for the remediation of contaminated soils within Study Areas 39 and 40 be submitted and approved by the Florida Department of Environmental Protection (FDEP), the U.S. Navy and the City of Orlando. A copy of the approved Work Plan may be found in **Appendix A**. This Work Plan was approved by the FDEP in a letter dated May 1, 2001. A copy of this letter may also be found in **Appendix A**.

The Work Plan contains the procedures implemented for the remediation of previously documented soil contamination within the boundaries of Study Areas 39 and 40. The Plan was developed based upon the delineation of soil contamination as documented in the Draft Base Realignment and Closure, Environmental Site Screening Report, prepared by Harding Lawson Associates (HLA) in April 1999. The boundaries of the soil contamination designated for remediation within Study Areas 39 and 40 were established and documented in the Base Realignment and Closure Work Plan for Interim Remedial Action for Study Areas 39 and 40 prepared by HLA dated ~~September~~ Nov. 1999. 10/1/01

The goals of the soil remediation project were to remove the soils within Study Areas 39 and 40 which had been documented as containing low levels of petroleum (PAHs) and arsenic contamination that exceeded the residential cleanup levels as established by the FDEP. The residential restrictions which will remain on Study Area 39 are the results of groundwater contamination which is currently in the process of being remediated by the U.S. Navy.

The soil cleanup, initially started by the U.S. Navy on Study Area 40, was also completed under these remediation activities. The remediation of soil contamination within Study Areas 39 and 40 will not affect the groundwater contamination issues currently being addressed by the U.S. Navy.

During July 2001, remediation activities as outlined under the approved Work Plan were initiated and completed. The following report outlines all activities associated with pre-excavation, excavation, and post-excavation procedures.

2.0 PRE-EXCAVATION SURVEY

Prior to the initiation of remediation activities, the areas slated for soil excavation and removal were delineated in the field. The delineation was undertaken by a Florida licensed Professional Land Surveyor, utilizing the maps generated as part of the previously discussed HLA investigations.

The boundaries of the areas designated for excavation were located in the field and staked for excavation. As outlined in the Work Plan, excavation within the staked area was to be performed to a depth of 2 feet below land surface.

In addition, the area of the former Grinder Landfill was also surveyed and staked to identify the area where excavated soils were to be deposited. This was also accomplished as outlined under the Work Plan. Only areas where actual landfilled material exists were identified for deposition of soils to be excavated from Study Areas 39 and 40.

Finally, silt fencing was verified as being located within the areas where excavation and capping were to take place.

3.0 STUDY AREAS 30 AND 40 SOIL EXCAVATION AND OFF-SITE DISPOSAL

During the week of July 23, 2001, excavation activities within Study Areas 39 and 40 were initiated and completed. **Figures 1** and **2** in **Appendix B** indicate the areas that were excavated in accordance with the approved Work Plan.

Excavation was accomplished to a depth of 2 feet below land surface within the cross hatched areas shown on **Figures 1** and **2** within Study Areas 39 and 40. Soils were removed by a track hoe, loaded onto 24 ton dump trucks, covered and transported for disposal onto the Grinder Landfill within the area designated during the previously discussed survey. Once deposited, soils were spread to a thickness of approximately 6 to 8 inches uniformly throughout the area designated within the former Grinder Landfill. This process was repeated until all excavated soil materials were removed from Study Areas 39 and 40.

Approximately 12,000 cubic yards of soil material were removed from Study Area 39 with approximately 5,500 yards of the material removed from Study Area 40.

Upon completion of the initial soil excavation activities, additional soil was removed from two (2) localized areas where post-remediation tests failed to show complete soil cleanup. After removal of additional soils, these two (2) areas were cleared for regrading, and soil excavation activities terminated.

NODARSE & ASSOCIATES

4.0 POST-REMEDIATION TESTING

4.1 Testing Procedures

The purpose of the post-remediation testing was to verify that the remediation process achieved the cleanup goals specified in the approved Work Plan. This testing process was implemented during all remediation excavation activities.

Upon completion of the removal of soils for disposal upon the former Grinder Landfill, grab soil samples were removed from the sidewalls of excavated areas. The purpose of these samples was to verify that the remaining soils met FDEP residential cleanup criteria. The procedures utilized for obtaining grab samples were identical to those presented in Section 2.0 of the Remediation Plan for the Golf Course Cleanup Program approved by the FDEP. Soil laboratory analysis for PAHs using EPA Method 8310 and arsenic using EPA Method 6010 were followed as specified in the approved Work Plan. Upon completion of soil analysis, if any area remained which did not meet the residential cleanup criteria for arsenic and petroleum contamination, a second round of soil samples were removed after additional soil was excavated.

4.2 Testing Results

A total of twenty-three (23) samples were removed from Study Area 40, and thirty-six (36) samples removed from Study Area 39. The location of the initial samples removed may be found on **Figures 1** and **2** in **Appendix B**. As a result of the initial sampling, all but two (2) samples indicated concentrations below residential standards for the parameters analyzed. One (1) sample designated 39-CS-25 exceeded residential criteria for PAHs. Sample 40-CS-10 located in Study Area 40 exceeded the residential criteria for arsenic.

Additional soil was excavated within the areas of these two (2) samples and additional sample analysis undertaken. Results of the second analytical testing for soils within these two (2) areas indicated that all parameters were below residential criteria. The location of the two (2) additional confirmation soil samples removed from these areas may also be found on **Figures 1** and **2** in **Appendix B**.

Copies of all laboratory analytical results together with appropriate chain of custody documentation may be found in **Appendix C**.

5.0 PARCEL NO. 4 (GRINDER LANDFILL) SOIL DISPOSAL AREA/ADDITIONAL COVER

5.1 Procedures

In accordance with procedures outlined under the approved Work Plan, the approximately 17,500 cubic yards of soils removed from Study Areas 39 and 40 were evenly spread throughout the former Grinder Landfill area. Soils were only spread within areas where landfilling activities are confirmed to have taken place. As previously discussed, these landfill areas were surveyed and staked prior to the beginning of soil deposition. Once soils from Study Areas 39 and 40 were deposited and evenly spread, capping activities were undertaken.

Soil for final capping was utilized from stockpiled soil material generated during the construction of stormwater disposal facilities located on-site. Prior to the utilization of these soils, a series of five (5) composite samples were removed from the stockpiled soil material utilized for final cover. These soils were selected and tested based upon procedures designated in MOA 6. Stockpiled soils were tested for the parameters listed under EPA Methods 8260, 8270, and for the 8 RCRA metals. These testing parameters were designated and approved by the FDEP and the U.S. Navy. Results of the stockpiled soil analyses may be found in **Appendix D**.

Results of the soil testing verified that none of the soils analyzed contained levels of parameters above state or federal cleanup levels.

Analytical results were submitted to the U.S. Navy and FDEP for approval prior to the utilization of these stockpiled soils for final cover within the Grinder Landfill area. Once approval was obtained for the U.S. Navy and the FDEP, final cover activities were commenced.

5.2 Final Cover Installation

As designated in MOA 6, a final 24-inch cover of clean soil removed from the approved stockpiled areas was deposited upon the Grinder Landfill area. A minimum 2-feet of soil was placed upon the area where contaminated soils removed from Study Areas 39 and 40 were deposited.

Prior to the deposition of final cover soils, a survey was undertaken and stakes placed on-site by a registered professional land surveyor indicating the final thickness of 24 inches. This procedure was utilized to provide assurances that at least 24 inches of final cover of clean soil material was placed upon the contaminated soil deposited from Study Areas 39 and 40 within the Grinder Landfill area.

5.3 Post-Remediation Survey

Upon completion of all soil deposition activities including the clean fill cover, a final land elevation survey was performed for the Grinder Landfill area. A copy of this final survey may be found in **Appendix E**, together with a copy of the pre-deposition survey analyses undertaken prior to the deposition of any soil material. The completion of this survey was accomplished following procedures outlined under MOA 6 and the approved Work Plan.

Photographic documentation of all excavation and capping activities may be found in **Appendix F**.

NODARSE & ASSOCIATES

6.0 CONCLUSIONS AND RECOMMENDATIONS

The removal of arsenic and petroleum contaminated soils from Study Areas 39 and 40 were completed following procedures outlined under MOA 6 and the approved Work Plan. A total of approximately 17,500 cubic yards of soil material were removed from designated areas at Study Areas 39 and 40 and deposited within the area of the former Grinder Landfill. Post-excavation confirmation sampling was accomplished which confirmed that arsenic and petroleum contaminated soils above residential standards were removed from Study Areas 39 and 40, and disposed of upon the former Grinder Landfill. Soils previously identified which exceeded residential cleanup standards within Study Areas 39 and 40 have been removed. Therefore, the goals of this remediation process as outlined in the Work Plan have been accomplished.

It is recommended that, based upon the procedures and confirmation sampling data contained within this report, residential restrictions be removed from Study Areas 39 and 40 regarding reference to any petroleum and arsenic contaminated soils.