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NAS CECIL FIELD  
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TECHNICAL MEMORANDUM FOR FURTHER ACTION POTENTIAL SOURCE OF  
CONTAMINATION 30 (PSC 30) BUILDING 313 MOP RACK DRYING AREA NAS CECIL FIELD  
FL  
1/1/2001  
TETRA TECH

**Technical Memorandum  
for  
No Further Action**

**Potential Source of Contamination 30  
Building 313 – Mop Rack Drying Area**

**Naval Air Station Cecil Field  
Jacksonville, Florida**



**Southern Division  
Naval Facilities Engineering Command**

**Contract Number N62467-94-D-0888**

**Contract Task Order 0078**

January 2001

**TECHNICAL MEMORANDUM  
FOR NO FURTHER ACTION**

**POTENTIAL SOURCE OF CONTAMINATION 30  
BUILDING 313 – MOP RACK DRYING AREA**

**NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:  
Tetra Tech NUS, Inc.  
661 Andersen Drive  
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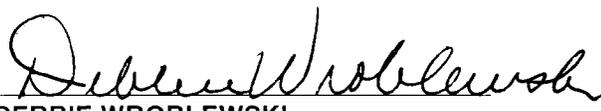
**CONTRACT NUMBER N62467-94-D-0888  
CONTRACT TASK ORDER 0078**

**JANUARY 2001**

**PREPARED UNDER THE SUPERVISION OF:**

**APPROVED FOR SUBMITTAL BY:**

  
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DEBBIE WROBLEWSKI  
PROGRAM MANAGER  
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PITTSBURGH, PENNSYLVANIA



The professional opinions rendered in this decision document identified as Technical Memorandum for No Further Action, Potential Source of Contamination 30, Naval Air Station Cecil Field, Jacksonville, Florida were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. Decision documents are based on information obtained from others and under the supervision of the signing engineer. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on this project described in this report.

Mark Speranza  
Mark Speranza, P.E.  
Professional Engineer No. PE0050304

Date: 1/31/01

*Mark Speranza*



CERTIFICATION OF TECHNICAL  
DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: January 31, 2001

NAME AND TITLE OF CERTIFYING OFFICIAL:

Mark Speranza, P.E.  
Task Order Manager

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## APPENDIX

### A ANALYTICAL LABORATORY RESULTS

## ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
AOI	Area of Interest
BaP	Benzo(a)pyrene
BCT	BRAC Cleanup Team
Bgs	Below ground surface
BRAC	Base Realignment and Closure
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DAF	Dilution attenuation factor
EBS	Environmental Baseline Survey
EISOPQAM	Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
HLA	Harding Lawson Associates
mg/kg	Milligram per kilogram
µg/kg	Microgram per kilogram
NAS	Naval Air Station
OU	Operable Unit
PAH	Polynuclear aromatic hydrocarbons
PRE	Preliminary Risk Evaluation
PSC	Potential Source of Contamination
QA/QC	Quality assurance/quality control
RAC	Remedial Action Contractor
RBC	Risk-based criterion
RI	Remedial Investigation
SAO	Sampling and Analysis Outline
SAR	Sampling and Analysis Report
SCTL	Soil Cleanup Target Level
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency

## 1.0 INTRODUCTION

This Technical Memorandum for Potential Source of Contamination (PSC) 30, Building 313 Mop Rack Drying Area, also known as Area of Interest (AOI) 30, at Naval Air Station (NAS) Cecil Field, has been prepared by Tetra Tech NUS, Inc. (TtNUS) for the Department of the Navy Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). The work was conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Contract Number N62467-94-D-0888, Contract Task Order (CTO) 0078. The Base Realignment and Closure (BRAC) Cleanup Team (BCT) agreed to delineate, excavate, and dispose of soil at PSC 30 that is contaminated with polynuclear aromatic hydrocarbons (PAHs).

TtNUS performed a field investigation at PSC 30 in June 1999 to supplement the results of previous investigations and to delineate the extent of PAH-contaminated soil. The results of the PSC investigation were used to develop a dig and haul package (remedial design plan) for a removal action consisting of soil excavation and off-site disposal of the PAH-contaminated surface soil.

This technical memorandum presents information from the previous investigations and summarizes the related field operations, results, conclusions, and recommendations of the PSC investigation conducted by TtNUS in June 1999 and the activities related to the removal action as described in the Source Removal Report for PSC 30 (CH2M Hill, 2000). The results of the investigations and the subsequent removal action indicate that no further action is needed at this site.

## **2.0 SITE DESCRIPTION**

### **2.1 PHYSICAL SETTING**

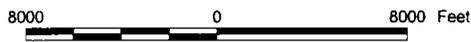
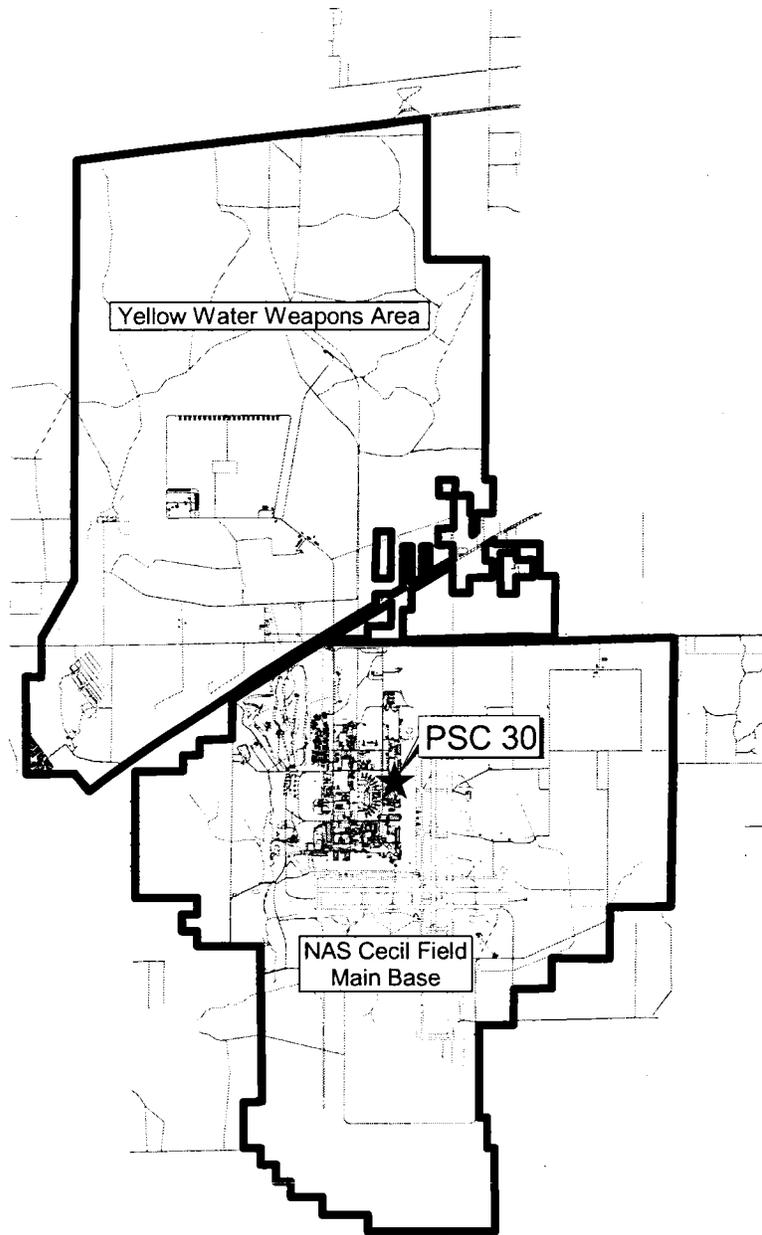
PSC 30 was formerly referred to in the BRAC NAS Cecil Field Environmental Baseline Survey (EBS) (ABB-ES, 1994) as AOI 30 - Building 313 Floor Wash Disposal Area. PSC 30 is located in a grassy area on the western side of the access road to the flightline, between Building 313 and Hangar 825 at the Main Base area of NAS Cecil Field (Figures 2-1 and 2-2). The area is approximately 10 feet by 15 feet in size and was used as a mop drying area and a floor wash disposal area for Building 313. The Operable Unit (OU) 7, Site 16 groundwater contamination plume is located beneath the site.

### **2.2 SITE HISTORY**

PSC 30 was color-coded Gray in the EBS Report (ABB-ES, 1994) to denote its historical use and the potential for soil contamination from cleaning solvents in washwater. The top 4 to 6 inches of surface soil at PSC 30 were reportedly removed in 1988; however, analytical samples were not collected during or following the soil removal (HLA, 1999). A field investigation and preliminary risk evaluation (PRE) were conducted between 1996 and 1999 to determine if soil contamination was present and to assess the potential risks to human and ecological receptors. The results were reported in the Sampling and Analysis Report (SAR), Area of Interest 30 (HLA, 1999).

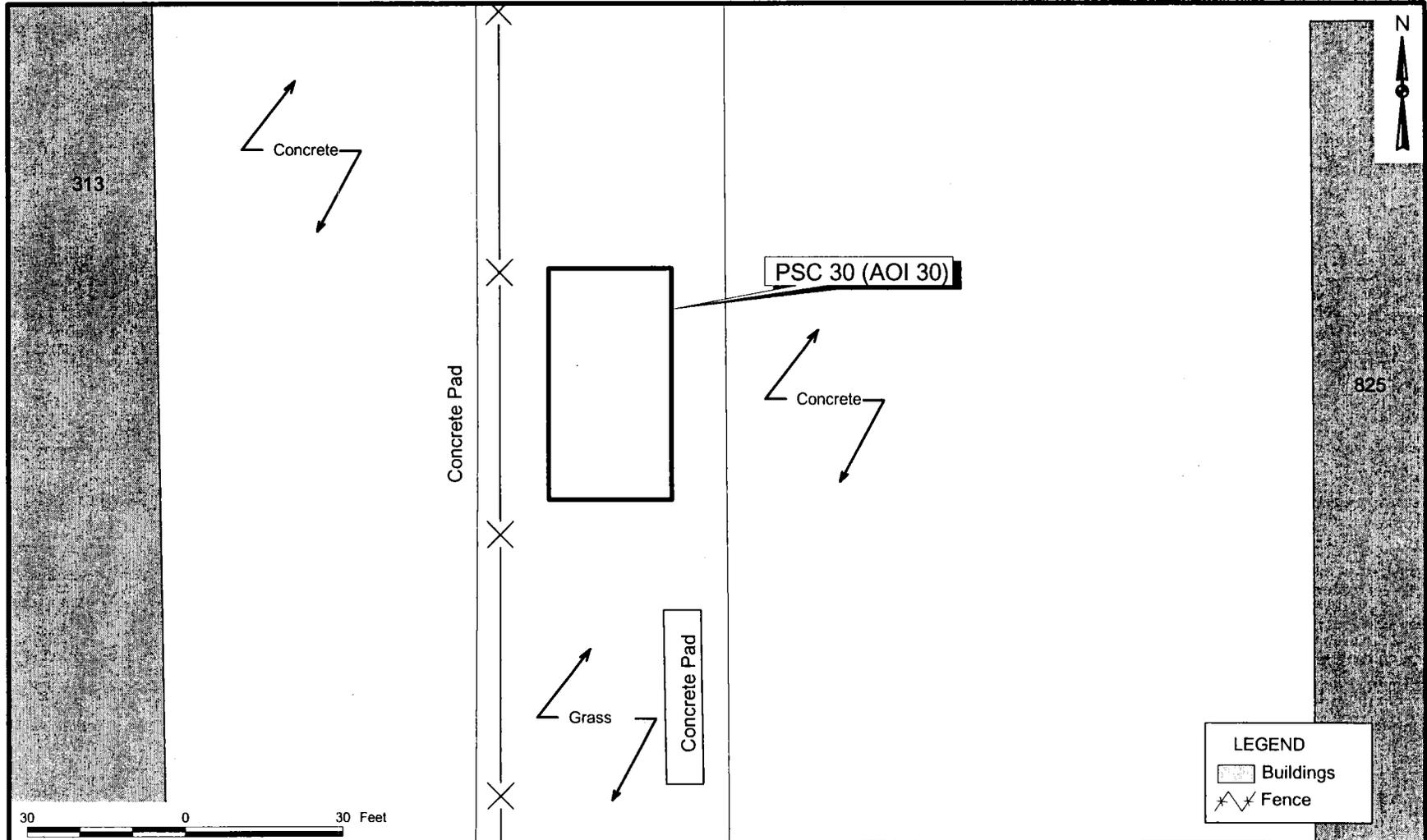
### **2.3 SITE GEOLOGY AND HYDROGEOLOGY**

The geological and hydrogeological characteristics of the site are as described in the Remedial Investigation (RI) Report for OU 7, Site 16 (ABB-ES, 1995).



DRAWN BY MJJ	DATE 08Oct99		GENERAL LOCATION MAP		CONTRACT NUMBER 0039	
CHECKED BY	DATE		PSC 30, BUILDING 313 - MOP RACK DRYING AREA		APPROVED BY	DATE
COST/SCHEDULE-AREA			TECHNICAL MEMORANDUM		APPROVED BY	DATE
SCALE AS NOTED			NAVAL AIR STATION CECIL FIELD		DRAWING NO. FIGURE 2-1	REV 0
		JACKSONVILLE, FLORIDA				

P:\GIS\NAS\_CecilField\PSC30\_TECHMEMO apr 21Sept00 MJJ 2-1 Site Location Map Layout



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MJJ	04/26/99
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP  
 PSC 30, BUILDING 313 - MOP RACK DRYING AREA  
 TECHNICAL MEMORANDUM  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY	DATE
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DRAWING NO. FIGURE 2-2	REV 0

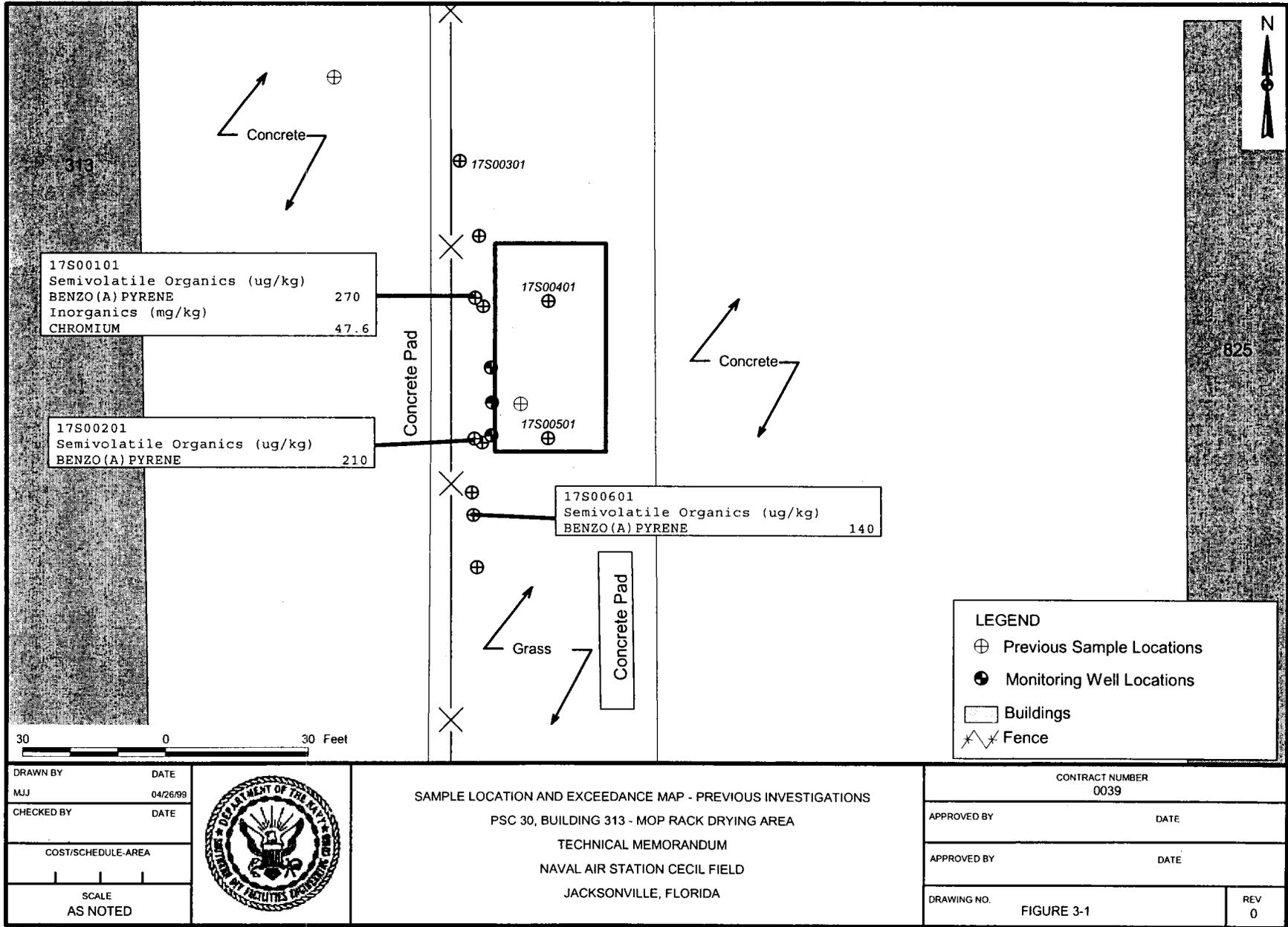
### 3.0 PREVIOUS INVESTIGATIONS

Environmental investigations at PSC 30 (formerly AOI 30) began in 1993 as part of a base-wide EBS. The following reports describe the results of investigations conducted prior to the TtNUS investigation at the site:

- EBS report (ABB-ES, 1994)
- RI for OU 7, Site 16 (ABB-ES, 1995)
- Sampling and Analysis Outline (SAO), Area of Interest 30 (ABB-ES, 1995)
- SAR, Area of Interest 30 (HLA, 1999)

The SAR (HLA, 1999) indicated the following:

- Although several organic compounds, pesticides, and inorganic analytes were detected in soil samples collected in the study area, only benzo(a)pyrene (BaP) was detected at a concentration in excess of the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Level (SCTL) for residential exposure scenarios. It should be noted that at the time the SAR was written the cleanup criterion for Chromium was 290 mg/kg.
- The extent of BaP contamination was not adequately delineated but appeared to be limited.
- Groundwater in the area is contaminated with chlorinated solvents from the adjacent OU 7, Site 16. Remedial action has been initiated at OU 7, Site 16.
- The human health PRE calculated an excess lifetime cancer risk of  $3 \times 10^{-6}$  for the maximum detected BaP concentration for a residential surface soil exposure scenario.
- The ecological PRE characterized the site as limited in extent and significance because the area was developed, industrial, and unlikely to be utilized by wildlife. No further ecological risk evaluation was conducted.
- Further evaluation was recommended to determine the extent of the BaP contamination in the area and to assess the requirements for remedial activities, if appropriate.



## 4.0 FIELD INVESTIGATION

A soil sampling and analysis event was conducted at PSC 30 in June 1999 to delineate the extent of PAH-contaminated surface soil. The field investigation was performed in accordance with the PSC 30 Sampling and Analysis Work Plan (TtNUS, 1999). Sampling locations are shown on Figure 4-1.

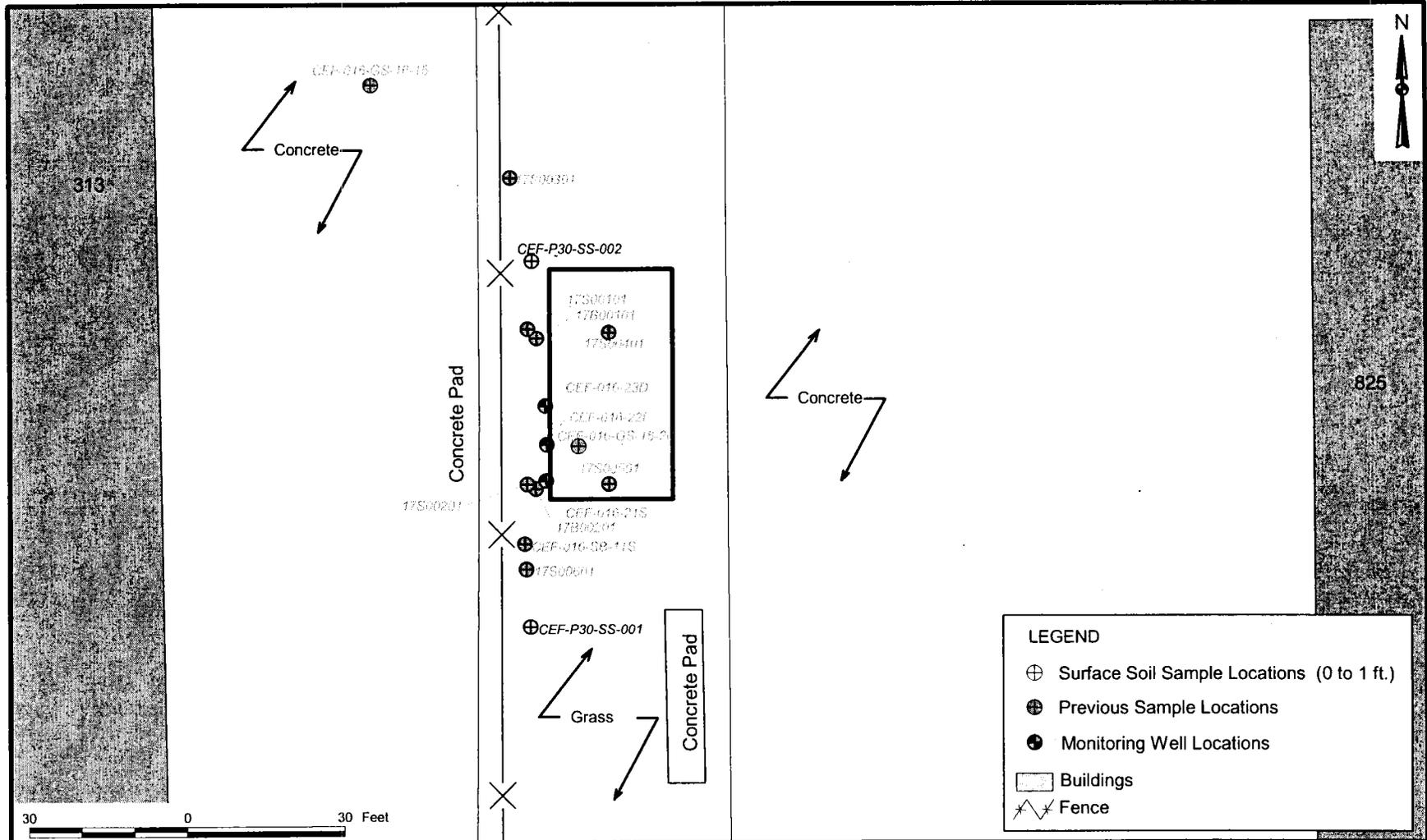
Two soil samples were collected:

- One surface soil sample (CEF-P30-SS-001) was collected from 0 to 1 foot below ground surface (bgs), 15 feet south of previous soil sample location 17S00601.
- One surface soil sample (CEF-P30-SS-002) was collected from 0 to 1 foot bgs, 15 feet north of previous soil sample location 17S00101.

One duplicate surface soil sample at CEF-P30-SS-001 was also collected for quality assurance/quality control (QA/QC) purposes.

Soil samples were collected as grab samples using plastic, disposable trowels. Sampling activities were performed in accordance with the procedures described in the U.S. EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) (U.S. EPA Region IV, 1996) and the NAS Cecil Field Base-Wide Generic Work Plan (TtNUS, 1998). As agreed by the BCT, no rinsate and trip blank samples were collected. In addition, field blanks were not collected because the sampling equipment was disposable.

The samples were analyzed for PAHs by U.S. EPA Method SW-846 8310. ACCUTEST SOUTHEAST in Orlando, Florida performed the analyses.



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SOIL SAMPLE LOCATIONS  
PSC 30, BUILDING 313 - MOP RACK DRYING AREA  
TECHNICAL MEMORANDUM  
NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY	DATE
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## 5.0 NATURE AND EXTENT OF CONTAMINATION

Analytical results for the soil samples collected during the TtNUS field investigation are shown on Table 5-1, and complete laboratory data are included in Appendix A. Table 5-1 also compares the results to the FDEP SCTLs for residential direct exposure and for migration to groundwater. Figure 5-1 shows the locations where the sample results exceed the FDEP criteria.

The results of the sampling and analysis identified the horizontal and vertical extent of PAH contamination. Based on the results of the sampling and analysis, a remedial design (dig and haul package) was prepared for excavation of the delineated area of PAH contamination.

A single excavation area of approximately 1,450 square feet was delineated based on sample locations where the analytical results were less than FDEP SCTLs. The estimated excavation volume for an excavation 1 foot deep is approximately 54 cubic yards. The excavation limits are shown on Figure 5-1.

TABLE 5-1

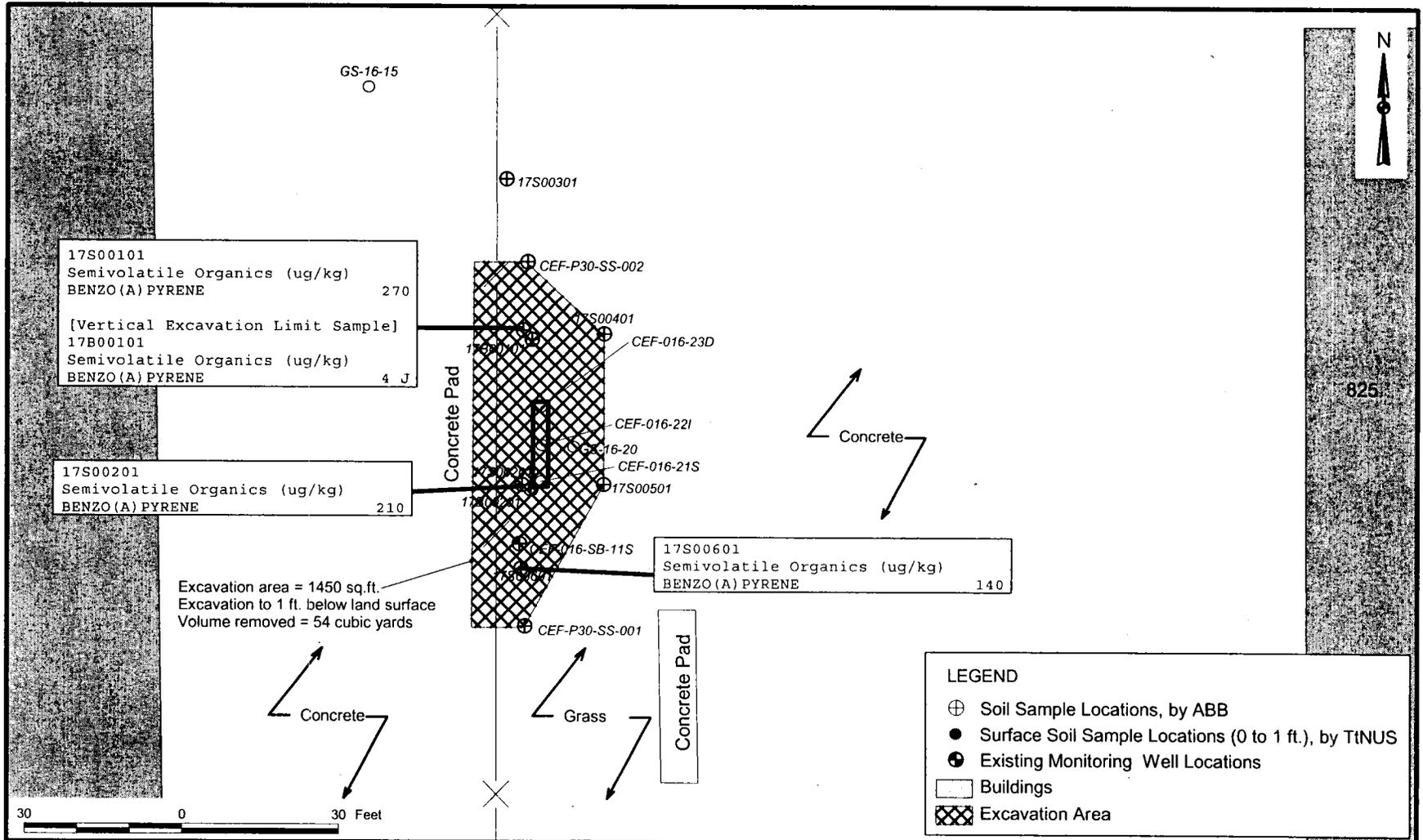
SOIL ANALYTICAL RESULTS  
 SUMMARY OF POSITIVE DETECTIONS  
 PSC 30 – BUILDING 313 – MOP RACK DRYING AREA  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA

Sample Location	FL SCTLs FAC 62-777		CEF-P30-SS-001		CEF-P30-SS-002
	Direct Exposure	Leachability to Groundwater	Sample	Duplicate	
<b>POLYCYCLIC AROMATIC HYDROCARBONS (µg/kg)</b>					
Chrysene	140,000	77,000	53.3	110	ND
Fluoranthene	2,900,000	1,200,000	ND	ND	35

FDEP SCTL based on most restrictive of residential direct exposure or leachability to groundwater criteria.

ND - Not detected

Analytical results below the detection limits are not presented in the table.



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SCALE AS NOTED	



CONTAMINANTS GREATER THAN CRITERIA AND LIMITS OF SOIL EXCAVATION

PSC 30, BUILDING 313 - MOP RACK DRYING AREA

TECHNICAL MEMORANDUM

NAVAL AIR STATION CECIL FIELD

JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 5-1	REV 0

## 6.0 PRELIMINARY RISK EVALUATION

The SAR prepared by HLA included a PRE to assess the potential risk to human and ecological receptors posed by contaminants in the surface soil. This PRE identified BaP, detected in excess of the FDEP SCTLs for residential direct exposure, as a human health risk for a residential exposure scenario.

The area encompassing the sample locations with BaP concentrations in excess of the FDEP SCTL was excavated and disposed at a permitted solid waste disposal facility. No BaP concentrations detected in the soil samples collected outside the excavation area were found to be in excess of the FDEP criteria. Therefore, a human health risk assessment does not need to be performed. No additional ecological risk assessment was performed, based on the results of the SAR.

A soil sample containing chromium at a concentration of 47.6 mg/kg was removed during excavation. This chromium concentration exceeds the FDEP leachability criterion of 38 mg/kg. However, no additional subsurface samples were collected to delineate this exceedance of a criterion. Although there was an exceedance of the leachability criterion, it is unlikely that there would be any impact to groundwater. The FDEP leachability criterion is based on hexavalent chromium. Any hexavalent chromium present in soil is typically reduced by organic matter to its less soluble and less mobile trivalent form (EPA, 1984). If hexavalent chromium was present in this sample, it would only be a minor fraction of the total concentration, a concentration less than the leachability criterion. Therefore this marginal exceedance of a criterion would not warrant additional sampling.

## 7.0 REMEDIAL ACTIVITIES

The Navy's Remedial Action Contractor (RAC), CH2M Hill Contractors, Inc., conducted the soil removal activities for PSC 30 on February 17 and 18, 2000. The RAC excavated, characterized, transported, and disposed of 63.64 tons of PAH-contaminated soil and restored the site to pre-excavation conditions. The excavated soil was transported and disposed off site on February 23, 2000.

The soil was excavated using a mini-excavator and then stockpiled, bermed, and covered before it was loaded into trucks, provided by Pritchett Trucking, for transportation and disposal. Soils were excavated to the horizontal excavation limits shown on Figure 5-1 and the vertical excavation limit of 1 foot bgs as specified in the Dig and Haul Package for PSC 30 (TtNUS, 1999b). The excavated soil was transported to the Chesser Island Road Landfill in Folkston, Georgia.

The material used to backfill the excavation was clean fill brought in from the Dallas Harts Borrow Pit in Jacksonville, Florida. The site was then graded and seeded with a mixture of rye and bahia grass. No confirmatory sampling and analyses were required, based on the specifications outlined in the Dig and Haul Package for PSC 30. A final inspection was conducted on March 1, 2000.

Detailed information on the remedial activities, including photographs, copies of the soil manifests, certificates of disposal, and certificate of clean fill, is provided in the Source Removal Report (CH2M Hill, 2000).

## **8.0 CONCLUSIONS AND RECOMMENDATION**

### **8.1 CONCLUSIONS**

Conclusions pertaining to PSC 30 are as follows:

- Areas of soil where BaP was detected at concentrations in excess of the residential FDEP SCTL have been excavated and disposed at a permitted solid waste disposal facility.
- The excavated area was restored to pre-excavation conditions with uncontaminated backfill materials.
- BaP was not detected in the soil samples collected outside the excavation area in excess of the residential FDEP SCTL.
- Since the removal action has been conducted, no contaminants or pathways pose a threat to the public health, welfare, or the environment.

### **8.2 RECOMMENDATION**

The removal action conducted at PSC 30 is protective of human health and the environment and utilized permanent solutions for the site. Since the removal action is complete, no further action is warranted. The final recommendation for PSC 30 is no further action.

With respect to soils only, the color classification for PSC 30 could be changed from Yellow to Dark Green to denote that releases of hazardous substances have occurred and remedial actions to protect human health and the environment have been taken. However, PSC 30 is located within the area of the Operable Unit 7, Site 16 groundwater plume where remediation of groundwater has not yet been completed. For this reason, it is recommended that the color classification for PSC 30 remain as Yellow until the remedial action conducted at Site 16 receives an approved Operating Properly and Successfully determination. At that time, the color classification in the Finding of Suitability to Transfer Report can become Dark Green (conditional).

## REFERENCES

ABB-ES (ABB Environmental Services, Inc.), 1994. Base Realignment and Closure Environmental Baseline Survey Report NAS Cecil Field, November.

ABB-ES, 1995. Sampling and Analysis Outline, Area of Interest 30, Base Realignment and Closure, Zone C, Developed Nonindustrial Area, Group V. Naval Air Station (NAS) Cecil Field, Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, February.

ABB-ES, 1995. Remedial Investigation, Operable Unit 7, Site 16, Naval Air Station (NAS) Cecil Field, Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, July.

CH2M Hill, 2000. Source Removal Report, Excavation of Petroleum – Contaminated Soil at PSC30, AOI 20, Building 313 Mop Rack Area. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina. NAS Cecil Field, Jacksonville, Florida. July.

Florida Department of Environmental Protection (FDEP), 1999. Contaminant Target Levels Rule, Soil, Groundwater, and Surface Water Target Cleanup Levels, Florida Administrative Code (F.A.C) Chapter 62-777, August.

HLA (Harding Lawson Associates), 1998. Inorganic Background Data Set.

HLA, 1999. Sampling and Analysis Report, Area of Interest 30, Base Realignment and Closure, Zone D, Industrial and Flightline Area (Revision 1.0). NAS Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, March.

TiNUS (Tetra Tech NUS, Inc.), 1998. Base-Wide Generic Work Plan at NAS Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, October.

TiNUS, 1999a. Sampling and Analysis Work Plan, PSC 30, Area of Interest 30, NAS Cecil Field. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, May.

TiNUS, 1999b. Dig and Haul Package for PSC 30, Area of Interest 30, Building 313 Mop Rack Area, NAS Cecil Field. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

U.S. EPA (U.S. Environmental Protection Agency), 1984. Health Assessment Document for Chromium. Research Triangle Park, NC: Environmental Assessment and Criteria Office. EPA/600/8-83-014F.

**APPENDIX A**

**ANALYTICAL LABORATORY RESULTS**



# Report of Analysis

<b>Client Sample ID:</b> CEF-P30-SS-001	<b>Date Sampled:</b> 06/01/99
<b>Lab Sample ID:</b> F4227-1	<b>Date Received:</b> 06/02/99
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 96.9
<b>Method:</b> EPA 8310	
<b>Project:</b> NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>		1	07/02/99	SUB	n/a	n/a	R6896
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	54	ug/kg	
208-96-8	Acenaphthylene	ND	110	ug/kg	
120-12-7	Anthracene	ND	8.2	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.2	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.2	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.2	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	11	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.2	ug/kg	
218-01-9	Chrysene	53	8.2	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	14	ug/kg	
206-44-0	Fluoranthene	ND	11	ug/kg	
86-73-7	Fluorene	ND	11	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	70	ug/kg	
91-20-3	Naphthalene	ND	54	ug/kg	
90-12-0	1-Methylnaphthalene	ND	54	ug/kg	
91-57-6	2-Methylnaphthalene	ND	54	ug/kg	
85-01-8	Phenanthrene	ND	8.2	ug/kg	
129-00-0	Pyrene	ND	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	p-Terphenyl-d14	48%		-%

(a) Analyzed By Accutest Southeast Subcontract Lab.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

00070



Tetra Tech NUS

INTERNAL CORRESPONDENCE

PITT-07-9-106

**TO:** M. SPERANZA **DATE:** JULY 15, 1999  
**FROM:** GRETCHEN PHIPPS **COPIES:** DV FILE  
**SUBJECT:** ORGANIC DATA VALIDATION -VOLATILES AND PAHs  
CTO 078 - NAS, CECIL FIELD  
SDG - F4236

**SAMPLES:** 13/Soils/

CEF-P49-SS-001	CEF-P49-SS-002	CEF-P49-SS-003
CEF-P49-SS-DU01	CEF-P30-SS-002-01	CEF-P49-SS-004
CEF-P49-SS-005	CEF-P49-SS-006	CEF-P49-SS-007
CEF-P49-SS-008	CEF-P49-SS-009	CEF-P49-SS-010
CEF-P49-SS-DU02		

#### Overview

The sample set for CTO 078, NAS Cecil Field, SDG F4236, consists of thirteen (13) soil environmental samples. Two (2) field duplicate pairs (CEF-P49-SS-001/ CEF-P49-SS-DU01 and CEF-P49-SS-008/ CEF-P49-SS-DU02) were included within this SDG.

Samples CEF-P49-SS-001, CEF-P49-SS-002, CEF-P49-SS-003 and CEF-P49-SS-DU01 were analyzed for volatile organics. All samples with exception to, CEF-P49-SS-001, CEF-P49-SS-002, CEF-P49-SS-003 and CEF-P49-SS-DU01, were analyzed for polynuclear aromatic hydrocarbons (PAHs). The samples were collected by Tetra Tech NUS on June 1 and 2, 1999 and analyzed by Accutest Laboratory. Volatile analyses were conducted using SW 846 method 8260B. PAH analyses were conducted using EPA method 8310.

The data was evaluated based on the following parameters:

- \* • Data Completeness
- Calibration Verifications
- \* • Holding Times
- \* • Laboratory Blank Analyses
- Field Duplicate Analyses
- \* • Detection Limits
- \* • Surrogate Recoveries
  
- \* - All quality control criteria were met for this parameter.

MEMO TO: M. SPERANZA - PAGE 3  
DATE: JULY 15, 1999

PITT-07-9-106

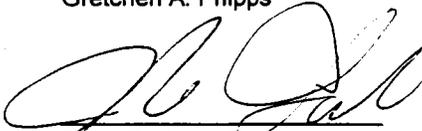
The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", February 1994 and the NFESC document entitled "Navy Installation Restoration Laboratory Quality Assurance Guide." (NFESC 2/96).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."



Tetra Tech NUS  
Gretchen A. Phipps



Tetra Tech NUS  
Joseph A. Samchuck  
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation